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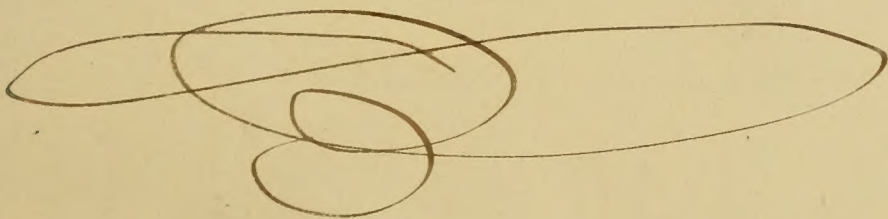
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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—

1879.—October 11.	1879.—Dec. 13.	1880.—Mar. 20.	27.
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Price 5d. each, post-free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.

THE GARDENERS' CHRONICLE,
Volume XII., JULY to DECEMBER, 1879.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

ALEXANDRA PALACE,
Muswell Hill, N.
The GREAT ROSE SHOW will be held in the Central Hall, SATURDAY, July 10. ENTRIES CLOSE—SATURDAY, July 3. Schedule of Prizes, Rules, &c., may be had on application to Mr. J. S. COOKE, Sec.
Alexandra Palace, London, N.

WEST OF ENGLAND ROSE SHOW, 1880.
—This EXHIBITION, open to all England, is fixed to take place at the Shire Hall, Hereford, on WEDNESDAY, July 7. Entries Close, Friday, July 2.
Credenhill Rectory. Rev. C. H. BULMER, Hon. Sec.

WEST KENT HORTICULTURAL SOCIETY.
The ANNUAL EXHIBITION of the above Society will be held on SATURDAY, July 10, by kind permission of N. W. J. Stode, Esq., in the grounds of Camden House, Chislehurst, the residence of H. M. the Empress of the French.
For Schedules of Prizes, &c., apply to the Honorary Secretary, T. A. MITCHELL, Esq., The Woodlands, Chislehurst.
Annual Subscription, £1 1s., to be paid to the Treasurer, JOHN SCOTT, Jun., Esq., Elmstead Grange, Chislehurst.

LUDLOW ROSE SHOW.
The ANNUAL EXHIBITION of ROSES will be held at the Assembly Rooms, Ludlow, on WEDNESDAY, July 14. Liberal Open Prizes will be given to Nurserymen, Amateurs and Cottagers. Schedules of Prizes and Regulations may be obtained from the Rev. V. T. T. ORGILL, Hon. Sec.
Ludlow.

ROYAL BOTANICAL AND HORTICULTURAL SOCIETY OF MANCHESTER.
The PROVINCIAL EXHIBITION of the NATIONAL ROSE SOCIETY will be held in the above Society's Gardens, Old Trafford, on SATURDAY, July 17. Open from 12 o'clock at noon till 7 P.M. Admission 1s. For Schedules apply to the undersigned.
BRUCE FINDLAY.
Royal Botanic Gardens, Manchester.

CARTER'S GREAT EXHIBITION
of FLOWERING and ORNAMENTAL FOLLAGED ANNUALS will be ON VIEW DAILY, in the Long Corridor of the Royal Botanic Society's Gardens, Regent's Park, N.W., and continue until further notice. Great display of 25,000 pots. Tickets of admission on application to
CARTERS, the Queen's Seedsmen, High Holborn, W.C.

CARTERS' HOME-GROWN SEEDS.
Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.
CARTERS, the Queen's Seedsmen, High Holborn, London.

Orchids.

THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.
Lion Walk, Colchester.

Myosotis elegantissima.

The new Silver-edged, Blue-flowered Forget-me-not.
RODGER, McCLELLAND AND CO. are now sending out this superb Novelty for the Spring Garden. Good plants 3s 6d. each, 36s. per dozen. Can be sent by post.
64, Hill Street, Newry.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HERE-FORD. (Established 1785.)
Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

To the Trade and Amateur Rosarians.
NEW ROSES in POTS:
TEA and NOISSETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.
Special LIST will be sent gratis and post-free to applicants.
EWING AND CO., Eaton, near Norwich.

BEDDING CLEMATIS, mixed colours.
—A great bargain is offered in very fine plants—25 for 20s., 50 for 30s., 100 for 50s., package included. Cash with order. A magnificent stock of CLEMATIS LANUGINOSA on offer.
CHARLES NOBLE, Bagshot.

OSBORN AND SONS
call attention to their collection of
HARDY HERBACEOUS ALPINE BULBOUS PLANTS,
Hardy FERNS, &c., a CATALOGUE of which will be forwarded Post-free on application.
OSBORN AND SONS, The Fulham Nurseries, London, S.W.

Hyacinths, Tulips, &c.
BUDDENBORG BROS., Bulb Growers,
House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

Begonias.
JOHN LAING AND CO.'S unrivalled Gold Medal Collection is now in bloom. Inspection invited. Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out.
LISTS free on application.
The Nurseries, Forest Hill, London, S.E.

SPIRÆA ULMARIA VARIEGATA.
—Beautiful golden variegated foliage (see the Garden, of June 12, 1880, p. 512).
Messrs. BUDDENBORG BROS., Hillegom, near Haarlem, Holland, offer fine plants of the above at 20s. per 100.

W. M. CUTBUSH AND SON
beg to announce that their
GENERAL PLANT CATALOGUE
is now ready for the ensuing season, and may be had post-free on application.
Highgate, London, N.; and Barnet, Herts.

Selaginella lepidophylla (true).
THE RESURRECTION PLANT.—The most remarkable of plants. They are dried up and apparently dead, but on being placed in water, immediately begin to unfold their elegant green fronds, in fact they come to life again in all their beauty. We offer these wonderful and unique plants at 3s. each, or three for 7s. 6d. post-free.
HOOPER AND CO., Covent Garden, London, W.C.

STRAWBERRY RUNNERS,
strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

Veitch's Autumn Giant Cauliflower.
FOR SALE, a large quantity of Veitch's AUTUMN GIANT CAULIFLOWER, BRUSSELS SPROUTS, SAVOYS and SCOTCH KALE. Apply, JOSHUA H. BATH, 1 and 3, York Street, Borough Market, London, S.E.

To Nurserymen, Florists, and others Cultivating MARKET PRODUCE.
SALE of SAME UNDERTAKEN,
at moderate Commission, by
WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

WANTED, 20,000 to 30,000 ROSE BUDS,
for working at once. State price and sorts to
THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

WANTED, Twenty Dozen of BEDDING GERANIUMS, not less than three dozen of sorts. Please to state the very lowest price.
E. R. WEBBER, Ecton, Northampton.

SUTTON'S HOME-GROWN SEEDS, &c.
PARIS, 1878.

In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (a superior distinction accorded to no other English Exhibitor of Seeds) was conferred on our Managing Partner, Mr. M. H. SUTTON, by the French Government.
SUTTON AND SONS, Reading, London and Paris.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vines.
CATALOGUES free. The Trade supplied.

FRUITING PLANTS
of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

To the Trade.

DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to
KELWAY AND SON, Langport, Somerset.

Gardenias.

MESSRS. JOHN STANDISH AND CO.
have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

NEW PALMS, CAMELLIAS and AZALEAS.
JACQUES COENE, St. Pierre-Alost Nursery, Ghent.

Pyrethrums, Double-flowered, in Pots.
ROBERT PARKER begs to announce that he can supply the above-named, by the dozen, hundred, or thousand, in nearly 100 named varieties, from 9s. per dozen upwards. Descriptive LISTS, with New General CATALOGUE of Hardy Greenhouse and Stove Plants, forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

Primulas — Primulas — Primulas.
Eleventh Year of Distribution.
WILLIAMS' superb strain, 1s. 6d. per dozen
10s. per 100; package and carriage free.
CINERARIAS, choicest assortment, same size and price. The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

PASSION FLOWER (Passiflora cœrulea).
—Nice young plants from pots, 6d. each, post-free for 9d.
H. ELLIOTT, 51, High Street, Maidenhead.

IXIOLIRION MONTANUM.—Just harvested Seed of the above pretty New Bulbous Plant, from Turkestan, at 1s. per packet, post-free, on receipt of stamps; also fine home-grown bulbs of the same, at 20s. per dozen.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

White Cape Flowers.
HURST AND SON have received a very fine importation of the above, lowest Price of which can be had on application. Also their LIST of FLOWER SEEDS for present sowing.
6, Leadenhall Street, London, E.C.

Yuccas, Palms, and Dracaenas.
W. JACKSON AND CO., Nurseries, Bedale, Yorkshire, have the above to dispose of—handsome Prize Specimens, suitable for exhibiting in collections for effect.
Full particulars on application.

CINERARIAS.—Finest strains in cultivation.
Strong plants, 1s. 6d. per dozen, 10s. per 100.
PRIMULA SINENSIS FIMBRIATA, same price. Post-free.
JAMES KIRK, Stourbridge.

THE BEST of the NEW GERANIUMS of 1879, in cuttings, very cheap. Denny's Catlin's, Postans', and Pearson's Singles, and Lemoine's Doubles, thirty of the very best for 10s.; the same in plants for 4s.; fifty older varieties, but all new recently, for 10s.; same in cuttings for 4s.; all post-free.
CATALOGUES on application.
RICHARD PANNETT, Nurseryman, Chailley, Sussex.

Roses in Bloom.
PAUL AND SON, the "Old" Nurseries, Cheshunt, have their Roses now finely in bloom. One mile from the Cheshunt Station of the Great Eastern Railway, where are Bays. The London Terminus is Liverpool Street.

DOWNIE AND LAIRD, Edinburgh, have at present over 40,000 PANSIES in full flower, at their Pinkhill Nursery. Inspection invited. D. & L. were awarded, at the Scottish Fanny Society, 1st Prize in the Nurserymen's Class for the best 24 Fanny Pansies; 1st Prize for the best 24 Violas; and 1st Prize for the best 12 Bedding Pansies; and at the Waverley Fanny Society, both 1st and 2d for the best 24 Fanny Pansies, and 1st Prize for the best Fanny Pansy in the Show.

SALES BY AUCTION.

Established Orchids, &c.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **WEDNESDAY, July 7**, at half-past 12 o'clock precisely, the valuable **COLLECTION** of **ESTABLISHED ORCHIDS**, formed by the late **W. S. Cooper, Esq.**, of Hill-Morton, Paddox, including some very fine specimens of *Phalaenopsis*, *Aerides*, *Odontoglossum*, *Masdevallia*, *Vandas*, *Angraecum*, *Cymbidium*, &c., many of them in flower; an importation of **PALM SEEDS** from Columbia; a collection of fine specimen **FERN**s and **STOVE PLANTS**; 20 fine plants of *MASDEVALLIA HARRYANA* in flower; 2 magnificent specimens of *ANTHURUM SCHERZERIANUM*; 200 plants of *SAXIFRAGA WALLACEI*; a consignment of **TREE FERNS** and other Plants from New Zealand; **ORCHID RA-KETS**, &c.; and several other importations of **ORCHIDS**, **PALM SEEDS**, &c.

May be viewed the morning of Sale, and Catalogues had.

Oncidium lanceanum.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, July 8**, at half-past 12 o'clock precisely, by order of **Mr. F. Sander, St. Albans**, a splendid importation of **ONCIDIUM LANCEANUM**, in large masses and splendid condition. Amongst others the consignment contains the most wonderful mass that ever reached this land, measuring 14 feet in circumference, and consisting of a group of plants growing closely on part of a tree. Four natives carried this truly grand specimen four weeks on poles to the seaport.

May be viewed the morning of Sale, and Catalogues had.

Valuable Importations of Orchids.

MR. J. C. STEVENS has received instructions from **Mr. F. Sander** to **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, July 8**, at half-past 12 o'clock precisely, large importations of **ORCHIDS**, including *Odontoglossum navium*, *Cypripedium Schlimii*, *Cattleya Menziesii*, *Miltonia Rupestris*, *Batemania meleagris*, *Cattleya intermedia*, *Trichopilia nobilis*, *Coleogyne fuscicincta*, large masses of *Cattleya Mossiae*, &c.

May be viewed the morning of Sale, and Catalogues had.

Importation just Received Direct.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, July 8**, eight **WARDIAN CASES**, containing *Phalaenopsis grandiflora*, *Grammatophyllum*, *Aerides subvissimum*, *Cypripedium barbatum*, *C. Hookerianum*, *Aerides affinis rosea*, *Vanda lamellata*, &c.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

The property of **F. A. Philbrick, Esq., Q.C.**, Avenue Road, Regent's Park.

MR. J. C. STEVENS has been favoured with instructions from **F. A. Philbrick, Esq., Q.C.** (who is leaving his residence), to offer for **SALE** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **TUESDAY and WEDNESDAY, July 13 and 14**, at half-past 12 o'clock precisely each day, his valuable **COLLECTION** of **ESTABLISHED ORCHIDS**, which has been formed during the last seven years regardless of expense, and comprising most of the finest species and varieties in existence. Amongst other grand things will be found *Aerides Schoderii*, *Veitchii*, *Fieldingii*, *quinquevulnerum*, *rubrum*, *affinis superbum*, *Lobbi*; splendid specimen *Angraecum*; *Phalaenopsis* in grand vigour; *Cattleya Gigas*, *Dowiana*, *dolosa*, *labiata*, *Warnerii*; *Cypripedium Dayanum*, *stelligerum*, *superbium*; *Dendrobium Schoderii*, *Griffithianum*, &c.; *Laelia* *anceps*, *Dawsoni*, *Schilleriana*, *superbium*, *Masdevallia*, *Tovarianae*, *Lindleyi*, *superba*, &c.; *Odontoglossum navium* majus, *Andersonianum*, *pichellum*, &c.; *Saccobolus*, including *Holfordii* (true), *Dayanum*, *violaceum*; *Vanda suavis*, *Veitchii*, *Rolissoni*, &c. All the plants are in the finest possible condition.

May be viewed the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **FRIDAY, July 15**, at half-past 12 o'clock precisely, without reserve, the **COLLECTION** of **ESTABLISHED ORCHIDS** formed by **D. G. STAIGHT, Esq.** (who is now giving up their culture), comprising many rare and valuable sorts, and which have been in the Crystal Palace, and exhibited at the Horticultural Shows.

May be viewed the morning of Sale, and Catalogues had.

"Westwood," Beulah Hill, Upper Norwood.

MR. J. C. STEVENS has received instructions from **Henry Moser, Esq.**, to **SELL** by **AUCTION**, on the Premises as above, about the middle of **JULY**, without the least reserve (in consequence of the freehold having been dispensed of), his entire **COLLECTION** of **STOVE** and **GREENHOUSE PLANTS**, consisting of magnificent specimen **Ferns**, which have taken 1st Prize at Crystal Palace and other Shows; good **Crotons**, *Camellias* and *Azaleas*, specimen **Coleus**, **Fuchsias**, **Tree Ferns**, **Eucharis**, **Pancratiums**, a few **Orchids**, &c.

Catalogues are preparing, and can be had on application to **Mr. J. C. STEVENS**, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Wood Green, Middlesex, N.

By order of the Mortgagee of **James Norris**, deceased, acting under power of Sale, with the permission of the Vice-Chancellor, Sir James Bacon.

A valuable **FREEHOLD VINERY**, with upwards of three-quarters of an Acre of capital LAND, situate within five minutes' walk of Wood Green and Palace Gates Railway Stations. Possession on completion of the purchase.

MESSRS. GREEN AND SON will **SELL** by **AUCTION**, at the Mart, Tokenhouse Yard, E.C., on **FRIDAY, July 30**, at 2 o'clock, in one lot, the valuable **FREEHOLD PROPERTY** known as **The Vineries**, Wood Green, possessing a frontage of 120 feet to Nightingale Road, and a frontage of 90 feet to Truro Road; having erected thereon eight Span-roof Greenhouses, containing about 500 established Vines and Peaches, Propagating House, Plant and Fern Houses, Pits, Boiler Houses, &c., Detached Cottage Residence, Office, Stabling, &c.; the whole forming a compact set of Horticultural Premises of the estimated rental value of £150 per annum. The Property is situated in the midst of a steadily developing neighbourhood, and possessing such good frontages is admirably adapted for the erection of new Houses without interfering with the horticultural position of the property.

May be viewed. Particulars of **MESSRS. HENSMAN AND NICHOLSON**, Solicitors, 25, College Hill, E.C.; and of **MESSRS. GREEN AND SON**, Auctioneers and Surveyors, 10, St. Swithin's Lane, E.C.

Acton, W.

EXPIRATION OF LEASE.—CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS will **SELL** by **AUCTION**, on the Premises, The Nursery, Park Road, Acton, W., near the Station, on **FRIDAY, July 9**, at 12 o'clock precisely, by order of **Mr. Long**, without reserve, the whole of the well-grown **STOVE** and **GREENHOUSE PLANTS**, including fine *Ficus elastica*, *Bouvardias*, *Maidenhair Ferns*, *Lycopods*, *geranium Double White Primulas*, specimen *White Azaleas*, *Scarlet Geraniums*, *Fuchsias*, and *Callas*, two Market **VANS**, capital **Spring CARRIAGES**, and other effects.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 88, Gracechurch Street, E.C., and Leytonstone, E.

Near the Victoria Station, Manchester.

AUCTION SALE OF IRON ROOFS, BUILDINGS, WIRE FENCING, &c.

MR. CHARLES COSTIGAN will **SELL** by **AUCTION**, on **TUESDAY, WEDNESDAY and THURSDAY, July 6, 7 and 8**, near Victoria Station, Manchester, on vacant land, corner of Victoria and Chapel Streets, about 260 tons of valuable **IRON** and **STEEL MANUFACTURES**, including about 20,000 Galvanised Corrugated Iron and Steel Roofing Sheets, painted and black corrugated sheets; 60 Complete Iron and Steel Roofs, 40 Complete Iron Buildings, 12 miles strong Wire Cattle Fencing, large quantities of Iron Hurdles, Gates, Fencing, Rope and Standards; Eaves Gutters, Ridge Capping, &c. The Galvanised Corrugated Iron and Steel Sheets will consist of usual sizes and strengths, suitable for covering roofs and buildings for all purposes. The Complete Roofs are valuable for hay and corn sheds, and general agricultural and manufacturing shedding, stores, warehouses, workshops, &c. The Wire Fencing is of various strengths, most of it against heavy cattle. The Hurdles are of three strengths, extra heavy, strong, and medium. All the goods are new, of usual sizes and best manufacture, and will be put up in convenient lots to suit all buyers. The Iron Roofs are specially worth the attention of agriculturists: thousands are now in use throughout the kingdom for hay and corn barns, &c. Save their cost to farmers in about three years.

Catalogues may be had week before Sale, from **MR. COSTIGAN**, Auctioneer, Park Road, Liverpool; and **ISAAC DIXON**, Windsor Ironworks, Liverpool. Full particulars may be had from **MR. DIXON**. Goods may be viewed on Monday, July 5.

Important Orchid and Ornamental Plant Sale, THURSDAY, JULY 15.

MR. DAVID MITCHELL, HORTICULTURAL AUCTIONEER and VALUATOR, has been instructed to **DISPOSE** OF, by **PUBLIC AUCTION**, on **THURSDAY, July 15**, at 12 o'clock, noon, a very choice collection of **ESTABLISHED ORCHIDS**, the property of a gentleman near Manchester, comprising a fine lot of *Dendrobium*, *Pleione maculata*, *lagenaria*, and *Wallichii*, all fine pieces; *Saccobolus*, *Laelia superbiens*, grand plant; *Laelia anceps* alba and *Dawsoni*, good plants (true); *Odontoglossum*, in variety; *Oncidium*, *Masdevallias*, leading kinds; *Trichopilia*, *Lycastes*, *Chysis bracteensis*, fine plant; *Miltonia* and *Cypripedium*, *Vanda coccinea*, *Aerides*, *Cattleya Warneri*, original variety. Also a very fine lot of beautiful-grown **Conservatory Plants**, from the same establishment, consisting of *Thrinax elegans*, *Kentia Belmoreana*, 6 feet; *Araucaria excelsa*, from 3 to 6 feet in height, splendid plants; *Cocos Weddelliana*, 2 to 4 feet; *Phormium tenax*, *Veitchii*, 4 feet; and *Anthurium Scherzerianum*, splendid plant; *Gonoma gracilis*, 5 feet, grand example; *Crotons*, *Dracenas*, *Dipladenias*, *Caladiums*, &c.

N.B. **MR. MITCHELL** would beg to draw the attention of cultivators to this important Sale of Plants. The Orchids are very choice, and the Ornamental Plants are superb.

Catalogues ready on Monday, and will be forwarded free on application.

D. MITCHELL, 6, Comely Bank, Edinburgh.—June 29.

To Nurserymen, Florists, and Others.

HIGHLY IMPORTANT SALE OF THE LEASE AND GOODWILL OF THE OLD-ESTABLISHED BUSINESS carried on at 46, Harborne Road, Edgbaston, near Birmingham, and called "the Birmingham Nursery;" together with the splendid collection of **STOVE** and **GREENHOUSE PLANTS**. By order of **Messrs. Felton & Sons**, who are giving up the business.

MR. JOHN WARD has received instructions to offer for **SALE** by **AUCTION** as a going concern (unless previously disposed of by private contract), at the Grand Hotel, Colmore Row, Birmingham, on **THURSDAY, July 22**, at 6 o'clock in the evening, in one lot, and subject to conditions then to be read, the valuable **LEASE**, **GOODWILL**, and **STOCK-IN-TRADE** of the above first-class Business. The Premises consist of a substantially-built Residence, containing Dining, Drawing, and Breakfast-rooms, Two Kitchens, Five Good Bedrooms, and Two Dressing-rooms, and the usual Out-offices, and a Small Three-roomed Cottage adjoining same. The Glass, which covers an area of about 25,000 superficial feet, consists of Sixteen Houses, varying from 10 to 20 feet in length, together with Two Large Potting-sheds, Office and Seed-rooms fitted with Mahogany Counters, Nests of Drawers, and Iron Safe, &c.; Six Pits, each 70 feet long; and Fourteen Two-light Frames. The whole of the Houses and some of the Pits are heated with Hot Water by Four Boilers constructed on most approved principles for the Propagating and Growing of Stove and Greenhouse Plants and Flowers. The Stock, which is a most extensive one, comprises all the newest Stove and Greenhouse Plants in every variety. The Property, which occupies an area of over an acre, is leasehold for term of forty years unexpired, at the absurdly low ground rent of £27 per annum. Immediate possession can be had on completion of the purchase.

N.B.—The Auctioneer begs to call the special attention of **Excess** Nurserymen and Florists to the Sale of the above Business, which is situated in the very heart of Edgbaston, and has a first-class connection, which is capable of great extension.

The Premises and Stock may be viewed at any time prior to Sale. For further particulars apply to **B. T. CARTWRIGHT, Esq.**, Solicitor, 59, Colmore Row; to **T. E. SPENCER, Esq.**, Solicitor, 14, Bennett's Hill; or to the Auctioneer, 84, Colmore Row, all of Birmingham.

Nursery, Florist, and Seed Business.

TO BE DISPOSED OF, IMMEDIATELY, by reason of the death of one of the partners, a genuine well established **BUSINESS** in Essex, and within half a mile of Rail, comprising good Residence, Seed Shop, convenient Offices, Four good Houses heated with hot water, and about 7 Acres of Ground planted with thriving Nursery Stock, including about 7000 Roses, for which the Nursery bears a high reputation, and orders for the whole are already secured. Incoming by Valuation or as may be agreed upon. Apply to **MR. J. MAYN**, Accountant, Sible Hedingham, Halstead, Essex.

To Market Gardeners or Nurserymen.

TO BE LET, from 10 to 100 Acres of rich **GARDEN GROUND**, half a mile from two stations, within 18 miles of London. Apply to **CHARLES E. COOPER**, Surveyor, 36, Bedford Row, W.C.

TO BE LET, with Immediate Possession, **NURSERY GARDENS**, about 1 Acre 2 Rods. A Seed Business has been carried on in connection with the same, and could be continued. There are two good Greenhouses, with Pits heated by Hot Water; Dwelling-house—a part of the House is at present let off at more than a third of the rent of the whole. Close to a good Market Town with about 12,000 inhabitants. No other business of the kind in the place. Thirty miles from London, with direct rail. A first-class opportunity for a pushing man with a little capital. Apply to **JOHN COX**, High Wycombe, Bucks.

To Gardeners Wanting to Start in Business.

TO BE LET, for £20 a year and attendance to a Small Garden, A **LARGE CONSERVATORY AND GRAPE HOUSE**, at St. John's Wood, London, N.W., where there is an excellent opportunity for a young man starting on his own account. Apply, 37, Marlborough Hill, St. John's Wood, London, N.W.

SHROPSHIRE HORTICULTURAL SOCIETY'S ROSE SHOW.—In consequence of the lateness of the season the Society's ROSE SHOW, fixed for July 1 next, has been **ADJOURNED** to **WEDNESDAY, JULY 28**, being the first day of the Grand National Archery Meeting, which will be held in Shrewsbury this year.

The **GREAT SUMMER SHOW** will be held on **AUGUST 18 and 19**.

Schedules may be had on application to the undersigned,

H. W. ADNITT, } Hon. Secs.
W. W. NAUNTON, }

Shrewsbury, June 17, 1880.

THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.—**JULY 31** and **AUGUST 2**. **THREE HUNDRED POUNDS** in **PRIZES**, including the following:—12 Stove or Greenhouse Plants, £20, £15, £10; 6 Dishes of Fruit, distinct, £5 5s., £3, £2, £1. Free to Subscribers of not less than 5s. Schedules of

C. S. FUDGE, Secretary.

NOTICE TO THE TRADE.—On and after July 1, the Business of Nurserymen, &c., lately carried on under the style of **Thomas Bunyard & Sons**, will be continued at the

ROSE NURSERIES, ASHFORD, by **THOMAS BUNYARD, JUN.**, while the Maidstone concern will be carried on separately under the name of

GEORGE BUNYARD AND CO.
GEORGE BUNYARD being Manager. The Trade are particularly requested to keep all accounts separately, and post Catalogues to each firm, as in future the Businesses will be quite distinct. Maidstone, June 28, 1880.

Fifty Nurseries, Market Gardens, Florist and Seed **BUSINESSES** to be **DISPOSED OF**.

MESSRS. PROTHEROE AND MORRIS' **HORTICULTURAL REGISTER** contains full particulars of the above, and can be obtained, gratis, at 98, Gracechurch Street, E.C.

FERNS.—Young North Devon, free, thirty Roots, fourteen kinds, 1s. 9d.; named, 2s. Twenty-five Roots, twelve kinds, 1s. 6d.; named, Two Clumps of *Hymenophyllum Wilsoni* and *Tunbridgeense*, free, 2s.; large, 10s., fourteen kinds, named, in hamper, for 5s. 6d., or 10s., 100 large *Lastrea Fœnisci*, in hamper, 10s.

ALEXANDER RICHARDS, Lodging House Keeper, Gardener, Woodbine Villa, Lynnmouth, North Devon.

VIOLAS, 20,000 fine strong plants:—
"coriata, white, 5s. per 100, 45s. per 1000.

LOBELIA, Emperor William, strong autumn-struck, from stores, 2s. 6d. per 100, 20s. per 1000; from single pots, 5s. per 100, 45s. per 1000.

VERBENAS, Pink and Crimson, strong autumn-struck, 6s. per 100, from stores; 20s. per 100, from single pots.

Cash only. Carriage and package free.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

To the Trade.

ENGLISH SOWING RAPE SEED AND WHITE MUSTARD.

H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application. Seed Growing Establishment, Wisbech.

GREENHOUSE and STOVE PLANTS.

TUBEROUS BEGONIAS, **HERBACEOUS PLANTS**, **SEEDLING PRIMULAS**, **CINERARIAS**, and **CALEOLARIAS** for potting.

COLLECTIONS of **GREENHOUSE** or **STOVE PLANTS**, in good named varieties, for exhibition or house decoration, at 6s., 5s., 12s., and 18s. per dozen, according to size and quality of collection; varieties omitted which purchasers possess.

CROTONS in good leading kinds, 6s. and 9s. per dozen. **TUBEROUS BEGONIAS**, several thousands of named sorts now on sale, all from last year's bulbs, at 4s., 6s., 9s., 12s., and 18s. per dozen.

PRIMULAS and **CINERARIAS**, from as fine a strain as any in cultivation, 12s. post-free, 2s., 25 for 3s. 6d., 50 for 6s., 100 for 10s.

CALEOLARIAS, 2s. per dozen, 15s. per 100. All these are now in cold frames, and strong plants, ready for potting into 60's.

HERBACEOUS PLANTS.—If these are planted now almost a season is gained in growth, and the plants are much stronger and better prepared for the winter than is the case when planted in autumn.

Our collection comprises almost all worth growing for Garden decoration, and selections can be made for any situations at 3s., 4s., or 6s. per dozen, of twelve varieties, 20s., 30s., or 50s. per 100.

FUCHSIAS, **HELIOTROPES**, **LANTANAS**, **SALVIAS**, **COLEUS**, **TROPÆOLUMS**, twelve fine varieties of any of these, all named, and including many novelties, 2s. and 2s. 6d. per dozen, 12s. and 15s. per 100.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

THOMAS RIVERS AND SON have now a large and fine Stock of Fruiting **ORANGE TREES** to offer, of various sizes. Sorts:—

St. Michael's	Sustain
Tangerine	Long Orange
Multese Blood	Botelha
White Orange	

Prices on application.
The Nurseries, Sawbridgeworth, Herts.

DANIELS' Unrivalled Strains of Choice FLORISTS' FLOWER SEEDS.

Post-free.



Post-free.

In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few parents than from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.



FOR PRESENT SOWING. Per pkt.—s. d.

AURICULA, Daniels' Prize Alpine	1	0
CARNATION and PICOTEE, from stage flowers, very choice	25	6d. and 5
" yellow varieties	25	6d.
CALCEOLARIA, Daniels' Superb Prize, 15. 6d., 25. 6d., and 50. 0		
CINERARIA, do. do.	15. 6d., 25. 6d., and 50. 0	
GLOXINIA HYBRIDA, magnificent	15. 6d. and 25. 6d.	
PRIMULA, Daniels' choicest red	15. 6d. and 25. 6d.	
" " white	15. 6d. and 25. 6d.	
" " mixed	15. 6d., 25. 6d., and 50. 0	
" " Fern-leaved	15. 6d. and 25. 6d.	
" " super double	25. 6d. and 50. 0	
PANSY, Daniels' Show and Fancy	15. 6d. and 25. 6d.	
" " super blotched, magnificent	25. 6d. and 50. 0	
" " improved, striped	25. 6d. and 50. 0	
POLYANTHUS, fine cold-laced	15. 6d. and 25. 6d.	
PRIMROSE, hardy, beautiful varieties, mixed	15. 6d. and 25. 6d.	
SWEET WILLIAM, Daniels' Prize	6d. and 1	0

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From Mr. R. GALE, *The Gardens, Smallburgh Hall, April 14.*—"I must tell you that my Primulas and Cinerarias from your seed are first-rate, the blue Cinerarias are magnificent."

From Mr. H. DALLIMORE, *Canton, Cardiff, July 8.*—"The Calceolarias grown from your seeds have turned out splendidly, both as regards colour and variety, and have gained me three 1st prizes."

From Miss WELCH, *Evercreech, February 26.*—"Miss W. has a splendid show of single, double, and Fern-leaved Primulas raised from Messrs. Daniels' seed. They have bloomed since October."

From N. VYE, Esq., *Uffcombe, July 9.*—"The Picotee seed I had from you succeeded well and produced magnificent flowers."

DANIELS BROS.,

The Royal Norfolk Seed Establishment, Norwich.

Come and See.

MY Show, Fancy, and Zonal PELARGONIUMS, BEGONIAS, COLEUS, GLOXINIAS, VERBENAS, PETUNIAS, VIOLAS, and many other Plants now in full flower. Probably the above form the most complete display to be seen in England.

Bedding Plants of All Descriptions.

H. CANNELL has still large quantities of the above, to give immediate effect, that he can offer at a reduced price.

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CHRYSANTHEMUM FRUTESCENS (White), best bedder.

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CHRYSANTHEMUM ETOILE D'OR (largest Yellow).

Post-free 15. each; price per dozen or 100 on application.

Pyrethrums, Phloxes, Violas, and Cannas.

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The *Journal of Horticulture* says:—"Violas at Swanley are magnificent, no other term doing justice to the rich masses of colour."

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PLANTS, &c., ALL OVER THE WORLD.

CUTTINGS ALL OVER EUROPE BY POST.

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"DEAR SIR,—I have to thank you for the parcel of Pelargoniums by post.—Yours truly, WILLIAM WEDD."

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"MR. H. CANNELL.—DEAR SIR,—The Seeds I ordered of you came in due time. I found them of first-class growing quality; they came up well, and are growing into fine healthy plants. The three packages of Plants by sample post arrived in good condition, as good in fact as any I ever received from our own florists, through the mails. If it were generally known by my countrymen how well you send Seeds and Plants across the ocean your business in this country would increase materially. Set me down for your annual of 1881.—Yours truly,
"240, W. 4th St. "Geo. CASWELL."

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Sutton's Superb Red } 5s. and 2s. 6d.
Sutton's Superb White } per packet.
Sutton's Superb Mixed } Post-free.

"The Primulas from your seed I have never seen equalled.—Mr. A. BIRT, *Rodborough.*"

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ROSES NOW IN FULL BLOOM.**

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RICHARD WALKER can supply for cash Enfield Market and Robinson's Champion Drumhead CABBAGE PLANTS, at 25. per 1000; BRUSSELS SPROUTS and SAVOYS, 25. 6d. per 1000, in any quantities. Market Gardens, Biggleswade.

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strong ditto, established in small pots, 305. per 100.
ASPLENIUM MARINUM, or Sea Spleenwort, 55. per dozen.
GYMNOGRAMMA LEPTOPHYLLA, or Annual Maiden-hair Fern, 55. per dozen.
Also a large quantity of **MAIDENHAIR FERNS** of varieties.

NEW DOUBLE TROPÆOLUM, nanum fl.-pl.—This is the finest novelty in soft-wooded plants introduced this year, and surpasses any other double variety previously in cultivation. The best idea of its merits will probably be given by a brief description of a plant now in our nursery. Age of plant from cutting about 5 months, length of shoot 3½ feet, size of flower 2 to 2½ inches in diameter, number of flowers and buds on the plant, 127; colour very dark orange-red. The petals wither on the calyx, but do not fall. This Tropæolum is one of the finest Cool-house Soft-wooded Climbers in cultivation, for brilliancy and freedom being unequalled. As a plant for Cut Flowers it will also be very valuable; it is a good grower, much better than other double sorts; very hardy constitution, wintering well. Plants, to flower this autumn, post-free, 11. 6d. each 125. per. per dozen.

TROPÆOLUM, fl.-pl., distinct from above, colour light orange-red, 6d. each.

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CAULIFLOWER, Walcheren and Early London, 55. per 1000, 405. per 10,000.

BROCCOLI, Early and Late White (for succession), 45. per 1000, 355. per 10,000; Purple Sprouting, 35. per 1000, 255. per 10,000.

BRUSSELS SPROUTS, Giant; SAVOY, Drumhead; CABBAGE, Thousand-head, Large York, Enfield, Nonpareil, and Robinson's Drumhead; KALE, Cottagers, &c., 25. 6d. per 1000, 205. per 10,000.

Well packed, package included.
N.B. Lower quotation for larger quantities.

Apply, **EDWARD LEIGH**, Norcote Farm, near Guildford.

Cabbage Plants.—Cabbage Plants.

W. VIRGO can now supply at reduced prices extra strong well-rooted plants of the following:—Robinson's Champion Drumhead, Early Ox-Heart, Early Enfield Market, Wheeler's Imperial and Drumhead Savoy, all at 35. per 1000; also BROCCOLI, CAULIFLOWER, BRUSSELS SPROUTS, WINTER KALE, GREEN CURLED SAVOY and EARLY CABBAGE—the above in any quantity at 45. per 1000, made up of different kinds. Cash or reference from unknown correspondents. Delivered free on rail, package included. N.B. Samples if required.
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COCOA-NUT FIBRE REFUSE, 3d. per bushel; 100 for 205.; truck (loose, 250 bushels), 305.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 55. 6d. per sack 5 sacks, 255.; 12 for 455., or 305. per ton.
BLACK FIBROUS PEAT, 55. per sack, 5 sacks 225.; 12 for 405., or 345. per ton; sacks, 4d. each.
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Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for FREE PRICE LIST.

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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £5 6s. per truck.

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"SEVENTH SET."—Consists of 8 splendid and distinct varieties, all of which were staged in the First Prize-taking Exhibits of the Pelargonium Society's Show of 1879. Five of the varieties were also awarded First-class Certificates of Merit.
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HELLEBORUS NIGER, the Christmas Rose. This beautiful white flower, coming to perfection at Christmas time, is already much too little grown, being hitherto too scarce and dear. Millions of its fine blossoms should be ready for the markets in mid-winter, where only hundreds are now to be found, and would always prove the most profitable thing it is possible to grow. It requires no heat nor care. We are prepared to supply for immediate orders any quantity of fine roots at one-sixth the usual prices, and we believe that investment in them will prove the finest speculation possible. For terms apply to
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 "Last year Daniels' Defiance Cabbage did very well with me. It is very distinct and superior to the old standard varieties." s. d.

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" "Tom Thumb" Cabbage	"	"	1 6
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" New Queen, of remarkably quick growth	"	1	0
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Special quotations for larger quantities on application.

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BULBS, DIELYTRAS, SPIRÆAS,
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ARALIA SIEBOLDII—This year's seedlings,
20s. per 1000.

LILY OF THE VALLEY—Price by letter.

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"Probably the finest Rose of the year."—*Gardeners' Magazine*.

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"Crown Prince, also raised at Waltham, claims special attention."—*Gardeners' Magazine*.

LITTLE GEM (Moss)—A miniature Moss Rose, which may be described as a crimson Mossy de Meaux. It forms compact bushes densely covered with small, double, crimson flowers, beautifully mossed. It is of charming effect in the garden, and most valuable for bouquets or vases.

"A charming little Moss Rose."—*Gardeners' Chronicle*.

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THE NEW FRENCH ROSES OF 1880, 30s. per dozen.

THE NEW ROSES OF 1879 (including Duchess of Bedford and Countess of Rosebery), 21s. to 36s. per dozen.

Good plants of the older Roses, in pots, for present planting and for greenhouse culture, 9s. to 18s. per dozen; £3 15s. to £7 per 100.

The same, of extra size, 24s. per dozen and upwards.

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THOMAS METHVEN & SONS

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Their Stock is a very extensive one, and well worthy the attention of intending Purchasers.

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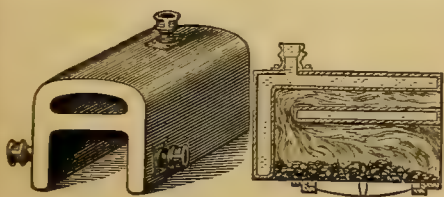
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B. S. WILLIAMS'
PRIZE MEDAL
FLOWER SEEDS.

POST-FREE.

	Per packet—s. d.
AURICULA, Show, finest mixed	1 6
AURICULA, Alpine	1 0
CARNATIONS, finest mixed	1 6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and 1 6	



From Mr. R. CAMIBELL, Utica, U.S.A., July 28, 1879.

"Sir,—I may state that the Calceolarias and Cinerarias, from seed imported from you, turned out more than what I expected of them. I may say that each flower was perfect, and not a poor or inferior one to be found."

CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d. and 1 6	
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THE

Gardeners' Chronicle.

SATURDAY, JULY 3, 1880.

THE PELARGONIUM.*

THE Pelargonium affords a subject large enough to occupy as many hours, days, or even weeks, as the mere moments I shall devote to it on the present occasion. The plants on the table represent in part the beautiful collection of species and hybrids in possession of the Royal Horticultural Society, the management of which at Chiswick is all that can be desired. It is fortunate I am not bound to mention Geraniums, for, if they are of less importance than Pelargoniums, they take us further back in time, and to do justice to them we should have to rummage amongst the old books and fish up some very curious memoranda. But the mention of the Geranium renders it necessary to begin with definitions. A Pelargonium is not a Geranium, although often so called. The true Geraniums are for the most part herbaceous plants inhabiting the northern hemisphere, and the Pelargoniums are for the most part shrubby or sub-shrubby plants of the southern hemisphere. Let us for a moment wander amongst the pleasant slopes of Darley Dale in Derbyshire, or by the banks of the Clyde or the Calder. We shall in either case be rewarded by seeing vast sheets of the lovely meadow Crane's-bill, Geranium pratense, a true Geranium, and one of the sweetest flowers in the world. In the rocky recesses of Ashwood Dale, or on the banks of the "bonny Doon," we may chance to see in high summer a profusion of the Herb Robert, Geranium Robertianum, with pink flowers and purple leaves, a piece of true vegetable jewellery. And, once more, I invite you to an imaginary journey, and we will ride by rail from Furness to Whitehaven in order to behold on the railway bank, more especially near St. Bees, a wondrous display of the crimson Crane's-bill, Geranium sanguineum, which from July to September forms solid sheets, often of a furlong in length, of the most resplendent colour. No garden colouring can even so much as suggest the power of this plant as it appears at a few places on the Cumberland coast; even the sheets of scarlet Poppies we see on badly-cultivated corn lands are as nothing compared with these masses of one of the commonest and hardiest of our wild flowers.

Now let us fly to the other side of the globe and alight in the vicinity of the Cape of Good Hope, say on the vast desert of Karroo, where there is much sand, much sunshine, and little rain. Here, in the midst of desolation, the world is rich with flowers, for the healthy scrub that occurs in patches, glowing with many bright hues, consists in parts of wild Pelargoniums, which often take the form of miniature deciduous trees, although in the valleys nearer the coast, where more rain falls, they are evergreen bushes.

* The substance of a lecture delivered by Mr. Shirley Hibberd, in the Council Chamber of the Royal Horticultural Society, on the occasion of the Pelargonium Society's annual exhibition, June 29.

Very different in their characters are these two tribes of plants, and they are not less different in their constitution and aspects. We may regard the Geraniums as herbs of Europe, and the Pelargoniums as miniature trees of Africa. When we examine the flowers we find the five petals of a true Geranium of precisely the same shape and size; but the five petals of a Pelargonium are not so, for sometimes the two topmost are the largest and stand apart from the rest with great dignity, like mother and father looking down on their dutiful daughters, and in other cases they are the smallest, suggesting that the daughters have grown too fast and have become unmanageable. The florists are doing their utmost to obliterate the irregularity of the petals of the Pelargonium, and in this respect to convert Pelargoniums into Geraniums, but the conversion will not be complete until much more wonderful things are accomplished. A Geranium has ten stamens, and a Pelargonium has only seven [perfect ones]. These numbers are not constant, but the exceptions are of no consequence in a general statement of the case. Of the Erodiums I shall say nothing, except that in their more prominent characteristics they agree with the Geraniums. As to their names, there is really nothing of special interest to be said. They refer to a certain fancied resemblance of the ripe seed-pod to the beak of a stork, a crane or a heron.

When all is said that can be said about the differences and resemblances of the several genera of Geraniaceæ, there remains only one constant and unfailing test of a true Pelargonium, and that is the nectariferous tube immediately beneath the flower, and running down one side of the flower-stalk. If you hold the pedicel up to the light it may be discerned as giving an indication of a double flower-stalk, but when dissected with a pin or the point of a knife it is found to proceed from the base of the largest of the green sepals, and it often appears to form a sort of digit or point in the line of the pedicel. When you have mastered this part of the story you may cherish the idea that you know something about Pelargoniums.

HISTORY OF THE PELARGONIUM.

The best short summary of the history of the Pelargonium I have met with is in the *Gardeners' Chronicle* of October 2, 1841. It gave me a clue that I wanted to the first-known Pelargonium as an inmate of an English garden. It speaks of one known to Gerard, but there is no mention of it in the *Gerard* of 1597. However, at p. 948 of Johnson's *Gerard* of 1633 is a record of a plant called Geranium indicum, "as of late brought into this kingdom by the industry of Mr. John Tradescant; and the author adds, "I did see it in flower about the end of July, 1632, being the first time that it hath flowered with the owner thereof." The plant figured by Sweet as Pelargonium filipendulifolium (i., 85) is a variety of Pelargonium triste, which is identical with the Indian Geranium of Johnson's *Gerard*. Thus we determine that the first flowering of a Pelargonium in this country occurred nearly 250 years ago.

Here it may be proper to remark that there are a few true Pelargoniums that are not natives of the Cape of Good Hope. *P. canariense* is a native of the Canaries; *P. australe* comes from the Australian continent; *P. cotyledonis* is found wild in St. Helena; *P. Endlicherianum* is Asiatic and almost European. There are two or three species in Abyssinia. But *P. triste* is a Cape plant beyond a doubt, and it is most agreeable to know that our first Pelargonium was brought into the country by John Tradescant, of whom Parkinson speaks as that worthy, curious, and diligent searcher and preserver of all Nature's rarities and varieties. It was in all probability amongst the treasures acquired in his voyage to Barbary, in the fleet sent out against the Algerines in 1620. When, in 1629, he became gardener to Henrietta Maria, Queen of Charles I., this plant was in his famous collection at Lambeth, and was thence set forth as the pioneer of the Pelargoniums and the Pelargonium Society. As the Cape was discovered in 1497, the plant had 123 years to complete the journey to the Mediterranean, and no doubt had the help of Portuguese traders in so doing.

It is singular that John Tradescant, who was an Englishman, born in Worcestershire, and probably of French extraction, was always regarded as a Dutchman. It is singular in this connection, because subsequent to his introduction of the first Cape Pelargonium, the Dutch were certainly the introducers of a dozen or more species that soon after came into Europe. In Dr. James Sherard's wonderful garden at Eltham there were in 1732 half a dozen species. In the second edition of *Miller*, published 1733, there are twenty species of African Geraniums, and these are all Cape Pelargoniums. This brings us to the publication by Linnæus of the *Genera Plantarum* in 1737, and the *Species Plantarum* in 1753, when the twenty-five species of Pelargoniums known to him were described as Geraniums for the last time in any work of high authority. In 1787 L'Heritier distinguished them by the signs I have already mentioned. In the *Hortus Kewensis*, published in 1812, as many as 102 species and hybrids are described as then in cultivation at Kew, and the list includes *triste*, *grossularoides*, *zonale*, *inquinans*, *lateripes*, *pelatum*, *grandiflorum*, *quercifolium*, and *fulgidum*.

GARDEN VARIETIES.

The splendid garden varieties of Pelargoniums that afford us so much delight are in a certain sense the creations of human skill. Nature never needed such things, and did not trouble to produce them. They are the products of careful systematic hybridising and crossing, and they represent the talent and perseverance of the florists during a period of sixty-five years



FIG. 1.—WILMORE'S SURPRISE.

—a period so brief considering what has been accomplished that it shrinks to a moment when we compare the original wildlings with the splendid flowers of this day. In the year 1815, or thereabout, the amateurs began to cross the species, and one of the leaders in this delightful work was Sir Richard Colt Hoare, who obtained a considerable number of beautiful hybrids. The work was taken up with more serious views by Mr. Robert Sweet, the author of a number of valuable illustrated works, comprising one in five volumes devoted to the Geraniaceæ. This was published from 1820 to 1830, in five volumes, containing 500 figures of species and hybrids of Geraniums, Pelargoniums, and other members of the same natural order. The progress made in the first fifteen years in the improvement of the flowers is strikingly illustrated in Sweet's fifth volume, wherein we already see the florists' flower taking shape and suggesting what it will be and what it should be. The headquarters of the Pelargonium at that time were Colvill's nurseries, in the King's Road, Chelsea; but Mr. Davey, Mr. Denniss, Mr. Tait, and others of Chelsea, were conspicuous amongst contributors of novelties to Sweet's work. Why Chelsea should obtain such a monopoly of Pelargoniums at that time it might not be easy to say. Mr. Anderson, the then director of the Chelsea Botanic Garden, fed the district with a taste for those things, and so, as it were, prepared the local atmosphere for the proper nourishing of the honorary secretary of the Pelargonium Society, the latest and ablest of the curators of that famous garden.

LARGE-FLOWERED SECTION.

The large-flowering florists' Pelargoniums are reputed to be the offspring of *P. speciosum*. It must be evident to every cultivator of these flowers that the blood of a score or so of species is mingled in them. *Speciosum* was introduced in 1794, but it has

no place under this name in Sweet or the *Hortus Kewensis*. It is variously described as producing purple and white flowers, and can scarcely be said to have a history. If the question be asked, What is *Pelargonium speciosum*? I must refer to Sweet's description of *P. involucratum*, No. 33. He there refers to *speciosum* of Andrews as identical with his own *superbum*, and he puts the *speciosum* of Willdenow out of court altogether. It is likely, I think, that *P. spectabile* (136), a hybrid raised from *P. cucullatum* and *P. ignescens*, and *P. involucratum* (33), raised from *P. cucullatum* and *P. superbum*, were the founders of the florists' race. Certain it is that these typical kinds were endowed with the capability of varying indefinitely, and with a plastic constitution rendering them possible sources of innumerable floral surprises. It is scarcely an exaggeration to say that amongst the true hybrids there are at least fifty that might be the parents of our exhibition race. But to clear up the point is impossible, for in very few instances did the early raisers keep any record that could be referred to for settling questions of pedigree.

The first variety figured as a proper florists' flower was called *Geranium grandissimum*, raised by Mr. Widdall, of Grantchester. The portrait of this variety appeared in the *Floricultural Cabinet* of September 1, 1834. It was a pretty thing, with rich dark top petals and warm blush-tinted under petals, but the small size and poor form would exclude it from any collection of Pelargoniums in the present day. What a marvellous advance on this do we behold in the latest flowers of Mr. Hoyle or Mr. Foster! To Mr. Hoyle, no doubt, we must assign the gold medal as the producer by systematic crossing of the finest varieties of the present day.

ZONAL SECTION.

The Zonal race acquired importance subsequently to the large-flowering section. Those we collectively term "Zonals" were grouped by Sweet under the generic designation *Ciconium*, and the most important of this genus are *Ciconium zonale*, introduced in 1710, and *Ciconium inquinans*, introduced in 1714 (see fig. 3, p. 9). These are the two parents of the race, no doubt, but their differences do not account for the fact that in the garden varieties we have every imaginable variation of leafage and of bloom. It is likely that *Ciconium reticulatum*, of Sweet (143), a very distinct hybrid, gave the first touch to the variegation of the leaves, which has in recent years attained to such extraordinary development. In any case, this hybrid marks a distinct departure, and appears well suited to be the founder of a race.

The "Nosegay" section is the oldest of the Zonals. The founder of this section is *Ciconium Fothergillii*, the figure of which by Sweet (226) would nearly serve to represent a good Nosegay of the present day, and it may therefore be concluded that the Nosegays have been less modified than the Zonals that represent *zonale* and *inquinans*.

Another early section is that with green leaves and pink flowers, of which we may consider *Christine* the modern type. This section is foreshadowed in *Ciconium cerinum*, which is admirably figured by Sweet (176). Here we have pubescent leaves and flowers of a soft rosy-pink colour, the petals of which are beautifully rounded and nearly equal in size. Cultivators who remember *Lucia rosea* will have no difficulty in connecting the dwarf bedding Pelargoniums of the *Christine* class with this beautiful wax-flowered Pelargonium, which Sweet regarded as a true species.

The most famous of the Zonal section is the green-leaved scarlet bedder known as General Tom Thumb, a descendant of *Frogmore Scarlet*, and a competitor of *Huntsman*, *Cooper's Scarlet*, and many more that the General quickly vanquished from the field. This famous variety was raised by Mr. Willson, gardener to W. Pigott, Esq., of Dullingham House, Newmarket, about the year 1842. [For the history of this variety, see *Gard. Chron.* 1866, p. 973.] It is said that as a seedling it was condemned and handed over to some children to be tormented, and very soon found its way to a dust-bin. But by some accident it was dragged from the dust-bin and planted, and as the summer advanced it manifested its character, and secured its fame and many more admirers than *Barnum's protégé*. But many persons have some kind of claim to the honour of raising Tom Thumb, for there prevailed during some fifteen years—say, from 1840 to 1855—a mania for raising scarlet Pelargoniums adapted for bedding; for those were the days of the

horticultural scarlet fever, and many varieties nearly alike came forth from various quarters. Many of these passed for genuine Tom Thumbs, and many perhaps were quite as good. However, the original and true variety differed from most of the others in this respect, that it rarely ripened a seed unless it was artificially fertilised, when it was as prolific as any. This fact separates it far from Christine, which is an inveterate seeder. The leafage also puts them far asunder, for Tom has a smooth papery leaf of a yellowish green, and Christine has a thick soft leaf of a bluish green—one takes us back to inquilans, the other to cerifera, and Nature ordered the characters ages ago in the solitudes that stretch away drearily to the west of Cape Town.

The pink-flowered Christine was raised by Mr. F. R. Kinghorn, of Richmond, in the year 1852. The parents were Ingram's Princess Royal and an old pink Nosegay, which was formerly much used for training on walls and pillars. The peculiar softness and blue tone of the leafage of Christine do not appear to be accounted for by the parentage, there being in it such evident traces of the cerinum or monstrosum of Sweet. Mr. Kinghorn, to whom I am indebted for its history, tells me that he very soon made note of its strong individuality, in which it seems to rise to

smaller plants of Flower of the Day were purchased by Messrs. Lee, in August, 1849, and in August, 1850, they had a stock of 1500 plants of various sizes to offer for sale—a wonderful sight in those days, and one worth seeing even now.

It so happens that the last-named, most useful of all the silver-leaved varieties, conducts us direct to the fountain-head of the whole race of Tricolors. In the year 1850 Mr. Kinghorn raised from Flower of the Day the beautiful variety known as Attraction, the leaf of which has a silvery margin and a dark zone, diffusing subdued rays of red and rich brown outwards upon the creamy band that girdles it. This Attraction was the first Silver Tricolor, and one of the parents of the first Golden Tricolor. Mr. Grieve, in his admirable *History of Variegated Pelargoniums*, tells that he fertilised a dark-zoned variety known as Cottage Maid with the pollen of Attraction. Amongst the seedlings occurred one that was the parent of the dark-zoned Emperor of the French, from which came the whole race of Golden Tricolors. From Cottage Maid and Golden Chain (the latter being the pollen parent) Mr. Grieve obtained Golden Tom Thumb, and from Emperor of the French and Golden Tom Thumb (the latter being the pollen parent) he obtained Gold Pheasant, the first true Golden Tricolor.



FIG. 2.—WILMORE'S SURPRISE.

the rank of a species, and reproduces itself freely and truly from seeds. During some fifteen years it was the most popular of all bedding plants, for it outran Tom Thumb at last. The beautiful Rose Queen, sent out in 1855, was one of the good things obtained by Mr. Kinghorn in the same batch with Christine. This has higher quality, but never proved so good a bedder, and therefore never attained to great popularity.

VARIEGATED FORMS.

It would be unfair to omit all mention of the variegated leaved varieties, because in a good bedding display they contribute features fully as important as the strong colours. They tone down and harmonise and divide. In the year 1844 there were very few variegated Zonals known, and only one with bright scarlet flowers; this was called Lee's Variegated, and was very scarce. It was, I think, raised by Mr. Bailey, then gardener at Nuneham Park. Mr. Kinghorn selected this Lee's Variegated to supply pollen for a cross on the old compactum, which was the seed parent, and in the first batch of seedlings from this cross he obtained the celebrated Cerise Unique, and the much more celebrated Flower of the Day, the most useful and most famous of all known variegated leaved Zonals. Mr. Kinghorn to this day considers this was the greatest advance ever accomplished at one bound in work of this kind, and I thoroughly agree with him. The large seedling plant and two

This same Emperor of the French, grandson of Attraction, produced by the pollen of Gold Pheasant the two most famous of the Tricolors, Mrs. Pollock and Sunset.

DOUBLE-FLOWERING VARIETIES.

The double Pelargoniums have had a career of fifty years at the least. A handsome double purple, named Veitchianum, not of the Zonal section, but allied to Barringtoni, was raised by the late Mr. J. Veitch at Exeter, about the year 1828, and its portrait appears in Sweet's supplementary volume (81), where nearly next door to it is another double named Implicatum (86), which is as like the double cucullatum Mr. Cannell has been growing of late as can be expected of things that are probably different.

But the proper history of the doubles begins with Wilmore's Surprise, a handsome semi-double variety, which was described and figured in the *Gardeners' Chronicle* of August 17, 1850 (see figs. 1, 2). This was found by Mrs. Wilmore, of Strawberry Vale, Edgbaston, growing in the midst of a plantation of Hollyhocks, and so unaccustomed were the eyes of the florists to such a thing that it was considered to be a true hybrid between a Pelargonium and a Hollyhock. A remarkable fact in the history of this variety is that simultaneously with the finding of it in the garden at Edgbaston it was obtained by the late Mr. Beaton as a sport from *Diadematum rubescens*, and was by him

named Monstrosum. The Edgbaston plant was shown by Messrs. Lee, of Hammersmith, at Regent's Park, on June 30, 1852, and Mr. Beaton suppressed his Monstrosum in favour of it.

The double Zonals are of later date, one of the earliest being the crimson-scarlet Gloire de Nancy, which was first shown in this country in the year 1866. In the year 1869 there were seventeen double Zonals brought into public notice, and of other sections in that year the collective name was legion. At this point of the story the subject becomes too large to be handled on the present occasion, and I shall say nothing of the Tricolors and the Bicolors and the Ivy-leaves and the Uniques, that during a period of about ten years overran all the gardens, furnished a common theme for conversation at every table, supplied all the business men and a few peers of the realm with buttonhole flowers, persuaded half the human race that Providence had designed gardens for one tribe of plants alone, and that possibly the Pelargonium itself was the tree of knowledge of good and evil that stood in the midst of the garden of Eden for the delight and perplexity of the very first of gardeners! It is quite certain that during the few years when Geraniums were everything and all other vegetables nothing in human estimation, the world quite forgot that for the adornment of the garden there were at least 150,000 species of plants to choose from. And it is equally certain that during the same interesting period of our floral history the heads of gardeners were so crammed with zones and margins and trusses and pips and beds that there was no room for anything else, and the phenomena of the Tulipomania were reproduced in a newer fashion, and no one was fully aware of the fact that the world had gone mad on the subject of Pelargoniums.

Now that we can again survey the subject calmly it will be observed that two classes of Pelargoniums remain in full favour with the public. The large-flowered show varieties and the large-flowered single Zonals take the lead, and they are pleasantly followed by a crowd of Ivy-leaved, double-flowered, and variegated sorts that are useful and beautiful, but no longer oppress us by their multitude and similarity. The Pelargonium Society has set up a severe standard of judging, and a variety must be distinct and good to pass through the sieve. Moreover, the raising of varieties has been to a great extent reduced to scientific principles, and we obtain as a result new characters suggestive of the great extent of the field that still lies open to the adventurous spirit in cross-breeding. No one in recent years has contributed more directly towards the scientific treatment of the subject than our painstaking Treasurer, Dr. Denny, of whose labours I propose to present a hasty sketch.

Dr. Denny commenced the raising of Pelargoniums in the year 1866, having in view to ascertain the influence of parentage, and thus to establish a rule for the selection of varieties for seed-bearing purposes. In raising varieties with variegated leaves, as also with distinct and handsome flowers, he found the pollen parent exercised the greatest influence on the offspring. The foundation of his strain of circular-flowered Zonals was obtained by fertilising the large starry flowers of Leonidas with pollen taken from the finely-formed flowers of Lord Derby. From 1871 to the present time Dr. Denny has sent out sixty varieties, and he has in the same period raised, and flowered, and destroyed about 30,000. These figures show that when the selection is severe, and nothing is allowed to pass that is not of the highest quality, there must be 500 seedlings grown for the chance of obtaining one worth naming. The late Mr. John Salter used to say that it was useful to flower 2000 seedling Chrysanthemums for the chance of one worth naming. Therefore, if the comparison is of any value, it shows that raising Zonals is a very profitable business, the chances of success being four times greater than with Chrysanthemums. But Dr. Denny obtains more good things than he sends out, for he makes every year a selection of plants for seeding, and these amount to about three per cent. of the total number. It will be seen therefore, that for every one sent out under name, there are about fifteen equally good or nearly so, but for some reason or other they are not parted with, but are reserved to supply seed or pollen, and are then destroyed to make room for a new selection.

Amongst many interesting results of our friend's observations is one that strikingly confirms a suspicion that accompanies a study of Sweet's portraits—it is that some varieties assume the character and bearing

of species, and by self-fertilisation reproduce themselves with peculiar exactitude. No one can doubt that many of the so-called species of plants, whether of Pelargoniums at the Cape or of Willows in England, are as truly hybrids as any that are raised in gardens. And this brings us to the question, What is a species? and the question suggests that if in treating this great subject I scarcely knew where to begin, I certainly know where to leave off. Ladies and gentlemen, I confess I cannot answer—I do not know what is a species; and so, thanking you for your kind attention, I now return to the golden silence.

New Garden Plants.

ODONTOGLOSSUM CORDATUM (Lindl.) SULPHUREUM, n. var.

A highly curious variety with sulphur-coloured sepals; petals and lip white with sulphur tips and sulphur blotches; column white at the top, praline greenish at base. It was collected by one of the numerous nephews of M. Roezl. It has been flowered by Mr. F. Sander, who kindly sends it, stating it was included in the consignment of September 22, 1879. Those who obtained *Odontoglossum cordatum* at that time from Mr. Sander might do well to have patience and see the plants flowering before parting with them. It might be useful to know whether Mr. F. Sander saw the difference in the bulb or was favoured by good luck. A line from the happy possessor giving answer to this question might be agreeable to all Orchidists. *H. G. Rchb. f.*

The importation, among which the yellow variety which Professor Dr. Reichenbach as above calls sulphureum-flowered, came, not from a new, but a rarely visited district in Mexico. *O. cordatum* is little liked in England—why I don't know; probably because it is of such easy culture, and amateurs seem to enjoy the battle with Nature, and the success in conquering the obstinate difficulties attending the cultivation of Orchids which are hard to grow, far more than cultivating those with which they succeed like a Fuchsia. *O. cordatum* is certainly one of the best *Odontogloss*ts, and if the plant is placed on a low shelf, as I have seen it done with Sir Trevor Lawrence and J. Buchan, Esq., and the spikes allowed to hang gracefully down (not tied to sticks), the effect of this free-flowering species is very fine indeed. As we could not find a market for all, some twenty or thirty plants were kept here, and sulphureum flowered among them. The grandest variety I have seen of the importation is in the possession of Allen Edward, Esq., Dawlish. *F. Sander.*

ONCIDIUM MACRANTHUM (Lindl.) WILLIAMS-ANUM, n. var.

This is a very curious variety, bearing on each petal a large rather reniform blotch of colour nearly equal to the Indian purple of Messrs. Winsor & Newton. I have no record, neither in my memory, nor in my herbarium sketches and notes, of having seen anything like it before. I have to thank Mr. B. S. Williams, of the Victoria and Paradise Nursery, for it. *H. G. Rchb. f.*

PONERA PELLITA, n. sp.*

A highly curious botanical plant. It has on the whole the shape of an *Arundina*, as Mr. B. S. Williams well observes. The shoots may be compared to Palm leaves. They have brown sheaths, which, when decayed, fall off, leaving nothing but a dark brown ring at the base under the naked green joint of the stem, shining like bamboo. The leaves are from 5 inches long by $\frac{1}{4}$ — $\frac{1}{2}$ inch wide, linear, bidentate. The small flowers, equal to those of *Ponera striata*, are terminal—perhaps also sometimes lateral, as in the just-mentioned species. They are much like those of a small *Maxillaria*. It is covered outside on the sepals and the ovary with stiff hairs, just as in some *Eria* of the *Trichotomia* section, a most remarkable thing, the first instance in the genus. Inside they are greenish. The petals are broader, short apiculate, yellowish, with purple longitudinal lines. Lip probably whitish or yellowish, with dark purple radiating streaks, quadrilobed, with distinct stalks. Column trigonous, three-toothed at the apex, most probably whitish; an arborescent yellow blotch in front over the base. I confess that I did not see the anther, and that the curious flower had suffered from heat when it came, so that some of the indications about colour are rather undecided. Thus I felt rather doubt-

ful. Mr. B. S. Williams was, however, so very kind as to send me the whole plant; and seeing all the details of roots and stems and leaves so much like those of *Ponera striata*, I have not the least hesitation to declare the curious plant a new *Ponera*. *H. G. Rchb. f.*

CRICHEL,

THE seat of Lord Allington, in the county of Dorset, is pleasantly situated in a park rich in stately trees, and commanding views of a large tract of picturesque country, which at this season of the year, when trees of all kinds are in full leaf, and the hill-sides are draped in deep green, and the cuckoo's notes fall softly upon the ear, is indeed one of the most charming spots that any one could choose for a holiday ramble. Criche! is some six miles distant from the old-fashioned town of Wimborne, in which the Minster—a cathedral-like edifice of unusual proportions for a small town—is the principal attraction for visitors. The road from Wimborne is cheerfully relieved by the presence of several quaint old villages, notably that of Wyhampton—a village which, by the way, is characteristically English in all its outward customs and traditions. There is the old-fashioned English church on the slope of a steep hill in the midst almost of a group of neat and well-kept cottages and gardens such as reminded the writer of his youthful days, and the pleasant conversations with the village parson.

As I meditate upon the simplicity and natural beauty of what I see around me, my attention is attracted by a neat but unpretentious piece of architecture, which I recognise as the lodge leading to the mansion; and as I enter the drive I slacken speed to note the beauties of the landscape. On my right is a lake which sweeps gracefully between the house and a thick belt of trees on the opposite side. There is a gentle ripple on the surface of the water which gives one the idea of a running stream, and the sublimity of the scene at once excites my admiration and curiosity as to the origin of this clear-running sheet of sparkling water; and one of my first inquiries on reaching the garden is about this lake, which I discovered is fed from one or more tributaries of the Stour. Upon the opposite side of this lake the belt of trees referred to, which is now a mass of the richest green, is one of the chief sights that Criche! can boast of, although the trees do not put on their gayest attire before the autumn, when the different shades and tints of the leaves are very handsome and effective. The trees have been very skilfully selected, and most of their number are over 20 feet in height. The admiration of the visitor is further enhanced by the sight of several small islands and large numbers of beautiful birds, the latter dotted about, as if by mechanical arrangement, on all parts of the lake. At the further end of the lake is the pavilion erected prior to the Prince of Wales' visit, in February, 1878.

The mansion itself is a substantial square block of the baronial type, ornamented and strengthened by massive round pillars on three sides of the building. There are three fronts to the mansion—namely, the west or carriage front, the south front (the view from which follows the sweep of the lake), and the east front, the view from which carries the eye directly across the lake, and after ascending a steep declivity upon the opposite side, and travelling through one or two "peeps" upon the hill-side, wanders in fancy into space. The church is only fifty yards distant from the house, opposite the south-east angle. Facing northwards from the flower garden there are some handsome Cedars of Lebanon left upon the lawn upon the right, and a projecting addition to the house upon this side leaves a cosy little grass-plot, with a single specimen Holly standing in the centre. This, I learned, was covered in with canvas, the tree included, during the Prince's visit, and converted into a refreshment tent. Proceeding from here northward the flower garden is entered. It is laid out in the natural, or promiscuous style, and is planted in harmony with its character and situation. Many people might suppose this an unfavourable position for a flower garden, on account of the north situation; but, the garden being laid out on the bosom of a slope, and the gradient being steep enough to insure natural drainage, the soil is warm and dry, and bedding out and other plants succeed admirably. The planting of the garden is also varied in style, and nothing is more striking or effective than the beautiful irregular oblong beds, carpeted in Mr. Beck's best style.

Harrison's Musk as seen here is a decided acquisition to the flower garden.

Basket beds carelessly dotted about, and a stray "raised" bed edged with Ivy, are also interesting objects, and vary the character of the garden to a degree that leaves nothing to be desired. This style of flower gardening is readily accomplished, in fact suggested, by the very nature of the situation, broken up as it is into a variety of forms by clumps of trees and single specimens.

One object worthy of especial notice is a handsomely proportioned specimen of the deciduous Cypress; and from the front of a clump adjacent to it is a fine bush of *Acer polymorphum*, with bronzy dark foliage, excellent and useful for many purposes of decoration. A *Cedrus atlantica* is pointed out as having been planted by the Princess of Wales during her visit to Criche!, and also a Mulberry tree planted at the same time by his Royal Highness. These trees are, as may be imagined, carefully guarded, and the interest which attaches to them in consequence of the royal hands that planted them, almost deprives other objects of their fair share of attention. These include mop-headed *Acacias*, and stumps of Cedars 12 feet to 20 feet high, clothed with Ivy, Honeysuckles, Roses, and *Clematis montana*.

A single Hemlock Spruce covers an area of 36 yards in circumference, and is not less than 40 feet high. A short distance from here, as you approach the extreme northern boundary of the garden, is a massive Oak quietly ensconced in a corner by itself, and under the spreading branches of this giant are trophies brought from the Crimea by Colonel Sturt. These comprise shells, cannon, and rock from Sebastopol; and as I gaze upon those grim messengers of death arranged on two sides and in front of the tree, their position reminds me of the memorable lines by Tennyson having reference to a memorable event during the Siege of Sebastopol:—

"Cannon to right of them,
Cannon to left of them,
Cannon in front of them
Volley'd and thunder'd."

Winding round to the left, the eye is met by several fine specimens of the Tulip tree (*Liriodendron Tulipifera*), and a small rosetry in wirework surrounded by beds of *Gladioli*. There is also the realisation of the idea, conceived by the late Mr. Sturt, of having climbing Roses and Honeysuckles planted among Hollies and Box bushes, and a very natural and pretty effect they have. The next object of special importance is a specimen of *Picea Pinsapo*, presented by the editor of the *Daily Telegraph* to Colonel Napier Sturt, which, although a fine tree, appears a mere arboreal infant compared with the dimensions of a row of tall Scots Firs upon one side and a row of Cedars of Lebanon upon the other side of a grass walk, which is also margined by choice Conifers and stumps of trees beautifully clad with Ivy, Roses, and other climbers, some of which are gay and flourishing at most seasons of the year.

A hedge of yellow-berried Hollies now indicates that you are leaving the ornamental to enter a more useful department of the garden; and a practical realisation of this supposition is soon attested as you come in full view of a range of forcing houses at the further end of a semi-ornamental plot having some useful quarters for standing plants, and a small nursery of ornamental shrubs, partly hidden from view by lines of Sweet Peas and two medley flower-borders. Before describing the contents of the glass structures, I must state that they are a good deal scattered, the plant-houses being mostly in detached blocks of from two to three compartments in each block. There are two kitchen gardens, besides a "field garden," and the forcing houses are pretty equally divided in both gardens. The forcing department consists of five vineries and two early Peach-houses, besides a Peach-case over 70 yards in length, in which Figs and Cherries are also grown in quantities on the back walls. The vineries are stocked with the usual succession of early and late Grapes, and in the early Peach-house are some grand samples of Peach-growing. The long Peach-case affords a succession of fruit until the season is far advanced, and it is also used for forcing French Beans and Strawberries, large quantities of which are required during the season. Mr. Beck has the old Fulmer's forcing Bean "true to name," and there is a striking difference between it and the wretched counterfeits that are frequently sold under

* *Ponera pellita*, n. sp.—Caule ac foliis *Poneræ striatæ*; inflorescentia in caule vetusto defoliato terminali; flore magnitudine ad figurâ illius *Poneræ striatæ*; ovario pilosulo; mento obtusangulo; sepalis ligulatis obtusatis extus peltatis; tepalibus paulo latioribus obtuse acutis levibus; labello unguiculato obtusangulo quadrilobato pandurato lævi; columna trigona apice tridentata. Sepala extus et ovarium fuscopellita. Sepala intus viridia. Tepala flava purpureo-striata. Labello flavidum (?) striâ radiatibus secus margines atropurpureis. Columna albidâ (?) macula oblongata in basi. Ex horto cel. B. S. Williams, Londinensis. *H. G. Rchb. f.*

its name. It is a long, handsome Bean, and a prolific bearer.

The plant-houses—the principal ones, at least—are modern structures, erected by Mr. Gray, of Chelsea. The first is a lofty span-roofed greenhouse, 72 feet long and 24 feet wide. It is substantially fitted up, and architecturally plain, as such houses generally are with practical men like Mr. Beck and Mr. Gray at the wheel. It has a broad tiled path all round, with centre and side stages, and is efficiently heated.

shape of the two varieties alba and rosea. Fuchsias, Pelargoniums, Balsams, Celosias, and a variety of other plants, are effectively grouped together on the side-stages, and margined with lines of Selaginellas dotted at intervals with *Panicum variegatum* and *Tradescantias*; and by the way I observed a band, about 2 feet in width, of *Selaginella Krausiana* planted under the centre and side stages, the deep green of which, coming in contact with the clean shining tiles of different patterns, has a most pleasing

of which measured 6 feet by 4 feet. Allamandas and Bougainvilleas are also trained, and there are many relics still left of the days when Mr. Beck's name was to be found amongst the list of competitors at horticultural exhibitions. There is a small collection of useful Orchids, such as *Cattleyas*, *Dendrobiums*, and *Calanthes*, and numerous small Ferns grown specially for the purpose of house furnishing.

I am next directed into a well-equipped range of span-roofed plant-houses, three in number. The path



FIG. 3.—PELARGONIUM INQUINANS. (SEE P. 6.)

It is well furnished with flowering plants, and several good specimens of Tree Ferns. The finest plant in the house is an extraordinary sample of *Anthurium Scherzerianum*, with flower-spikes 6 inches by 3 inches. It is quite a picture for eight months in the year, and is kept in a greenhouse temperature in summer. The plant was purchased from the Messrs. Veitch, of Chelsea, and, I believe, is the same variety [*Wardii*] exhibited by that well-known firm at the great show at South Kensington in May, 1878.

I also noticed a good plant of *Brugmansia arborea* alba, and *Lapagerias* trained in cup and umbrella

effect. Some plants of *Nertera depressa* are so thickly covered with berries as to hide the embossed surface of green beneath them, and are singularly attractive.

On my way to the plant stove I had a peep into several heated pits occupied with good crops of Melons and Cucumbers, and hundreds of plants for supplying cut flowers next winter. The plant stove is a moderate-sized house of unequal span, having a pit in the centre and a sunk path in front, which renders the work of keeping up a sufficiently moist atmosphere for tropical subjects a labour of comparative ease. The specimen plants are chiefly *Crotons*, one

is in the centre of the house, and I notice the creepers are trained only over the path, where they will not obstruct the light from the plants on the side stages, and where they can be kept clean by syringing. The first is filled with *Dracenas*, *Caladiums*, and flowering *Begonias*, and has a healthy plant of the old *Ipomoea Horsfallii* trained over the path. No. 2 contains one of the healthiest collections of Ferns that I have seen for many a day—not specimen plants as seen at flower shows, but useful kinds for private purposes, such as *Adiantum cuneatum*, *A. Capillus-Veneris*, *A. Veitchii*, and *A. concinnum latum*. The

Australian Bird's-nest Fern (*Thamnopteris nidus*) is also well represented, as are Lomarias, Blechnums, and other useful kinds. The third compartment is an intermediate house, containing a miscellaneous collection of plants, and having a Tacsonia Van Volxemi trained over the path.

Passing into the frame-yard I observe several pits filled with hard-wooded plants, and a little further on, in a cosy corner, is the "Violet-yard," where the Princess of Wales with her own hands gathered Violets as large as florin pieces. Violet growing is one of Mr. Beck's specialities, the pits being fitted into a sloping mound, facing the south and east—the two aspects giving in turn a supply of Violets which are famous for their size and the quantities the plants produce.

Mr. Beck has a comfortably appointed cottage in the garden, and, as I admire, a Honeysuckle trained over an arch at the front door, I noticed a row of detached, neat trellised cottages covered with creepers, at the base of a hill known as "Mill Hill," a short distance from the garden. It is a beautiful green slope dotted with trees in Nature's own way, and, selfish creature that I am, I cannot help thinking that the sweet rural scenery and simple flowers of the cottage garden bear a greater resemblance to the "first garden" we read of in a book older than Herodotus himself, than the artificial grandeur produced by modern landscape artists in situations where Nature is superseded by clumsy art. Mr. Beck has been for over fourteen years the directing head of this well managed garden, and long may he be spared to adorn, both in precept and practice, the profession to which he belongs.

Visitor.

THE GRAND SALEVE.

EVERY one who has been at Geneva will remember a chain of grey-looking mountains which stand out in strong relief on the east of the town, and which are known as the Salève. Their appearance is certainly somewhat bleak and unattractive, and yet these mountains are full of interest and well worth a visit, for not only does one get from their summit a panorama as varied and extended as almost any other in Switzerland, but the Salève possesses many special attractions. It is in the first place of a very peculiar geological formation, and therefore interesting to the geologist and mineralogist; and then, in the second place, its flora is one of the largest and most important in Switzerland; and De Saussure, the De Candolles, and other celebrated botanists, have always held the Salève in great affection, as being the source whence many of their most precious treasures have been derived. On the Salève are found several very rare plants, some of which are only found besides in one or two places in the Alps. Amongst the most celebrated of these is the beautiful alpine Clematis, *Atragene alpina*, which is found near that part of the mountain known as Les Pitons in May and the early part of June; *Cypripedium Calceolus*, or *Sabot de Venus*, as it is commonly called; *Fumaria Chavini*, *Arabis hybrida*, *Sisymbrium acutangulum*, *Ononis rotundifolia*, *Potentilla petiolulata*, *Asperugo procumbens*, *Barbarea arcuata*, *Cyclamen hederæfolium*, and several others.

Scarce as these plants are naturally, they become every year more and more so, owing to the ruthless way in which they are torn up by the roots by boys and girls, who, finding that some of them have a ready sale in the Geneva market, scour the Salève in search of them; and only the other day a friend of mine saw a quantity of lovely and precious *Atragene alpina* tossed into the middle of the market-place along with a lot of refuse, waiting for the scavenger's cart. In some parts of Switzerland the local authorities do all they can to check this vandalism, as in the Engadine, for instance, where, under a fine, it is forbidden to dig up the beautiful but rapidly disappearing Edelweiss. One cannot but wish that some such law could be passed with reference to the Salève flora. Unfortunately, the Salève, although considered by the Genevese as their special property, is outside their political boundary, and the authorities in Savoy are not as enlightened as their neighbours.

The Genevese love the Salève; it is their recreation-ground—the place to which are attached many of the happiest *souvenirs* of childhood and after-life; to it on Sundays and *fête* days, and especially on Thursdays, which is a whole holiday in all the schools and col-

leges, crowds of people flock, of every age and condition in life—the young couple, or the father and mother with a merry band of children, or a party of students singing as they go some of their quaint patriotic songs; or the members of some scientific society; all and every one bent on the same object—to climb to the summit of the Salève, and there, amidst the beauty of the scenery and the freshness of the air, to forget for awhile the life of the world below with its various anxieties and cares.

On leaving Geneva the road goes through Malagnon, a deliciously shaded road where many of the leading Genevese have summer residences, and which is a perfect grove of nightingales, who sing not only all night but almost all day long also. We next pass through Chêne. Soon after Chêne, we cross the Swiss frontier and enter Savoy. We now begin to ascend, and every now and then we get a splendid view of the Mont Blanc range. Passing through Momex we at last reach our destination, Monnetier. It happened to be on the day of our visit the *Fête Dieu* or *Corpus Christi* day, which is a grand festival in the Roman church, but the bishop of the diocese had issued a pastoral recommending the faithful, in view of their proximity to a Protestant population, not to keep the festival on that day, but to postpone it to the following Sunday, so that the only signs we saw of the *fête* were a quantity of young girls in white, who had that day made their first communion.

When we had rested a little at Monnetier we started off for the Treize Arbres, one of the highest points of the Grand Salève. After about an hour's walking we reached La Croix, a large stone cross from which one gets a very fine view, which we all admired, and then went on again, but our progress was slow, owing to the children's delight at the flowers, which were in their full beauty. We got quantities of the lovely alpine Rose, Lilies of the Valley, and many kinds of Orchis, also lots of a curious little flower, something like a diminutive Edelweiss, and which is known commonly as *Pieds or Pattes de Chat* (*Gnaphalium dioicum*). The Gentian was almost over, for everything is very early on the mountains this year, on account of there being very little snow this last winter; and it was a most curious fact that while in the plain there was a thick fog and leaden sky and no sun for almost ten consecutive weeks, on the Salève and Jura the weather was glorious, the sky perfectly blue, and the sun very powerful.

At last we reached the Treize Arbres, so called on the *lucus a non lucendo* principle, for trees worthy of the name there are none. A little way beyond this point is a knoll from which the panorama is unfolded in all its glorious beauty. It was a lovely afternoon, not a cloud in the sky, and a beautiful fresh breeze to counteract the heat of the sun. Before us stood out the whole chain of Mont Blanc, with the giant king towering above all his satellites. In front, in striking contrast to the white mountains behind, was the dark evil-looking Môle and the Voirons at the side. At their feet lies the fertile valley of Savoy, with the Arve running through it like a silver thread. Far away in the distance stretched the Lake of Geneva, and at the extreme limit of sight we could distinguish the Dent du Midi, Diablerets or Dent d'Oche. Right down beneath us as it seemed lay the town of Geneva, with the towers of St. Pierre conspicuous above all the rest, and beyond the valley of the Rhone with the junction of the Arve and Rhone, and the united rivers winding through the plain until they seemed to lose themselves in the mountains beyond: all this, far more easy to imagine than to describe, was presented to our view. Before such a scene as this time only too quickly slips away, and reluctantly indeed did we admit the assertion of the matter-of-fact one of our party, that it was a long way home and that it was getting late. So down we came, and on our way we gathered huge bouquets of lovely wild flowers, such as the *Melittis Melissophyllum*, *Orchis ustulata*, *Orchis Simia*, *Epipactis pallens*, *Onobrychis sativa*, *Dentaria pinnata*, and many others besides those already mentioned. Some of your readers may perhaps have occasion to pass through Geneva some time or other: it is in the hope of inducing them to do the same, feeling sure they will be amply repaid for their trouble, that I have given this account of our excursion to the top of the Grand Salève. E. A. B.

MR. G. F. WILSON'S GARDEN, WEYBRIDGE HEATH.

ALL who take an interest in the culture of hardy flowers must have heard of Mr. Wilson's garden at Heather Bank; he has cultivated this class of flowers for many years, and every year the number and variety of forms and species increases with him. It is a great treat to spend a day amongst these flowers in the company of their owner. The gardens have been planned by Mr. Wilson, the rockwork is his own handiwork, and all his choice plants are carefully attended to by himself. Indeed it is only in this way that real healthy pleasure can be derived from gardening. The owner of acres of glasshouses may not derive a tithe of the pleasure from them that the ardent florist or enthusiast in hardy flowers obtains from a loving personal interest in every specimen he possesses. It is almost superfluous to say that Mr. Wilson's specialty is Lilies—in this class of plants he has obtained a world-wide renown. Probably every known species, or variety of species, has passed through his hands. They are cultivated in pots, and in every conceivable position in the open air. Those in pots are grown in a large span-roofed orchard-house, and a number more in a house that seems specially adapted for them. I have grown Lilies fairly well for some years, and have devoted some attention to their culture, but I have failed to bring them up to Mr. Wilson's standard. The plants, when I saw them a few weeks ago, were making splendid growth, and the leaves in perfect health to the base. The slender growing *L. tenuifolium*, from the wilds of Siberia, is a remarkable contrast to the massive grandeur of *L. giganteum* from Nepal. There are also a number of very remarkable trees in the orchard-house. Pear and Plum trees, in pots not larger than 15 inches across, by their appearance show that they have seen at least twenty summers. They are now in good health, and are loaded with fruit. All the attention they receive is to dig down the sides of the pots in the autumn, and remove a portion of the exhausted soil, as has been frequently described in the *Gardeners' Chronicle*. Mr. Wilson removes the trees outside during the summer and autumn to ripen their fruit. The Lilies in the house have their representatives planted in the open ground. They have been planted about the garden in every position that could be thought of—in full sunshine and in partial shade; and the result has decisively proved that a little shade is best. It has been found that if the sun gets upon the leaves when they are frozen early in the morning, the whole plant suffers at the time and shows the result of it the second year. Mr. Wilson pointed out to me a small bed of *Lilium auratum* where one-half of the plants had been injured by the sun shining upon them early in the morning, and the other half, that did not catch the sun's rays, was in very good health.

Mr. Wilson seems to instinctively select the position in his garden and grounds that exactly suits the requirements of the plants he cultivates, or if the essential conditions do not already exist he creates them in some way. Here is a superb group of the new and beautiful Lily, *L. nilgherrense*. It is sheltered on two sides with close hurdles, to break the force of the wind; and another is laid on the top, to break the force of the sun's rays, and also to shelter it from frost, which does serious injury to the tender growths of Lilies. *L. giganteum* is sheltered from wind and sun by trees and a hedge; it is throwing up a very stout stem, well furnished. It will be a sight to see the Lilies in flower in the wood at Wisley. Some of the beds of *L. auratum* were planted with 800 bulbs.

The Wilson raft has been previously noticed in these columns: suffice to say it is thoroughly well stocked with aquatics; and amongst them I noticed some splendid flower-heads of *Saxifraga peltata*, which will by-and-bye be followed by its peltate Rhubarb-like leaves. This will evidently be a great acquisition to the marsh plants. On another swamp the golden blossoms of the various double forms of Marsh Marigold are conspicuous. This plant will grow in ordinary garden soil as well as in a marsh, and is a very showy herbaceous plant.

The rock-garden is well furnished with plants, and here considerable experience and judgment is necessary to select the right positions for the different species. Some plants thrive best in the sunshine, others well shaded, and some only partially so. One

THE WEST OF SCOTLAND PANSY SOCIETY.—The first annual exhibition of Pansies, Roses, and Pinks, organised by this Society, is announced to be held in the City Hall, Candleriggs, Glasgow, on Wednesday, July 28.

plant in particular had been planted in what seemed the best position for it; and another plant, a smaller one, was planted in a different place. In a little while it was seen that the small plant had obtained the right place, as it is now far ahead of the other. In arranging the rock-garden it is quite necessary to study the habits of the plants. The following were in flower on April 28:—*Omphalodes Luciliae* was very pretty, with pale clear blue flowers. The *Primula* family, except the varieties of *P. acutis*, were past their best; *P. ciliata* is a pretty species, and Mr. Wilson thinks very highly of *P. longiflora* for the rock garden; its large rosy-purple flowers, with long tubes, are musk-scented. *Veronica repens* is very pretty, with stems not an inch high. A most striking plant was *Mitella cordifolia*, with very pretty spikes of cream-coloured flowers about 9 inches or a foot high. *Viola semperflorens*, a pretty species, with pure white flowers. *Rubus arcticus*, one of the dwarfest of the species, and very pretty, rambling amongst the stones: the flowering-stems are but 3 or 4 inches high, the flowers pink. *Phlox reptans*: this is one of the prettiest of dwarf-creeping *Phloxes*; its purplish-red flowers are very freely produced, and the plants grow very freely. *Thalictrum anemonoides* is a very interesting species: its pure white flowers are quite charming. It likes a moist, rather shady part of the rockwork.

Corydalis nobilis was fully in flower, and as it is seen on the rockwork here is the finest of the species, as it is also as free in growth and flower as any of them. The flowers are rich yellow. *Linum alpinum* is a very dwarf free-growing and flowering species; its pale blue flowers are very pretty. But the most beautiful plant in the rock garden at the time of my visit was the *Trillium grandiflorum*; a large mass of it in a shady position was very beautiful indeed, its large snowy flowers set in a mass of its dark green leaves formed a striking picture.

I ought not to omit mention of the *Primroses*; these are allowed to seed at will over the place. I have seen no such *Primroses* anywhere else; the large size of the flowers, their bright and varied colours, are quite in advance of other growers. One may get a "wrinkle," too, from the way in which the seeds are sown. A mossy cushion of *Saxifrage* is encouraged to grow near the *Primroses*; the seeds fall into this, and the *Primroses* grow and flower amongst them as "dot" plants. *J. Douglas.*

HUMMING - BIRDS AND THE NECTAR-CUPS OF THE MARCGRAVIAEÆ.

TROPICAL America possesses in the small group of plants called the *Marcgraviaceæ* a parallel to the Old World *Pitcher-plants* or *Nepenthaceæ*. Not that they are in the remotest manner structurally related, but the members of both groups have this in common, that they develop on some part of their system curiously formed vessels or receptacles, the nature and functions of which are still imperfectly understood. Again, the hollow receptacles of the two groups are wholly dissimilar, formed on diverse parts of the plant, and probably exercise different functions. The pitchers of the *Nepenthaceæ* have been the subject of considerable research and experiment, and there is no doubt that they are admirably adapted for entrapping insects, which they do on a large scale. It is also certain that the entrapped insects cannot escape from the pitchers, but soon die and rapidly decompose from the action of a fluid secreted within the pitchers. Several eminent observers agree that this decomposed animal matter enters, or is absorbed into the system of the plant, which it nourishes. On the other hand, it is equally clear that the plants flourish as well, under otherwise favourable conditions, without this animal food. It would seem that the *Pitcher-plants* can digest animal food, and that it is specially serviceable to them in a wild state where other nutriment is not so easily obtained. The receptacles of the true *Pitcher-plants* are continuations or appendages of the leaves (the interior of the cavity of the pitcher corresponding to the upper surface of the leaves), whereas the receptacles of the *Marcgraviaceæ* are transformed bracts, associated with the flowers, and probably perform some rôle in assisting or facilitating fertilisation. Still, very little is known on this subject, and, as it appears to me, great misconception prevails as to the position of the mouth of these receptacles or nectar-cups, whatever their shape. It may be stated here that the *Marcgraviaceæ* consist of four genera, comprising about forty species, dispersed in tropical

America from Mexico through Central America and the West Indies to Peru, Bolivia, and Brazil. They are lofty climbing shrubs, or erect shrubs, or quite small trees, having umbellate, racemose, or spicate flowers, interspersed or associated with which are modified bracts assuming various forms, usually those of hollow receptacles. An examination and description of the principal modifications exhibited by these organs, if they may be so termed, and their nature and position in relation to the flowers, constitute the principal subject of this paper. But first let us glance at the recent literature bearing on the subject. Within the last twenty years, three, or rather four, botanists have specially studied the *Marcgraviaceæ*, and recorded the results of their researches. In 1863, Professor J. E. Planchon and Dr. J. Triana published (*Mémoires de la Société Impériale des Sciences Naturelles de Cherbourg*, tome ix.) the fruits of their joint researches on the nature, function, &c., of the modified bracts of the *Marcgraviaceæ*. The most important point elucidated by the authors in question was the morphological construction of the hollow bracts. They determined that the interior of the cavity corresponds to the under surface of the bract, which is intruded by the unequal growth of the tissue. With regard to the honey or nectar secreted in the tissue of the transformed bract, they failed to find the channel through which it is excreted into the cavity. And as to the function of these bracts they express no decided opinion. On this point they say, "Et, d'ailleurs, tandis que les ascidies foliaires semblent le plus souvent être des pièges à insectes, les ascidies des *Marcgraviées*, toujours rapprochées des fleurs n'attirent probablement les insectes que pour leur faire jouer un rôle, indirect ou non, dans l'acte de la fécondation." In their remarks on the direction of the bracts, or hoods as they term them, is a sentence which is very misleading, and which does not, indeed, express their views of the matter, as I subsequently discovered on perusing their paper to the end. It runs thus:—"Chez les *Marcgravia*, au contraire, l'orifice du capuchon ou cornet regarde toujours en bas et sa cavité redressée est parallèle au pédicelle." One would naturally suppose from the foregoing that the orifice of the hood was directed downward, but such is not the case. This is more fully explained below. In 1869 Delpino published (*Nuovo Giornale Botanico Italiano*, 1869) a "Rivista monografica della Famiglia delle *Marcgraviaceæ*," in which he specially treats of the bracts, or nectaries as he terms them. In all their modifications he regards them as bracts, having their origin on the main axis of the inflorescence, and more or less adnate to the pedicels. "Noi non esitammo a dichiararle bratee metamorfiche, e bratee non del peduncolo ma dell'asse dell'inflorescenza" (*l.c.*, p. 269). What I have termed pedicel he designates peduncle. Delpino determined, too, that the flowers of most *Marcgraviads* are protandrous; and he regarded the transformed bracts as special adaptations for the secretion of honey outside of the flower to attract insects and birds, through the agency of which fertilisation is effected. But he seems to have then adopted the theory propounded by A. St. Hilaire, that the cavities of the bracts are formed by the cohesion of their margins. In another place (*Nuovo Giornale Botanico Italiano*, 1871, p. 174) Delpino, *Sulle Pianta a bicchieri*, points out, in reference to a note by Dr. Seemann (*Journal of Botany*, viii., p. 245) on *Marcgravia nepenthoides*, which Seemann designates a *Pitcher-plant*, that the essential difference between a pitcher and the nectaries of the *Marcgraviaceæ* is that the interior of the cavity of the former corresponds to the upper surface of the leaf, whilst in the latter it corresponds to the under surface of the bract. The next and last author whose writings on this subject there is space to notice here is Dr. Wittmack. He has recently monographed the *Marcgraviaceæ* for the *Flora Brasiliensis*, and he also read a paper in February, 1879, on the structure, &c., of their extra-floral nectaries, before the *Gesellschaft Naturforschender Freunde zu Berlin*. In this paper Dr. Wittmack adopts the principal conclusions arrived at by the authors before mentioned, and by means of some abnormally developed bracts he was able to prove that the cavity is actually formed by the intrusion of the under surface. But his most important contribution to what was previously known of these nectar-cups was the discovery of the pores through which the honey issues into the cavity of the cup. Of this more

below in the explanations of the figures illustrating this paper. With reference to the position of the orifice of the nectar-cups, Dr. Wittmack seems to have been in the dark until near the end of his work, and then not to have thoroughly comprehended it. Perhaps he was misled, as I was at first by the sentence quoted above from Planchon and Triana, especially as the latter botanist is a native of New Granada. Be that as it may, all the species of *Marcgravia* itself figured in the *Flora Brasiliensis* are represented with the inflorescence erect, instead of pendulous, so that the orifices of the nectar-cups are directed downward; yet in his description of the genus the author describes the umbels as pendulous. On the other hand, he states that it is worthy of note that the opening of the nectaries is usually directed downward, yet the honey does not flow out. ("Bemerkt zu werden verdient noch hinsichtlich der Nektarien, dass, obwohl ihre Oeffnung gewöhnlich nach unten gerichtet ist, doch der Honig nicht ausfliesst.")

I think I shall be able to demonstrate, by means of the accompanying illustrations and the evidence I have been able to collect, that the mouth or opening of the nectary-cup, whatever the shape of the cup, is eventually always directed upward. This does not entail an exactly vertical position. It is a singular thing, that not alone in the *Flora Brasiliensis*, but in several other modern works in which there are figures of the inflorescence of *Marcgravia*, it is represented wrong side upward. A noteworthy exception, to which I shall again refer, is one in Belt's *Naturalist in Nicaragua*, p. 129.

The first representation of a flowering branch of a *Marcgravia* is in Patrick Browne's *Civil and Natural History of Jamaica* (1756), p. 244, t. 26. Browne knew the plant thoroughly, and figures all that is necessary to identify it, whether in flower or without flowers. Before quoting what he says respecting this plant, it may be well to explain that the species of *Marcgravia* are climbing, often epiphytical shrubs, with two very distinct kinds of foliage, as represented in fig. 4, A. They climb by means of their leaves, which are flat and closely applied to the rocks or trunks of trees, and attached by means of numerous rootlets. Like the Ivy (which also exhibits a great diversity in the foliage of its barren and flowering branches, though the differences are not so striking) *Marcgravia* rarely flower before they reach the summit of the object to which they attach themselves. Then they develop long pendulous flower-bearing branches. Browne's account of *M. rectiflora* conveys so good an idea of these curious shrubs that I shall be excused for reproducing it entire.

"This curious plant is frequent in the woods of Jamaica, and appears in such various forms that it has often been mistaken for different plants in different stages of its growth. It is but a slender weakly climber at first, and as it rises throws out a few leaves, somewhat of the form of a heart, on both sides: these are sustained by very short footstalks, and stand always opposite to a number of slender radical fibres, whereby it sticks and grows to its supporter. By these means the plant continues its growth until it gains the top, and lays its trunk more commodiously over the larger branches of the tree; then it begins to strengthen, and casts many slender, dependent, and sub-divided branches from the upper parts. But as it increases at the top the stem grows thicker, separates from the supporter, and appears a strong withy shrub, whose trunk is frequently no less than 4 or 5 inches in diameter. The [flowering] branches of this plant hang always downward, bearing their leaves in an alternate but distichous order. The flowers are sustained by long footstalks and disposed in the form of an umbel about the extremities of the branches, but the summit or crown of the supporter is constantly adorned with four, five, or more hollow, divergent, glandular bodies that occupy the centre of the umbel. These are of an arched oblong form, obtuse and roundish; they are hollow within and affixed by very short footstalks, that rise immediately from one side of the aperture or opening of the gland, which is so disposed as to receive the water that dribbles down along the branches in rainy weather. What the real use of these may be is not easily determined, it is, however, remarkable that the leaves of the branches are plain, of an oblong oval form, with a smooth membranous edge, while those of the younger plants are always observed to have many little glands set gradually round the margin."

The species to which the foregoing paragraph refers is not, as was formerly supposed, the same (*M. umbellata*) as that figured by Plumier (1703) in his *Nova*

Plantarum Americanarum Genera, p. 7, t. 29 (detached flowers and fruits only); and by Burmann in *Plumier Plant. Amer.* 1757, p. 166, t. 173, flower-bearing branches represented erect. Burmann had not seen the living plants. The species figured by Browne is *M. rectiflora*, Planchon and Triana. A striking difference in these two species is that the axis of the flowers in the latter is continuous, or running out straight from the pedicel, whereas in *M. umbellata* it is oblique or nearly at a right angle to the pedicel. Delpino divides the genus

seen, as a Fern; and not many years ago Miquel described a barren state, of what I regard as *M. polyantha*, as *Urostigma infestum*. Fig. 4, B, represents the kind of inflorescence characteristic of the genus *Marcgravia*—an umbel or abbreviated raceme. In some species the flowers are all given off from nearly the same plane. It will be seen from the position of the inflorescence, that the openings of the nectar-cups are directed upward or toward the base of the umbel. In this species the floral axis is almost at right angles to the pedicel. On the

rally speaking the nectar-cups are brilliantly coloured, while the flowers are small and inconspicuous; but this is more particularly the case in the other genera of the family. The nectar-cups of the various species of *Marcgravia* itself vary very much in shape and size, as well as in the number in each umbel or cluster. *M. nepenthoides* has the largest of any described species. Fig. 4, C, represents one of them about the natural size. In this species there are usually five or six in one umbel. Concerning this species there are some interesting facts on record.

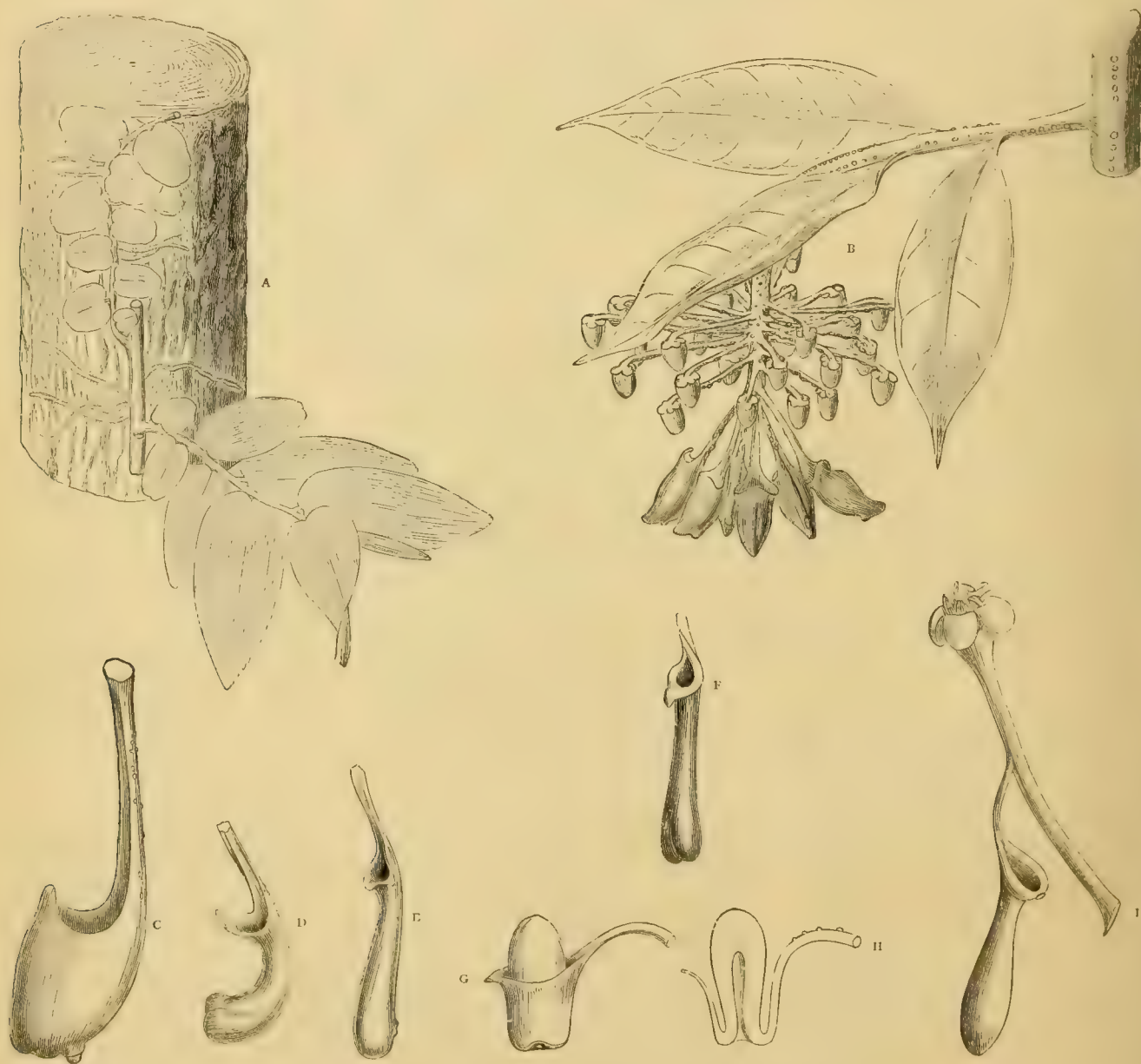


FIG. 4.—FOLIAGE, FLOWERS, AND NECTAR-CUPS OF MARCGRAVACEAE.

REFERENCES:—A, Portion of a branch of *Marcgravia rectiflora*, with two young shoots: one attached to the trunk of a small tree, and bearing the form of leaf characteristic of the climbing barren branches; the other free, and bearing the form of leaf characteristic of the flower-bearing branches (nat. size). B, Inflorescence of a species of *Marcgravia* in its natural position (nat. size). C, One of the nectar-cups of *Marcgravia nepenthoides*, Seemann, with a rudimentary flower near its (morphological) summit (about nat. size). D, Nectar-cup of *Marcgravia myriostigma*, Pl. and Tr.? E, Nectar-cup of *Marcgravia umbellata* (nat. size). F, Nectar-cup of *Marcgravia coriacea* (nat. size). G, Abnormal nectar-cup of *Marcgravia rectiflora*; H, vertical section of the same, after Wittmack. I, A flower and its nectar-cup of *Norantea peduncularis* (nat. size).

into two sections based upon these characters; but there are some species in which the obliquity is very slight. Jacquin (*Stirp. Am. Hist.* 1763, p. 156, t. 96) correctly describes and figures *M. rectiflora* (under the name of *M. umbellata*); but he, like Browne, had seen the living plant in its native country. Browne, in the description quoted above, mentions that his *Marcgravia* appears in such various forms that it had often been mistaken for different plants in different stages of its growth. This remark applies to the fact that Sloane (*History of Jamaica*, vol. i., t. 28) figures the barren state, which was all he had

authority of such unimpeachable observers as Burchell and Belt, the nectar-cups are filled with a sweet liquid or nectar at the time the flowers expand; and this nectar attracts insects and humming-birds, which travel from cluster to cluster and thus convey the pollen from one flower to another. To obtain the nectar from the cups of the inflorescence of the species represented in fig. 4, B,—which, by-the-by, Wittmack thinks may be the *M. Trianae* of Baillon—the birds must pass under the flowers. In doing this after the extinguisher-like corollas have fallen, the bird's back would rub against the stamens. Gene-

Seemann (*Journal of Botany*, 1870, viii., p. 245) furnishes the following particulars:—"The species here described attains 20 feet in height, and has quite a bushy crown, bearing numerous pendulous umbelliferous racemes, which have as many as twenty-five pedicels, the inner five of which form pitchers about the size of those of *Cephalotus*, but much more fleshy and substantial, and of a green colour, blotched with dull reddish-brown, bearing on the apex abortive flowers, and proving that these flower-bearing organs are not bracts, as has been assumed, but abnormal pedicels." It has already been explained that the

nectar-cups are metamorphosed bracts, fused with which is a pedicel, bearing usually a mere rudimentary flower (see fig. 4, c), though occasionally one meets with an almost perfect flower in this position. Belt (*The Naturalist in Nicaragua*, p. 129), alluding to the same species, states that "when the flowers expand in February and March the pitcher-like vessels are filled with a sweetish liquid. This liquid attracts insects, and the insects numerous insectivorous birds, including the species I have mentioned and many kinds of humming-birds. The flowers are so disposed that the birds, to get at the pitchers, must brush against them, and thus convey the pollen from one plant to another. A second species of *Marcgravia*, that I found in the woods around Santo Domingo, has the pitchers placed close to the pedicels of the flowers, so that the birds must approach them from above; and in this species the flowers are turned upwards, and the pollen is brushed off by the breasts of the birds." Unfortunately Mr. Belt does not mention what kind of insects visit the nectar-cups, although he names several species of bird. If lepidoptera, they are nearly as conspicuous as humming birds; and if small coleoptera, &c., one

F. The nectar-cup of *M. coriacea*, fig. 4, F, is very much constricted near the top (morphologically the bottom) with a recurved rim. In some specimens the rim is much more strongly developed, and the tubular portion is occasionally 2 inches long, and covered with tubercles. The specimens which I have doubtfully named *M. myriostigma*, fig. 4, D, has long-stalked umbels of upwards of fifty flowers, which are borne on pedicels twice as long as the nectar-cups, and turned upward. In *M. umbellata*, fig. 4, E, there are usually from fifteen to twenty-five flowers in an umbel, and they are directed downward, and borne on pedicels shorter than the nectar-cups. Fig. 4, G and H, borrowed from Wittmack, represent a curiously abnormal nectar-cup, the nature of which will be understood by the vertical section: the position of the cup is the same as in the other figures.

In the genus *Norantea*, and in fact in all the genera of the *Marcgraviaceæ* except *Marcgravia* itself, the nectar-cups are attached to the pedicels of the fertile flowers; and the species are (always?) erect shrubs or small trees developing only one kind of foliage. The flowers are borne in usually long racemes or spikes, which are either erect or nearly horizontal, or some-

different form of nectar-cup. The flowers are exceedingly numerous and arranged in racemes, sometimes as much as a yard in length, and stretched out horizontally. Fig. 5, J, represents a portion of such an inflorescence, from which it may be seen that the flowers proceed from the upper side of the main axis, and the nectar-cups, which are attached to the base of the pedicels, hang below. Instead of the narrow circular opening of the flask-shaped, or the broad opening of the helmet-shaped nectar-cups, there is a slit on one side. What kind or kinds of bird visit this modification of the nectar-cup we are not informed; but in Burchell's MS. note-book in Kew Library there is an entry relating to the specimen from which the accompanying figure was drawn. It is to the effect that it was taken from a small tree remarkable for its spreading, almost black inflorescence; and the bag-like dark blood-red bracts contained a fluid, which was sipped by birds—"Bractæ cucullatæ atrosanguineæ continentes liquorem avibus sorbillum." *N. brasiliensis* has, judging from the dried specimens, erect racemes, with almost perfectly horizontal pedicels scattered all round the main axis; and pendent from about the middle of the pedicel is a pouchlike nectar-cup (see fig. 5, K). Another species, *N. anomala*, has strictly spicate flowers, and similar though smaller nectar-cups. Whether the spikes are pendulous or erect I have not been able to ascertain. Fig. 5, L, represents a small portion of a quite young spike in which the openings of the cups are turned toward the base of the spike; but the spikes may be pendulous, or the cups may bend over as they grow older. The position of the nectar-cups in the two remaining genera, *Souroubea* and *Ruyschia*, is close, or nearly close under the flowers. From the material I have been able to examine, it was not possible in all cases to determine with certainty the natural position or direction of the inflorescence, though, from the form of the pedicel, it might be guessed. Thus fig. 5, M, and N, represent one flower of an inflorescence of *Souroubea pilophora*, the pedicel of which is strongly curved, so that in a pendulous raceme the opening of the hatlike nectar-cup would be directed upward, and a humming-bird or large-winged insect visiting the cup of one flower would brush against the flower above it. The nectar-cups of *Souroubea guianensis* (fig. 5, O), are of a very singular form, the mouth of the cavity being closely applied to the pedicel and prolonged into two lateral lobes of about the same length as the cavity. Turned what I should regard as wrong side upward, they resemble an equestrian astride a horse, hence the reason why in some parts of South America they are called *caballitos*. The racemes of flowers appear to assume such a position that the mouth of the cavity is at least not directed downward. Fig. 5, P, is a vertical section through the cavity, exposing one of the two pores through which the nectar secreted in the tissue issues into the cup.

Coming to the genus *Ruyschia*, we find that the transformed bracts scarcely assume shapes that would warrant us in terming them nectar-cups, though they are undoubtedly nectar-secreting organs. In *R. clusiæfolia*, fig. 5, Q, R, and S, the bract is ladle-shaped, whilst in *R. cymbadenia* (?), fig. 5, T, it is nearly solid. The secretion oozes out on the surface, and it is of a sufficiently thick consistence to adhere. This may also be the case in some of the hollow ones.

From the foregoing description of some of the principal modifications of the nectar-cups of the *Marcgraviaceæ*, their position in relation to the flowers, their function, &c., it is evident that much remains to be elucidated. Perhaps this exposition of the state of our knowledge respecting this interesting group of plants may induce residents and travellers in the West Indies and tropical America, to bestow some attention on them. I may add, that the material in herbaria is often very incomplete, and quite insufficient to afford a clue to the degree of variability exhibited by the species. Dr. Wittmack takes a broader view of the species than I should consider convenient, but he certainly has had an opportunity of examining more materials than I have had. In conclusion, I wish to mention that I am indebted to Mr. N. E. Brown, of Kew Herbarium, for the careful drawings engraved by Mr. Smith to illustrate this paper. *W. B. Hemslery.*

CLEMATIS PELLIERI ×.—This plant, according to the *Revue Horticole*, is a hybrid raised between *C. erecta*, fertilised by pollen of *C. lanuginosa*. The leaves are simple, ovate acute, the flowers about 4 inches across, pale violet in colour. The plant is curiously intermediate in character between its parents, and has the excellent character of being very free flowering, and lasts in bloom for four months.

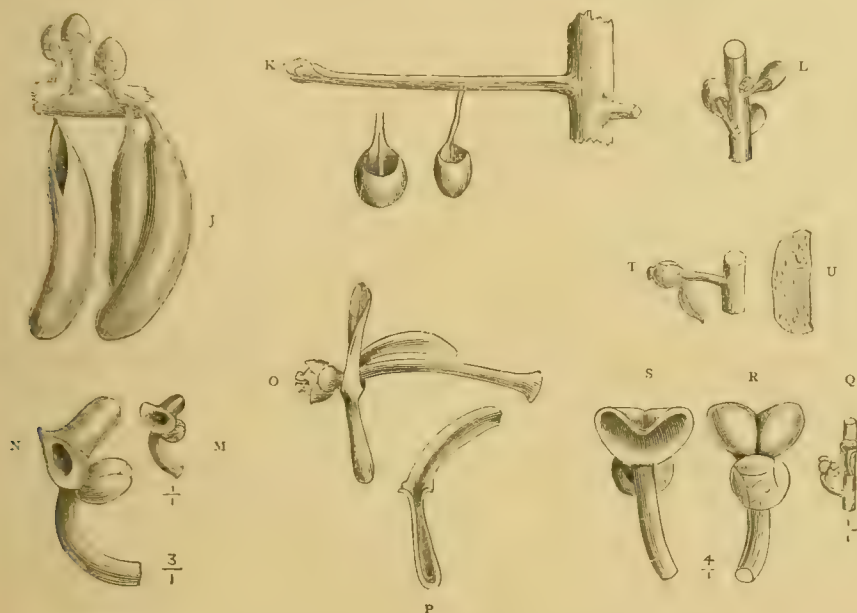


FIG. 5.—NECTAR-CUPS OF MARCGRAVIACEÆ.

REFERENCES:—J, Portion of the horizontal inflorescence of *Norantea paraensis* (nat. size). K, Portion of inflorescence of *Norantea brasiliensis*, bearing a nectar-cup (nat. size); detached cup slightly enlarged. L, Portion of a young inflorescence of *Norantea anomala* (nat. size). M, A flower of *Souroubea pilophora* and its nectar-cup (nat. size). N, The same enlarged. O, A flower and its nectar-cup of *Souroubea guianensis*. P, A vertical section of the nectar-cup, revealing one of the nectar pores near the base of the cavity. Q, Small portion of an inflorescence of *Ruyschia clusiæfolia* (nat. size). R, A flower and bract enlarged, seen from below; S, the same, seen from above. T, Flower and bract of *Ruyschia cymbadenia* (? (nat. size). U, Cross section of the bract, enlarged.

would expect to find traces of them in the dried specimens, but I have examined a great many unsuccessfully. I wrote to Mr. F. Du Cane Godman on this point, and he replied that neither he nor Mr. Salvin (both of whom have spent some time in Central America studying natural history) had actually seen insects visit nectar-cups, but that Belt would scarcely have assumed they did so because insectivorous birds were attracted to them. On the other hand, Burchell, as quoted below, states in his note-book in Kew Library, that birds sucked or sipped the liquid from the nectar-cups of a *Norantea*. Fritz Müller (*Botanische Zeitung*, 1870, p. 275), writing from Itajahy, doubts whether *Norantea* are fertilised by humming-birds, because he had never seen them visit these plants, though they were very active in visiting more brilliantly coloured plants, such as *Combretum*, &c. It may be that the particular species of *Norantea* referred to by Müller is not fertilised by bird-agency.

Turning now to some other modifications of the nectar-cup in the genus *Marcgravia*, we find a gradual transition from the open reverse helmet-shaped one of figs. 4, B and C, to the more elegant elongated flask-shapes of fig. 4, E and

times, perhaps, pendulous. N. peduncularis (fig. 4, I), has a few relatively large flowers on long pedicels in an erect raceme, and the transformed bracts or nectar-cups bend over and hang down from the pedicels; the weight of the hollow portion being sufficient to overcome the resistance of the narrow base. In this case the bract forming the nectar-cup is adnate to about the middle of the pedicel. Imagine the pedicel and flower adnate or grown to the nectar-cup throughout their entire length, and we should have something analogous to what frequently occurs in *Marcgravia*, though in the latter genus the flowers are usually quite rudimentary, as represented in fig. 4, B, C, and E. But if this were the case in *Norantea peduncularis* the orifice of the nectar-cup would be directed downward, and the nectar would escape as fast as it was secreted. The relative position of the pedicel and the opening of the nectar-cup in this species clearly indicate that the interior of the nectar-cup corresponds to the under surface of the bract from which it is formed. In form the nectar-cups of this species are the most elegant I have seen, though they are not much unlike those of *Marcgravia umbellata* (fig. 4, E). N. paraensis (fig. 5, J) exhibits a very different inflorescence, and a correspondingly

Florists' Flowers.

GREENHOUSE FLORISTS' FLOWERS.—AZALEAS.—The main collection should now be in heat, as the very latest varieties have finished flowering by the second week in July. Pick off all the seed-pods, and thoroughly cleanse the plants; if there is any spider or thrips on them, it is a good plan to lay the plants on their sides, and thoroughly syringe the leaves with a mixture of soapy water, to which has been added some tobacco-water. This should be used as strong as the leaves will stand it. I usually try it on a part of a plant that is not of much value, and if the leaves are not injured the whole collection should be dipped or syringed. There are some varieties which are generally too thickly set with flower-buds; it is quite necessary to thin such buds, leaving those that remain as evenly as possible distributed over the plants. If some varieties are left to themselves, the flowers are occasionally so thickly clustered together that they have not room to expand, and as a consequence they are not half so large as they ought to be. The neat little plants, with stems a foot high, are useful for decorative purposes, although they are sometimes too closely trained. We generally repot our plants at the time of putting them into heat; use turfy, sandy loam, and if it is not desirable to increase the size of the pots, the ball of roots may be cut round, reducing it by an inch or an inch and a half all round. Those not repotted may be stimulated by a surface-dressing of guano; a very small portion sprinkled on the surface of the pots about three times during their growth will answer better than too much at one time.

AMARYLLIS.

There are still a few plants in flower, but the largest proportion are in a house where they have a little heat, those that have completed their growth being removed to a cool house. A moderate supply of water must be continued to the plants as long as the leaves are green. Checking any plant for want of water before its growth is completed cannot but be injurious.

BOUVARDIAS.

Our plants are looking remarkably well in a frame. They are now being shifted into their flowering pots; we use good turfy loam with a little rotten stable manure added to it, and about a third part of fibrous peat. A little greenfly had appeared, but this was easily destroyed by dipping the plants in soft-soapy water before potting them. The treatment further is the same as that given at p. 718.

CALCEOLARIAS.

Seed should be sown now; use well-drained pots or pans, and fill them up to within an inch of the rim with ordinary potting stuff; the surface should be very fine sandy soil, and the seeds, being very small, should be sown on a level surface, just sprinkling a little of the very finest soil over the seeds. They vegetate freely if the pots are placed in a hotbed from which the bottom-heat is nearly gone; place a square of glass over the pot—this is to retain moisture in the soil; and, further, it will be necessary to shade from the sun until the seeds vegetate. It is here that good seeds are destroyed; they become dry in the process of germination, and the result is that they are destroyed, and the plants do not even appear above-ground. When the seeds germinate I remove the pots to a handglass or frame behind a north wall until they are ready to be pricked out.

CHINESE PRIMULAS.

Continue to repot or prick out seedlings as they require. The best position for them is a frame facing the north: the plants obtain sufficient sun here without being dried up; in very hot weather it may even be desirable to shade from 11 to 4 o'clock. Choice varieties that have been propagated from cuttings should not be over-potted; we have good strong plants at present in 5-inch pots, they will be repotted, when the pots are well filled with roots, into 7 or 8-inch pots. As the flower trusses appear they must be picked off for the present. Let the lights be quite removed from the frames, except during dashing rains or in hot, scorching sunny days.

CINERARIAS.

Prick out seedlings, and pot those singly in small pots that have been pricked out some time previously. Offsets that have grown out from the base of the old plants should be removed and be potted singly in

small pots as previously advised. Thrips very frequently attack the Cineraria, and do much damage to the plants if it is not noticed in time; and a species of aphid, different from that which attacks Pelargoniums, clings closely to the stems: either of these will destroy the plants if they are not killed in time with tobacco-smoke. If the plants are placed in a cool position, and not exposed to the direct rays of the sun, they will make rapid growth now.

CYCLAMENS.

Our large plants are very freely exposed to the air, and water is applied to them to prevent over-dryness. Small plants are kept more under glass, with the treatment advised at p. 718.

CRYSANTHEMUMS.

The plants should have their final shift, if this has not been already done. We place three plants of the large-flowering section into 11-inch pots, or two into those 9 inches in diameter, inside measure. Specimen plants that have the growths pinched should now have the final stopping. The large-flowering specimens should be potted into 11-inch pots, and the Pompons will form sufficiently large specimens if they are potted into 8½ inch. See that they are perfectly free from greenfly before repotting; we destroy it at this season by dipping the points of the shoots in soapy water. Place the plants as they are potted in an open place well exposed to the sun.

FUCHSIAS.

The large specimens will now be in flower, and few subjects are better adapted to take the place of the large Azaleas in the greenhouse or conservatory. Large specimens placed in the middle of the centre stage of large span-roofed houses give an effect at once imposing and beautiful. If they have been potted in good rich turfy loam, and are not root-bound, flowers are produced for a long time, and these are much improved by the addition of manure-water used in a weak state. Young specimens growing on to flower in the autumn should be in a house where air is freely admitted night and day; pinch the points of the growing shoots to form bushy specimens and to prevent their flowering until they are required. Many persons grow their specimens with a centre stem, and growths all the way up from base to top; but these do not make such imposing specimens as when a number of strong growths are encouraged to grow out from the base of the plants to form large bushes.

LARGE-FLOWERED PELARGONIUMS.

These have flowered exceedingly well, many are in flower now, and by a little management a good display can be kept up until the middle of July. Some varieties flower later than others, and if these are pinched back later it makes a month difference between the flowering of the early and late varieties. Many of those named "decorative" flower much earlier than the main collection of the more refined florist forms, and no one can dispute the fact that in many cases they produce a larger quantity. We may also hope that a Hoyle and a Foster will arise to do for the "decorative" what those gentlemen have done and are still doing for the large flowering section. When the plants pass out of flower they may be removed out-of-doors, and water should be gradually withheld until the wood is well browned, when they may be cut over; even in this some account must be taken of the time they are wanted to flower next year—if late they must be pruned late, and if large plants are not wanted cut the young growths well back, say to the third eye from the base. If the soil in the pots is quite dry, as it ought to be when the plants are cut back, they will not bleed, and water must not be applied until the cut portions heal over.

ZONAL PELARGONIUMS.

One great advantage in growing this section in pots, is that they come in well to fill the places vacated by the large-flowering varieties. Plants from cuttings put in last year in September are now coming into flower in 6-inch pots; they would make a brilliant display for many weeks, or, if they would be more valuable in the autumn, all the flowers could be pinched off, the points of the shoots stopped, and when fresh growth is made the plants should be potted on into pots a size larger, being careful as previously advised not to use too rich compost. If no convenience under glass exists the plants may well be placed out in the open air and be freely exposed, J. Douglas, Loxford.

Garden Operations.

KITCHEN GARDEN.

ORDINARY WORK.—Proceed with planting out the main crop of Celery as soon as the plants are fit for it. Let the operation be carried out in the way which was indicated in a recent paper upon this subject. Already we have discovered that terrible pest, the Celery-fly, to be very abundant on an advanced crop. If this be the case anywhere else by no means delay to effect a riddance of it by the only sure method, namely, hand-picking. This operation should be repeated frequently until the maggots are eradicated altogether. As these plants advance let them be kept free from weeds, and be encouraged by a moderate earthing-up by-and-by; before which see that the roots are in a satisfactory state as regards moisture. The plants for our subsequent or last crop of Celery are now ready for pricking out; a proportionate number of them will be done in this manner prior to being planted out finally. The autumn and winter crop of Cabbage or Colewort is an important one, and therefore should obtain proper attention. If the plants sown the first week in June are not thinly placed in the seed-beds they should be made so by removing the surplus ones, and pricking them out elsewhere, if they be wanted, so that the main supply may make good sturdy plants. A good rich piece of open ground should be prepared in readiness to receive them when they are fit. In planting, allow Cabbage from 15 to 18 inches every way, and compact growing kinds of Colewort about 12 inches. The most forward crops of Potatoes are now coming in rapidly. As these are lifted the space will be available for other autumn and winter crops, as late Broccoli and winter stuff, including Leeks, also Cabbage, Coleworts, Turnips, &c. In this locality rain has of late fallen most bountifully, which, in conjunction with other favourable conditions, has wonderfully changed the appearance of vegetation generally, the vegetable crops now being in a most luxuriant state, amongst which Peas are particularly noticeable this year for the rampant growth they are making, several sorts being at least from 18 to 24 inches above the usual height. Amongst these William I. seems to have quite lost its primitive character in this respect, and also in regard to its earliness, as with us Harbinger, planted beside it at the same date, came into bearing at least a week sooner. Advanced crops of dwarf Beans of such sorts as Canadian Wonder will require short sticks to keep the plants erect and the Beans free from damage: this matter should be seen to before the plants fall about. About this time sow another breadth of an early variety, to come in for late use. Sow Endive for successional crops at intervals of about three weeks, until such time as the last or winter sowing is made, which will be about the middle of August. Give due consideration to the requirements necessary for crops of winter Onions, Spinach, Cabbage, Colewort, &c.; these subjects are important crops in their season, and therefore really good places and well-prepared ground is quite essential for them. G. T. Miles, Wycombe Abbey.

FRUIT HOUSES.

PEACHES AND NECTARINES.—Succession-houses, in which the fruit has passed the stoning period and shows signs of beginning to swell, should be carefully overhauled and divested of all small or badly-placed fruits before the most prominent Peaches are affected by their detention. The planting and furnishing of a Peach-house, notwithstanding the fact that the extension system of training is now generally practised, takes several years for its accomplishment, and when trees, true to name, on good stocks, are well established, the careful cultivator is better satisfied with a fair average crop of good fruit than a glut of mediocre Peaches one season and none the next. To succeed in this, after many years' experience on a good Peach soil, I have found that one fruit from every square foot of trellis covered with foliage is quite sufficient; and to keep them up to the standard frequent lifting and relaying of the roots in new soil, and good feeding by means of rich mulchings and waterings with liquid manure, are of the greatest importance. By timely thinning of the fruit and careful stopping of shoots that it is intended to remove after the crop is gathered, Nature is often prevented from asserting her right to relief herself by casting numbers of fruit that the trees have been unable to support through the stoning process, and the finest and heaviest crop is secured without injury. Ply the syringe twice a day until the fruit begins to soften, always using soft water that will not leave a deposit on the woolly coat of the Peach, and avoid the production of soft elongated growths, by giving night air followed by liberal ventilation through the early part of the day. Run up to about 80° under bright sunshine with a circulation through the house, and close in time for it to remain at that temperature for some time afterwards. Keep late houses and Peach-cases thin of wood, as no good object can be gained by laying in a single shoot that is

not likely to be wanted next season. Stop all gross shoots, keep them neatly tied, and force or otherwise according as the fruit is likely to be wanted for use. When the last Peach has been gathered from the early house, the thorough cleansing of the trees by washing with the garden engine will require attention. Take out all shoots that have borne fruit and are not likely to be wanted for next season. Mulch and feed exhausted trees until the buds are properly developed, and note for lifting before the leaves fall in the autumn any that are getting too strong or persistent in growing when they ought to be ripening their wood and going to rest. *W. Coleman, Eastnor.*

PINES.

At this season we have natural advantages in the way of sunshine and heat which should be made available, as far as possible and practicable, in connection with the cultivation of these plants, so that whenever the force of these elements is available, artificial means should only be employed as an auxiliary. In the case of fruiting plants, if the temperature will stand at 70° at night, we deem fire-heat to be quite unnecessary, nor will it be needful in those compartments where the young stock of plants is located whilst 60° is assured. Attention to simple details of this nature contributes much towards subsequent and satisfactory results, and particularly so during the most seasonable part of the year for these plants, which is included between midsummer and October following. The chief of the fruit will by this time be cut from the most advanced section of summer fruiting plants. At an early and convenient date the suckers should be carefully screwed out, and without much delay they should be potted in a firm manner in good prepared loam of a friable nature in properly drained pots of from 5 to 7 inches in diameter, after which they should be plunged into a bed having a temperature at 6 inches from its surface of from 80° to 90°, in a pit or house which is naturally somewhat moist. Shading should be applied over the plants whenever it is needed, and effectually so during the prevalence of powerful rays of sunshine; this should be continued for about a fortnight, by which time new roots will be formed, and growth in the plants will proceed vigorously, after which but little or even none will be required, unless the plants stand in close proximity to the glass. The suckers should be watered at the time of potting, but no more should be given to them until it is actually needed. Keep the place damp by ordinary means, and lightly dew the plants overhead twice every day when sunshine abounds. The general management will comprise attention to watering, shading, syringing, and airing the structures; let the last operation have prompt attention whenever necessary, by opening the places early to dispel damp from off the plants in the daytime, and by closing up so as not to lose the evaporating power of sunheat as a means of keeping up the moisture of the atmosphere, after syringing the plants or the house as the case requires at the time of closing. Water the plants judiciously, examining the surface of the soil in the pots by hand, and supplying water abundantly when it is needed. This operation should in the case of plants in small pots be seen to at least twice a-week. *G. T. Miles, Wycombe Abbey.*

FIGS.

When the second crop of fruit has been gathered from the earliest pot trees forcing should be discontinued, and the young growths allowed to find their way up to the glass, where they will ripen up to the points and set as many embryo Figs as they contain leaves, but care must be observed in their management, otherwise they will get too far advanced to stand over the autumn, while the freeing and forcing necessary to their swelling and ripening off will weaken the trees and keep them too long in an excited state to admit of a proper season of rest before they are again started in November. We have sometimes taken a third crop from the same tree, but it has always been at the expense of the early crop, which is of more value when forced fruit is scarce, and on this account we find it the safest and most profitable plan to secure two crops, and gradually inure the trees to full exposure through August and September by increasing the roof ventilation and taking the lights off entirely in very hot weather. A liberal supply of water is of course necessary, and the trees will require good syringing, and in all probability sponging, as a means of keeping the foliage clean and healthy until it shows signs of ripening, when a gradual reduction will tend to the maturation of the roots as well as the wood. Permanently planted trees in succession-houses require similar treatment with regard to cropping and ripening, by allowing the points of the shoots to ascend; but under the long-rood system of training over a trellis less stopping or pinching is required. Many fruit trees are injured by being pinched too late in the season, say after the beginning of July. When getting too strong it is better to lift, root-prune, and replant in the autumn than to risk having a number of blind points, which must break into new growth in the spring before they

can produce fruit, or be cut away altogether at the autumn pruning. When these trained trees have finished the first crop the necessary cleansing of the foliage and liberal thinning of the fruit from which the second is to be secured must have attention, otherwise the fruit will be small and poor in quality. The daily routine laid down for the management of the early house will also apply here. Figs, like Melons, delight in heat and moisture when growing, and require an abundance of light and air when ripening. *W. Coleman, Eastnor.*

ORCHARD-HOUSE.

If the fruit has been gathered off the trees in the early house and they require repotting, my advice is to have this done at once; fresh roots are speedily formed, and they run into the fresh compost—this causes the buds to plump up well, and the trees are sufficiently established before the leaves drop off. In previous numbers full instructions have been given as to how the operation is performed and the after-treatment of the trees; it may be enough at present to say that they should be free from red-spider and in good health at the time—that the soil should be good, moderately clayey loam, to which has been added a fourth part of rotten stable manure. The soil should be pressed in rather firmly with a wooden rammer. The trees must be syringed twice daily after they are placed in the house, and the atmosphere must also be kept moist. Should the leaves show any signs of flagging it may be prevented by dewing them over with a fine syringe. Some persons have a notion that when the fruit is gathered from trees of this kind, if they should happen to be indoors, the right thing to do is to throw open all the ventilators and doors, and keep them so night and day. This system of management is not so common as it was twenty years ago, but as it is contrary to right principles one must protest against it. The best way is to keep the trees sufficiently supplied with water at the roots, keep the leaves clean by the use of the garden engine, and maintain a warm atmosphere until the buds are quite prominent. After this time plenty of air should be admitted, and water must be gradually withheld, but it will not answer to dry them up, even when the trees are quite at rest. In the late house there is now plenty of work to do. The trees are growing with great vigour where they have been well attended to with water and surface dressings. The vigorous young growths must be stopped, in order to cause fresh growths to break forth of weaker shoots.

The late Mr. Thomas Rivers, of Sawbridgeworth, used to recommend the ventilators to be left open night and day after this time, but the only reason he could have for doing so must have been to prevent any injury to the trees by the sun scorching them in the morning through any neglect in opening the ventilators sufficiently early. We shut ours up after 4 o'clock in the afternoon, and by doing so get the fruit to ripen very much earlier, and the warm moist atmosphere causes it to grow to a larger size. We have never been very successful with trees placed out-of-doors, but in good seasons and suitable positions they have done well; and should the trees be too close to each other a few may be placed out, unless there are Pears, Plums, or Apples, when it would be better to place these out instead, and thus give the Peaches and Nectarines more room. There may be another reason for placing a few trees of Peaches and Nectarines out-of-doors, and that may be to prolong the season, for we have few varieties of much value to succeed Barrington and the Late Admirable. *J. Douglas, Loxford Hall.*

ORANGE-HOUSE.

The cultural directions all through the summer months are such as have frequently been given in these columns. A Pine-house temperature seems to suit them best; plenty of water at the roots if necessary, and in hot weather syringing twice daily. I prefer to surface-dress the trees instead of applying manure-water. I found Mr. W. Paul's Rose manure to be an efficient stimulant; when this has not been available another, easily composed of bone-meal, charcoal powder, or wood ashes and loam in equal proportions, answers well; a portion of this spread thinly over the surface of the soil in the pots causes most vigorous growth, but it should not be applied unless the trees are well furnished with fruit and it can be seen by the state of the leaves that some stimulant is necessary.

I find mealy-bug to be a most troublesome pest on the Orange trees; it can be destroyed by hand washing with soapy-water, and this must be repeated as soon as any of the pest appears. Potting may be performed at any season. We do this after a crop of fruit has been gathered, and this may be in any month from January to June. We like best to arrange it so that the trees are in flower in February, as then the fruit is ready in November or December, even earlier if it is the little Tangierine. If the trees blossom in May the fruits will not ripen for twelve months after. *J. Douglas, Loxford Hall, Ilford, Essex.*

PLANT HOUSES.

ORCHIDS.—By this time a very large proportion of these plants will have passed through their annual flowering stage, and will speedily turn their attention towards making new growth. Those plants which when in flower were removed from their growing quarters and put into positions where their beauty could be more appreciated should now be replaced. As in most collections many plants will thus have been moved, the present will be found an excellent time to overhaul the inmates of every division. Every plant should be cleared of all spent spikes or their remains, and have all insects and dirt washed from it by some weak solution. Top-dress or pot those that require it, and afterwards rearrange, bearing in mind that room and light for each individual plant is of more importance than the general effect of the most accurately arranged group or stagel of plants. It is utterly useless to expect small plants of Cattleyas and Lælias to progress satisfactorily when shut in by large pots and plants. If large plants do well with their foliage within a few inches of the roof-glass and with nothing intervening, it is scarcely likely that small duplicates of such will act the same when standing 2 or more feet below and overshadowed with thick foliage.

Sickly plants which may have been recently repotted or in any way disturbed at the roots will be greatly benefited if extra shaded, but small healthy plants and also semi-established imported ones require no more coddling than the main of the occupants of whatever division they belong to. Imported Orchids are by no means pretty, and for this reason they are too often packed away out of sight, and as a rule soon lose all chance of ever becoming pretty. Give them fair, generous treatment and they soon clothe their nakedness by fresh foliage, quickly followed in many cases by abundance of flowers. This done, cost and trouble are less acutely felt. Quite the contrary in every sense is it when imported Orchids are pushed out of sight and left mainly to take care of themselves. Those persons whose dislike for the looks of imported Orchids is greater than their interest in the well-doing of such would act wisely by increasing their collection with established plants alone. By doing so they would save much time and escape entirely the doubts and fears as to whether the plants would pull through.

Among those plants which will probably require potting will be Cattleya Mossiæ and its many varieties, C. amethystina, C. amethystoglossa, C. Mendelli, C. maxima, C. gigas, C. Warnerii; Lælia purpurata, L. Brysiana, L. cinnabarina; Anguloa Clowesii, A. uniflora, and its varieties. When the Cattleyas and Lælias have been kept well in hand, that is, in suitable sized pots, and those full of undecayed compost and roots, it is only necessary to turn them carefully out, and give them a size, or two sizes, larger pots. In the case of large plants that have stood in their pots many seasons, and which are on the decline through their roots having nothing but sour and rotten compost to run in, it will be necessary to wash every root clean previous to repotting. Many such plants may also, after they have been trimmed and carefully divided, be got into smaller pots than what they have occupied. In potting give ample drainage; indeed it is almost impossible to err on the too much side. Keep the plants well elevated above the rim of the pot, and, by means of stakes and ties, perfectly firm; pot moderately firm, using a compost of two-thirds of the best fibry peat to one-third of sphagnum, broken crocks, and charcoal.

As a rule freshly potted plants of Cattleyas and Lælias are too frequently watered, and as a consequence soon lose their roots. A thorough soaking every ten days or a fortnight will be sufficient for ordinary plants, but a decidedly moist atmosphere must be maintained and the ventilators used freely whenever the external air is above 60°. There is scarcely a single Cattleya or Lælia which will root properly in a close confined house. The Anguloas should have their pots one-third full of drainage; pot them, not very high up, in equal parts of peat and sphagnum, and water often all through the growing season. The large thin leaves of these plants should, by being often sponged, be kept free from their great enemy, red-spider.

With such glorious weather as we are now getting through the day-time and with such warm nights as we have had for the last week, there will be no need to use but very little fire-heat in any division. Even through the night the pipes in no division should feel more than lukewarm. Let the East Indian-house be freely ventilated during the middle hours of the day, but close early enough to allow the sun to raise the temperature to between 80° and 90°. The lower ventilators of the Cattleya-house may now be kept partially open all through the night. The cool-house must of course be freely ventilated at all hours, and must on no account be neglected in the matter of damping down and shading. *J. C. Spyers, Burford Lodge, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, July 6	Oxford Rose Show Annual Festival of the Gardeners' Royal Benevolent Institution, at the "Albion," Ealing, Acton, and Hanwell Horticultural Society's Summer Show Fareham and South Hants Horticultural Society's Show Newcastle Botanical and Horticultural Society's Show (two days) Royal Caledonian Horticultural Society's Show Sale of Established and Imported Orchids, at Stevens' Rooms Royal Horticultural Society of Ireland's Second Summer Show Sale of Imported Orchids, at Stevens' Rooms
WEDNESDAY, July 7	Torquay Horticultural Society's Show Clearance Sale of Stove and Greenhouse Plants, at the Nursery, Park Road, Acton, by Protheroe & Morris Alexandra Palace Rose Show West of England Horticultural Society's Show, in Camden Park
THURSDAY, July 8	
FRIDAY, July 9	
SATURDAY, July 10	

WEDNESDAY, July 7, should be a day of days for the GARDENERS' ROYAL BENEVOLENT INSTITUTION. Its connection with Royalty has hitherto been more nominal than personal, but now one of HER MAJESTY'S sons is to preside at the annual festival on the day just mentioned. Gardeners of all qualities and degrees yield to no other class in their respect and admiration for the good government with which Royalty is in this country associated. Their loyal attachment to the sovereign and the members of her family is at least as fixed a principle as it is with any other class of the community. Many doubtless will avail themselves of the opportunity of testifying to these feelings, and of showing their gratitude to the royal Duke who in the midst of numberless duties yet finds time to plead the cause of the weak and weary among the gardening community.

We have never heard any one object to the principles of this society. To give help where it is wanted, to ensure assistance, when needed, as the direct consequence of previous forethought and self-denial, are objects which commend themselves to every man. As we all need help in some way, and at some time, it is our bounden duty to give that help to others when and how we are able. But how much more willingly should that help be given when it is afforded to those who in the days of their ability to do so, have done their best to help themselves, and at the same time have done a good turn to others. It is a duty to help the helpless under any circumstances; it is a privilege and a pleasure to do so when a gallant attempt has been made in the direction of self-help. The Society is, as we know, carefully and judiciously administered; it affords pensions to aged or infirm gardeners and their wives, giving the preference to those who have been subscribers. The objections raised to the way in which the principles of the Society are carried out, are certainly not unworthy of consideration, but so far as we have heard, they all depend upon one cause, the apathy of the gardeners themselves as to the working of their own Institute. Some say, and we agree with them, that the pensions are too small—some say that the pensions are not numerous enough, and we agree with them. Some object, or did at one time object, because it was supposed that the nurserymen, or those whose subscriptions were largest, exercised an undue influence in the election of candidates. But this objection, if it were ever true, has been met, and we believe the election to be as fair as the existing system will allow; besides, it is for those who object on this score to nullify the objection by increasing their own subscriptions.

Some doubt—and we share their doubts—whether a "charity dinner" is quite the right way of promoting the object we all have in view. Some raise objections to the mode of election as radically bad. One gentleman deplores the need of any such Society, stating that if all employers did as he does, there would be no necessity for such Institutes. But it is obvious that it is not every employer who can

provide in this way for his workpeople, and there are besides many circumstances which of necessity prevent so desirable a system being universally carried out.

To most of these objections to which we have alluded, and to any more that there may be, there is one answer—let the gardeners come forward in greater numbers, and put themselves in a position to make their wishes known. The aim of the Institute is excellent, the system is perhaps open to objection, but it exists and has existed for years; and, on the whole, though it is not theoretically perfect, it has worked well. We should all like to see it work as much better as possible. There is but one way to accomplish this, and that is for the gardeners themselves to show a more active interest in their own concerns, and to be less dependent than they have hitherto been upon the favour and good nature of others; and by gardeners we here mean, not only those who work for a weekly wage, but those who take an active interest in gardening pursuits generally.

May the stimulus of a Royal visit be effectual in largely adding to the number of annual subscribers. May it be the means of so adding to the invested funds that larger pensions and more of them, one or both, may safely be awarded by the committee in future. If this happy result should take place we may have reason to remember with gratitude "the Connaught Year." We shall be pleased to help in the realisation of this wished-for result, and shall gladly receive and hand over to the proper persons any sums which may be sent to us for the benefit of the Institution.

— TRACHYSTEMON ORIENTALIS.—This (fig. 6) is one of the earliest spring flowering plants. It is known in some gardens, but incorrectly so, as Italian Borage. Botanically it has been called *Borago*, *Psilostemon*, and *Nordmannia*, but it seems to have found a resting-place in the genus *Trachystemon*. Whatever name be adopted, the plant in question is decidedly one of the most striking and elegant of all herbaceous plants. It sends up in early spring its elegant panicle of pale blue flowers, the segments of which, recurved at the tips, serve to show a conical tuft of white stamens. After the flowers come the noble cordate ovate acute rough leaves. One fault this splendid plant has—it is too vigorous, and unless kept in check it is apt to spread like a weed, but the use of the spud or hoe is quite sufficient to keep it in its place. It is not adapted for cutting, as the flowers fall off so readily; but for the wild garden, wilderness walks, and the like situations, it is admirably adapted. It is a near ally of the common *Borago*, and is a native of the Levant.

— BOOKS FOR THE SEASON.—We have on our table, waiting till we can find space to notice them more at length, three capital little books, which we may at once recommend our readers, especially those about to take their summer holidays, to procure. They are *Ponds and Ditches* and *The Woodlands*, by Dr. M. C. COOKE, and which form part of the series issued under the title of *Natural History Rambles* by the Society for Promoting Christian Knowledge, Northumberland Avenue. The third is Dr. TAYLOR'S *Nature's Bye Paths* (BOGUE, St. Martin's Lane).

— THE CORN MARIGOLD.—Mr. BURBIDGE sends us a glorious bunch of the rich golden-yellow flowers of *Chrysanthemum segetum*, a common plant enough, but one of which our gardeners have been slow to avail themselves in spite of its gorgeous colour. We are glad to hear Mr. BURBIDGE is growing seeds of this fine plant with a view of selecting varieties. The plant is usually annual, but becomes biennial if prevented from flowering.

— THE POTATO DISEASE COMMISSION.—Whatever comes of this, we do hope something may be done in the way of prevention. We do not believe in a cure, but that much of it may be prevented by careful destruction of infected haulms and tubers, careful storage, careful selection of varieties, careful cultivation, we feel convinced. Our cultivators too often propagate the disease wholesale, and, as we have

seen, one large grower actually boasts that he feeds his horses on the diseased tubers, and, as we are told, without boiling the tubers or doing anything to destroy the spores. It is almost impossible to conceive any better devised plan for spreading the disease. The gentleman in question might supply Potato fungus spawn, like Mushroom spawn, cheap. Seriously, we should look upon such practice as absolutely criminal if it were not done from ignorant thoughtlessness.

— GARDENERS! — ATTENTION!! — You are cunning scoundrels, "most gardeners are." JOHN ELLIOT says so, and he must be right, for he has been apologising for "mothers-in-law" in the current number of *Time*. In another article in the same periodical some one admits that he has sinned, and rather likes it—in loving his neighbour's wife. We think, under the circumstances, gardeners need not much care for the opinion of such writers, be it good or bad.

— THE POTATO DISEASE.—We are pleased to hear that Mr. W. G. SMITH has been called on to give evidence before the Committee. We believe that he did not confine himself to the history of the *Peronospora*, but called attention to that other parasite whose ravages are nearly as destructive, but whose existence is so generally ignored—we mean the *Fusisporium solani*, the discovery of the resting-spores of which was also made by Mr. SMITH.—It is reported that the disease has made its appearance at Charmouth, in Somersetshire; also at Beauminster and Bridport, Dorset.

— PRIZES FOR CHERRIES.—A correspondent writes:—"The attention of Cherry growers is invited by the committee of the South Chiltern Cottagers' Horticultural Society—an association of a few villages on the Chilterns—to the following notice. His Highness, the Maharajah of BENARES, G.C.S.I., being interested in the cultivation of the Cherry, has offered, through one of his English friends resident in the district, some prizes for the encouragement of Cherry culture. The prizes are chiefly limited to the residents in the locality; but one prize of £1 is offered by the committee for the two best dishes of Cherries, two varieties, of one pound each, open to all comers. The committee would be very glad to receive for exhibition some good samples of this fruit, both because it would tend to improve the culture of Cherries in the district, and because it would be a gratification to them to report to his Highness that his courtesy had been recognised, and that some excellent Cherries had been sent. They hope that horticulturists who might not otherwise care to send, will nevertheless do so in appreciation of the cordial and kindly feeling towards Englishmen which in small, no less than in great matters, has always actuated the Maharajah. The show will be held in the grounds of Woodcote House, near Reading, on Wednesday, July 21. Intending exhibitors should send notice as soon as convenient to one of the joint secretaries, Rev. C. J. ABBEY, Checkenden Rectory, near Reading, or Rev. H. G. NIND, Woodcote House, near Reading. There is a small entrance fee of 1s. 6d., which may perhaps enable the committee to offer a second prize."

— SOCIETY OF ARTS.—The Council of the Society of Arts has awarded Silver Medals to Mr. J. C. MORTON, Editor of the *Agricultural Gazette*, for his paper on "The Last Forty Years of Agricultural Experience;" and to Major-General SCOTT, C.B., F.R.S., for his paper on "Suggestions for Dealing with the Sewage of London."

— MALT DUST.—Although in presenting his recent remarkable Budget Mr. GLADSTONE exhibited the Malt Tax as affecting the manufacture of pickles, and to that extent perhaps influencing the sale of certain horticultural products, it is yet probable that few persons have imagined that anything in connection with that tax or its repeal could materially affect horticulture in that or any other way. Malt dust is a waste product of malting, and as such has usually been regarded as a comparatively valueless material, of little service to any one, and been disposed of by the maltster for what it would fetch. If some recent experiments with the culture of Potatoes go for anything, malt dust is likely to prove for that esculent a valuable manure. It would, of course, be incorrect to imagine that such a fact renders the general con-



version of Barley into malt desirable. In the course of the process of malting Barley loses a considerable percentage of its nutritive properties, and what remains is chiefly converted into sugar, but the waste, as found in the malt dust, consists of the plant germs of each seed pushed into life by moisture and heat, dried and cleaned from the malt in heat, and then swept aside to become no longer food but manure. It is a round-about way of making manure, and not a commendable one, but as this waste product remains there can be no doubt that it should be put to the best possible of uses, and that we hope the season may determine it to be useful as manure for Potatoes. It is worthy of note that as far as results are yet visible in growth the malt dust is equal to some high-class patent Potato manures, while it far excels others; and farther, it exceeds all tried with it in producing dark rich-coloured leafage—an appearance that those who delight in a heavy crop like to see. There can be little doubt but that the dust brought into close proximity with the young roots is very speedily assimilated, perhaps in this respect having the precedence of chemical mixtures, but a few weeks more will tell whether the root-growth will be as favourable as the haulm-growth is now.

— THE SEASONS OF SHAKESPEARE'S PLAYS.—At a meeting of the New Shakespeare Society, on June 11, the Rev. H. N. ELLACOMBE read a paper "On the Seasons of SHAKESPEARE'S PLAYS." He found the seasons marked in eight comedies, five histories, and eight tragedies, by mentions of flowers, plants, or other indications. For instance, in the *Midsummer Night's Dream*, though its days were April 29, 30, and May 1, its English flowers were midsummer ones; and the distinction was worth noting between the "blowing" of the wild Thyme, which would be then at its fullest, and the "growing" of the Oxlips and the Violet, which had passed their time of blowing, but the living plants continued "growing." In the *Winter's Tale* the flowers named are all summer flowers, Carnations or Gillflowers, Lavender, Mints, Savory, Marjoram, and Marigold. And so with other plays.

— LILIAM THUNBERGIANUM.—In the garden fronting Mr. WM. COLE'S residence at Feltham may be seen an evidence of what a single Lily bulb will develop into in time, and in cool holding soil. There are now in the clump twenty stout stems, carrying heads of bloom of varying numbers, and a total of just about 500 flowers. Such a specimen would make a noble feature in a group of pot plants.

— ST. JOHN'S NURSERY TRIP.—The annual excursion of the *employés* at Messrs. RICHARD SMITH & Co.'s nurseries, St. John's, Worcester, took place on Wednesday, June 23, when a party of about 400 (including friends) came by special train to London, spending the day in visiting various places of interest and amusement. The firm, with their accustomed liberality, gave a day's holiday to all in their employ, and most thoroughly was it appreciated. The train (the engine of which was gaily decorated with flowers) left Shrub Hill at 5 A.M., arriving at Paddington at 8.40, returning therefrom at 8.30 P.M., and reaching Worcester at 12.20. The arrangements made by the committee (Messrs. COX, AXLETT, and HARBER) gave universal satisfaction, as also did the punctuality observed by the officials of the Great Western Railway.

— THUNDER-STROKE AT ABBERTON HALL.—The *Worcestershire Chronicle* states that on the afternoon of Thursday, June 17, during the prevalence of a heavy storm, the lightning struck the top of a large Elm a little to the east of Abberton Hall, the residence of WM. LASLETT, Esq., stripping it of bark from top to bottom, and carrying away a piece of hard wood, torn from the tree, and over 5 feet long, to the distance of 60 yards, many other pieces being carried to a shorter distance. A man standing under a neighbouring tree was almost blinded by the intensity of the blaze of light attending the electric flash.

— A MONSTER FEAST.—At the opening of the Victoria Extension Docks on Thursday, June 24, the *djeuner* was served by Messrs. SPIERS & POND in a building 750 feet long by 120 feet wide; 200 tables were laid for nearly 4000 guests, and 1½ mile of tablecloth was required. There were used on the occasion 25,000 forks, a ton of knives, 24,000 glasses, 15,000

plates, 5 cwt. of black Grapes, 1 cwt. of Muscatels, 2000 baskets of Strawberries, 100 dozen Apricots, 2000 Plums, 10 dozen Peaches, 10 dozen Nectarines, 2000 Oranges, about 3 cwt. of Cherries, and 120 Pines, &c., making altogether 1000 varied pyramids of fruit. Besides the flowers used in decorating the interior of the building there were placed upon the tables over 1000 flowering plants, which, together with the fruit, were supplied to the firm by Mr. GEORGE BUTT, of High Street, Kensington. An army of 150 cooks and carvers prepared this enormous feast, and 500 waiters served it. The whole of the staff, plant, linen, decoration, and utensils, as well as the varied and ample viands, were conveyed from Messrs. SPIERS & POND'S central depôt at Blackfriars to the docks in twenty-four hours.

— BISHOP GOODENOUGH'S HERBARIUM.—This collection has been presented to the national herbarium at Kew by the Corporation of Carlisle, and proves on examination, we are informed, to contain many interesting and valuable types. It consists mainly of garden specimens, it is true, but many of these appear to have been taken from the types of species described by AITON and others from cultivated plants. The collection was made during the last quarter of the last century, a period of great botanical activity. GOODENOUGH resided for some time at Ealing, and during this period he obtained numerous specimens from Kew and other gardens in the vicinity of London. He was afterwards Bishop of Carlisle, and died in 1827, having been born in 1743. Bishop GOODENOUGH was at one time Treasurer of the Linnean Society, and his botanical reputation rests upon some papers contributed by him to the *Transactions* of the Society. His most enduring work of this kind is that entitled "Observations on the British Species of *Carex*," read before the Society in 1792, and published in the second volume of the *Transactions*, pp. 126–211. In the third volume of the same publication is his paper, of 150 pages, on "British Ferns." In 1793 Sir JAMES EDWARD SMITH, then President of the Linnean Society, dedicated the genus *Goodenia* to the Rev. Dr. GOODENOUGH. In addition to the garden plants mentioned, GOODENOUGH'S herbarium contains, among other things, the types of SOLE'S British Mints, a complete set of JAMES DICKSON'S *Facsimile of Dried Plants*—one of the first publications of the kind—and also the types of the plants figured in SHAW'S *Travels*; or *Observations relating to Several Parts of Barbary and the Levant*. There were two editions of this curious and interesting work; the first appeared in 1738, and the second in 1757. In the herbarium library at Kew is a copy of the second edition.

— BIG DECIDUOUS TREES IN AMERICA.—In CASE'S *Botanical Index* for April, the dimensions are recorded of several large deciduous trees growing in Indiana. The largest is a Sycamore in the White River bottom, not far from Worthington. It is said to be 48 feet in circumference, and to have a solid trunk. At a height of 25 feet it branches into three or four limbs, one of which is estimated at more than 5 feet in diameter. There are also some gigantic Chestnuts in Jackson County; the trunk of one of these measures 22 feet in circumference at 2 feet above the ground, and the height to the first limb is about 70 feet.

— TREES IN THE STREETS OF LONDON.—At frequently recurring intervals there is an outcry for trees in the streets of London, and we are as regularly reminded of the contrast Paris presents in this respect. We have more than once recorded our opinion that, most desirable as the judicious planting of trees in our towns is, there are only certain thoroughfares in London and its vicinity where trees would add to the beauty of the roads or to the comfort of the inhabitants or pedestrians. Were the principal streets of London even much wider than they are, we should not recommend planting them indiscriminately with lines of trees. There are many reasons why trees in many streets of towns of this country would often prove a nuisance rather than a benefit or a pleasure. In the first place the climatal conditions are so different from what they are on the Continent. Here we rarely get week after week of cloudless sky, but fleeting clouds and frequent showers instead. Hence we maintain there is

not the same need for shade in our towns, and it would be better not to obstruct the little sunlight and heat that reaches our roads and houses. Again, in consequence of the humidity of our climate, trees usually hold their leaves later in the autumn here than on the Continent, which would keep the houses and roads dark and damp at a season when dry roads and glimpses of sunshine are very welcome on account of their rarity. In a broad and general sense, then, planting in the streets and open spaces of the towns of this country should be carried out with discrimination and with a view to embellishment rather than the providing of shade, and for that purpose groups of trees and single specimens would, under many circumstances be found more effective than a row or rows of trees on each side of a street. Given a very broad straight or curved street of imposing buildings with ample space between the footways and the road, and you have the most favourable conditions for an avenue of trees. Planting trees in towns, especially in large towns, in such a manner that they shall flourish, is necessarily a costly operation, and false economy in the outset is eventually wasteful and productive of a state of things worse than a treeless street. The pretty seaside town of Eastbourne in Sussex, offers some instructive examples of both judicious and injudicious street planting.

— VITALITY OF THE SEEDS OF *PINUS CONTORTA*.—Some of the Pines, among others the one named above, hold the unopened cones of many successive years, so that seeds varying in age from one to perhaps ten years may be collected from one tree at the same time. There are specimens in Kew Museum illustrating this curious phenomenon. How long these seeds retain their vitality, whether those six or eight years old are as good as those one year old, whether the older ones lose their germinative power quicker than the younger after removal from the parent tree, are questions which cannot be satisfactorily answered without further investigation. Mr. SARGENT, of the Harvard Arboretum, communicates the results of one imperfect experiment with the seeds of *Pinus contorta* to COULTER'S *Botanical Gazette*. In 1874 Dr. ENGELMANN collected in Colorado a branch of this species, to which were still persisting the closed cones which had ripened in the years 1865 to 1873 inclusive. In the spring of last year the branch was sent to Harvard Arboretum, in order that the vitality of the seed might be tested. All the seeds yielded by the cones were planted on May 17, 1879, those of each year in a separate pot. They all received the same treatment, and the final examination was made on December 13, 1879. The following is the result:—

- 1865—Eighteen seeds from three cones, none germinated.
- 1866—No seed from the only cone.
- 1867—No cone for this year.
- 1868—Twenty-four seeds from two cones, none germinated.
- 1869—Twenty-four seeds from two cones, four germinated.
- 1870—Forty-five seeds from two cones, four germinated.
- 1871—Six seeds from one cone, two germinated.
- 1872—Nineteen seeds from two cones, five germinated.
- 1873—Nine seeds from one cone, none germinated.

This experiment does not prove much beyond the fact that seed ten years old germinated. Possibly some of the seeds were never perfect, and probably some of them would germinate after lying some time longer in the ground.

— VACCINIUM STAMINEUM.—Although more than a century has elapsed since this lovely North American shrub was introduced to British gardens, it is far from common at the present time. Many catalogues do not mention it, and yet it is a very beautiful and easily cultivated plant. Some specimens in a peat border at Kew were a perfect picture a week or more ago, their charming white, saucer-shaped blossoms being produced in the greatest profusion. The species attains a height of about 3 feet, and is a somewhat diffuse shrub with ovate-lanceolate leaves, green above and glaucous beneath; it would make an elegant pot plant.

— DESTRUCTION OF FRUIT TREES BY FROST.—From the German gardening journals we learn that the cold of the last winter was exceedingly destructive to fruit trees. No similar calamity has befallen Germany, we are told, since 1829. The extent of the damage has exceeded all estimates and fears. Pyramidal Pear trees are nearly all destroyed, Apple trees to a less extent, and unprotected Peach and Apricot trees were totally annihilated. All the healthiest trees

of the Mirabelle and Gage Plums are also dead. The trees in enclosed sheltered gardens have suffered most, in fact few trees occupying open, exposed situations were completely killed. It is sad to reflect that the fruit growers pruned and cleaned many a corpse, for the frost rarely killed the crown, and there was often sufficient sap left in them to enable the buds to burst. Usually from the middle of the trunk downward, to within 3 or 4 inches of the ground, all life was extinguished. Where the trees are not absolutely killed they are so much injured that it is assumed they must gradually die off, and years must elapse before the former condition of things can be restored. This is said to apply to the whole of the south and west of Germany and the north of France. Ornamental trees have suffered to an almost equal extent. Wellingtonias are wholly destroyed, and such trees as *Taxus*, *Thuja*, and in some places even Pines, are injured. In some places—Maugau, for example—not more than one-sixth of the Apple trees, it is stated, remain uninjured, and nurserymen have lost nearly the whole of their stock.

— *COLLETIA SERRATIFOLIA*.—At Kew some specimens of this interesting Chilean shrub are flowering profusely. It seems to be the hardiest member of the genus in cultivation, for whereas several species under similar conditions to the subject of this note have been badly injured or altogether killed by the two last winters, this seems to have passed through the ordeal without experiencing any harm whatever. In the *Journal of the Horticultural Society*, vol. viii., p. 59 (1853), it is spoken of thus:—"In the garden it forms a moderate-sized deciduous shrub, and is nearly hardy, living well out-of-doors when trained against a south wall. It increases by seeds and cuttings, but unwillingly. The flowers appear in May and June in great abundance, and being remarkably sweet-scented, give the plant much value either for growing in pots or for planting against a conservatory wall." It has opposite, shining, bright green, serrated leaves, and axillary, many-flowered clusters of small greenish-white blossoms. A figure of this plant was given in the *Gardeners' Chronicle*, viii., 1877, p. 619.

— *ROSA MICROPHYLLA*.—The single form of this beautiful Rose is now flowering freely at Kew, and it appears to be somewhat rare in gardens, for we do not remember ever having seen it elsewhere. The double-flowered variety was introduced to this country from China a little more than half a century ago, and as soon as it produced flowers was figured both in the *Botanical Magazine* and the *Botanical Register*, but apparently no figure of the type plant has ever been published. It is a most distinct and desirable species, and moreover perfectly hardy, having stood for several years in the open border without the slightest protection, and even the two last severe winters do not seem to have injured it in the least. In the *Botanical Magazine* it is stated, on CURTIS' authority, that it (the double-flowered form) "is hardy enough to bear our mild winters without protection; but with very sharp frosts it is liable to be destroyed in the open ground, a circumstance owing to tenderness of its roots: for when budded on the Dog Rose stock it becomes much more hardy." The Kew plant, which was originally introduced from Japan, was received from the St. Petersburg Botanic Gardens some years ago under the name of *R. chlorocarpa*—a name given to it under the belief that it was distinct specifically from the Himalayan *R. microphylla*. It forms a neat bush, with pretty light green leaves, made up of from nine to fifteen small leaflets; the prickles seemed confined to the base of the leaf-stalks, where they appear in pairs; and the short, barren shoots bear a considerable resemblance to some species of *Xanthoxylon*. The flowers are large, bright rose in colour, and the large, almost globular fruits, covered with stout prickles, are light green when fully ripe, and exhale a very decided Pine-apple odour.

— SOUTH AUSTRALIA.—Dr. SCHOMBURGK'S annual report of the Botanic Garden for 1879 is to hand, and contains, as usual, matter of much interest. The average annual rainfall at Adelaide, it appears, is only 21 inches. The summer, January and February, was very hot and dry, the thermometer in the shade fluctuating between 95° and 106°, while on January 20 it rose to 113° in the shade and 172° in the sun, the highest temperature yet recorded in the

colony, and within 40° of boiling point! This great heat proved, as might be expected, very fatal to many plants. Elsewhere in the report mention is made of the short duration (sixteen to eighteen years) of the native trees and shrubs planted in the garden, such as *Melaleucas*, *Acacias*, *Grevilleas*, *Hakeas*, &c. A similar result is remarked in the case of *Cupressus macrocarpa*. Dr. SCHOMBURGK suggests that the reason for this quick decline may be found in the quick and luxurious growth of these shrubs when moved into better soil than that of their native sterile localities. No such short term of existence has been noted with similar plants under greenhouse cultivation, which in some respects must offer more favourable conditions of life.

—LAST WINTER IN BELGIUM.—The *Bulletin d'Arboriculture* records the following losses among Conifers:—*Araucaria imbricata*, completely destroyed; *Cedrus atlantica*, *Deodara*, *Libani*, all the young plants in the nurseries destroyed; *Cryptomeria elegans*, killed; *Podocarpus*, all species killed; *Prumnopitys elegans*, killed; *Taxus hibernica*, killed in most places; *Taxodium sempervirens*, killed to the ground; *Thuja gigantea*, injured; *Wellingtonia*, greatly injured; *Retinospora obtusa*, killed; *R. pisifera*, unhurt. The following have been hurt but will recover:—*Abies lasiocarpa*, *nobilis*, *Douglasii*, *Nordmanniana*, *Pinsapo*; *Biota orientalis aurea*, *Cryptomeria japonica*, *Cupressus Lawsoniana*, *Juniperus sinensis*, *Cephalotaxus*, *Chamaecyparis decussata*, *Taxodium distichum*, *Taxus baccata*.

— OLIVE CULTURE IN THE CAPE COLONY.—A Cape Town correspondent kindly sends us the following cutting from the *Cape Times*:—

"The suitability of the soil and climate in many parts of this colony for the cultivation of the Olive has often been noticed, both in our own columns and elsewhere. Colonists are not prompt to make experiments in new products, but an experiment having been successfully made, they may not be slow to follow a good example. In the vicinity of Montagu, we are informed, the experiment of Olive culture has been made with eminent success. The trees which have been planted grew luxuriantly, and the soil, now well tested, has been declared admirably adapted for their nourishment. An interesting experiment is further being made which, if as successful as it is confidently expected to prove, will undoubtedly extend the cultivation of this product until it assumes very considerable proportions. On the wild Olive tree, indigenous to this country and widely distributed, the cultivated Olive (from imported stock) is being grafted, with what result is not yet reported, but there is every reason to hope that the result will be wholly satisfactory. Messrs. BARRY & NEPHEWS, who are energetically promoting the Olive culture about Montagu, have imported a neat press designed to press the oil from the berry, and also for use as a wine press. Trials of this appliance are to be made this season, and we shall be glad to hear the result. A practical impulse to the steady production of olive-oil would be of no mean service to a colony so hungering, as is ours, for an increased variety of industries."

—and, we may add, in view of recent legislation, so anxious to prevent the importation of useful plants!

— HORTICULTURAL WIREWORK.—We note that those well-known workers in wire, Messrs. J. J. THOMAS & CO., Edgware Road, have extended their sphere of operations, by opening a new set of show rooms at 87, Queen Victoria Street, E.C., where they have placed on view an extensive assortment of all kinds of wirework, and various other garden appliances.

— "THE JOURNAL OF HORTICULTURE."—Our old friend "The Journal" begins its third series with the present issue. Like its contemporaries, it has grown bigger and better with age. We are not sure whether we did not like the old title of "The Cottage Gardener" better than the more pretentious one now adopted. At any rate, we are glad to see the old familiar title retained, if only as a sub-heading.

— KOCH'S "WOCHENSCHRIFT FÜR GÄRTNEREI UND PFLANZENKUNDE."—We are glad to learn that a complete copy of the above serial has been secured for the Kew Library—the copy, we believe, that belonged to the editor, the late Professor KARL KOCH. This publication, although more horticultural than botanical in its scope, contains descriptions of many species founded upon garden

plants which have not been taken up elsewhere. Several libraries in this country contain very incomplete sets of this *Wochenschrift*, but not one to which we have access previously possessed a complete copy.

— THE GLOBE LAWN MOWER.—Under this title Messrs. RANSOME, SIMS & HEAD, of Ipswich, are about to introduce a machine for which they claim certain important advantages over any other machine that has yet been sent out. They claim that it will do any kind of cutting, *i.e.*, cut longer grass than most English or American machines, while at the same time, and without any alteration of the working parts, it will cut as close as the closest set of any ordinary lawn-mower, leaving the cut surface as smooth and as even; and that in this respect they do not claim more than is due, we are satisfied from a sufficient trial made at Lillie Bridge on Wednesday last. The machine is a strongly constructed and durable article, but, like all other machines worked by an arrangement of cogwheels, it is not so easy to drive or pull as those with the chain gearing. On the other hand, machines constructed on the former principle are not so liable to get out of order as the latter, and with many this is a more important point than the difference of a few pounds in the draught. The cutting barrel of the Globe Mower has knives unlike those of any other lawn mower, being nearly three times the thickness of the ordinary knives in use, and having the steel cutting edge rolled, together with the wrought-iron body, which is bevelled at the back. The weight of the knives, four in number, gives momentum to the barrel in working, while the bevelled back reduces the friction on the plate below, and the cut is clean without any pulling or tearing. Each bearing of the machine is adjustable, each part of the gearing is covered in on every side, to prevent the ingress of dirt as much as possible; and every part can be got at without deranging any other. Every part of the machine is numbered and kept in duplicate, so that in case of breakage it can be easily replaced. It was a 14-inch machine that was tried at Lillie Bridge, and the work done was all that could be desired, cutting rough and smooth grass in the most satisfactory manner. For all-round work we consider the Globe Mower a machine of general utility.

— EASTBOURNE FLOWER SHOW.—This exhibition will be held in the grounds of Compton Place, on Wednesday, August 11.

— THE WEATHER.—General remarks on the weather during the week ending June 28, issued by the Meteorological Office, London:—The weather during this period has been changeable, with heavy thunderstorms over our Midland and Eastern Counties on the 22d, 23d, 24th, and again over the more southern parts of those districts on the 25th and 26th. A good deal of fog at the Scotch stations on the 22d and 26th. The temperature was a little above the mean in Scotland, but below it in Ireland and England; the difference, however, slight in both cases. In "England, N.E.," "Scotland, W.," and some parts of the Midland Counties the highest of the maxima occurred on the 22d, but at the more southern stations the highest readings were registered towards the close of the week. No very low night readings are reported. The rainfall was a little less than the mean in "Scotland, E.," "England, N.E.," and "England, S.W.," and about equal to it in "Ireland, S.," but more than the mean in all other districts. The excess was considerable in the Midland Counties, where the aggregate amount is very much swollen by the heavy falls which accompanied the thunderstorms of the 22d, 23d, and 24th. Very heavy rain occurred locally in the east and north-east of London on the evening of the 25th. Bright sunshine was more prevalent in the Midland Counties, "England, S.," and "England, S.W.," than during last week, the percentage of possible duration varying from 31° in the two first-named districts, to 48° in the last, but in all other places a very decided falling off is reported, the percentage in "England, N.E." and "England, N.W." being only 19°. The wind at first was westerly in the south, and very variable elsewhere. A decided northerly current set in over our western stations on the 26th, subsequently backing to south-west and south, and blowing strongly in the extreme west and north-west on the 27th. Westerly breezes were general on the 28th.

Home Correspondence.

Lettuce.—There is scarcely another edible which is cultivated in a natural way that occupies so much time and attention throughout the year as this. This is in a great measure accounted for by reason of its not lasting long in perfection after it has attained maturity, and also from the fact of the supply required being almost continuous throughout the year. The Cos section, which forms the principal ingredient in salads at all seasons, is, as a matter of course, much more extensively cultivated than the other, the Cabbage section of Lettuce, which is chiefly required for making soup and for stewing purposes. In private establishments the Lettuce crop may with propriety be described as being strictly an intermediate one from the fact of it being grown almost universally in intervening spaces between other crops, which differ according to the period of the year. We make it a rule to have one general early crop planted in beds between lines where early Peas are to be sown, and most of the succeeding successional crops are produced under similar circumstances. In order that Lettuces may attain the highest state of excellence, they need to be abundantly watered in dry weather, and should always be grown in soil of the very best and richest kind, so that the growth may be rapid and continuous in order to make them crisp and tender. The spring crop of Lettuce is one which in general demands special attention and concern, and upon which considerable trouble is bestowed; for this crop we make a point of sowing the seed about August 20, and on this occasion confine the sorts to a superior strain of the old Black-seeded Brown Cos, which we possess and perpetuate by seed every year; and we also employ the Stansted Winter Cabbage variety, as we find these kinds to endure the climatal changes to which they are exposed and to withstand frost better than any others. Therefore we select these in preference to any other kinds for this particular period. But we further recommend, even under such circumstances, that a provision likewise be made to meet any emergency by having a few hundred plants pricked out where it will be convenient to protect them with glass, in the event of intensely severe frost or other inclement element prevailing, which is likely to be destructive amongst them. In the first instance, as soon as the plants are ready we make a practice of planting out permanently on the place selected—which should be a border facing the south or some other sunny place which inclines to the south—as many of the best of the plants as may be deemed to be requisite. We invariably employ the intervening spaces between lines where early Peas will be sown at 6 feet apart; after the lines for these are marked out, five other lines are made 12 inches apart: those on either side next the Peas are filled with Stansted Winter Cabbage Lettuce, and the three remaining with the Brown Cos, at 12 inches apart all ways. After they are planted the surface soil is made even, so that rain and moisture may escape from about the plants freely. A subsequent sowing of seed is made about the middle of February—these plants require a little nursing; the next about the middle of April, out-of-doors, and afterwards at intervals of about a fortnight, until July 24 is reached, which completes the cycle of the year. There are many kinds of useful Lettuce possessing sterling qualities for summer use if they are well grown, but we prefer Wilmot's White Cos and Brighton or Paris Green Cos for salad, and Victoria Cabbage for stewing purposes. None of these kinds require tying up, which is a slight advantage; but independently of this we do not deem them equal to a pure kind of Blackseeded Brown Cos, providing it be properly blanched at any season. In order to secure an early supply to come in before those planted out in a natural way, we have a certain area set apart, so that movable lights can be placed over it whenever necessary. The plants are first put into this place moderately thick, and with proper attention to the ventilation, &c., afterwards, an early crop, which is most esteemed, is most assuredly secured. *G. T. Miles.*

—To get Lettuces in spring that are crisp and juicy is a very easy matter, but to grow such during the summer months requires some care and attention, for should the weather prove hot they must have not only water but shade, the latter of which may be afforded in a variety of ways. A good plan is to sow on a border facing north-west, as then the fierce heat of the sun is kept off the greater part of the day, and the plants are not distressed—a great point in the cultivation of Lettuce, for, if they flag, the check not only drives them up to seed, but hardens the tissues and makes the leaves bitter, tough, and indigestible—a condition, it need hardly be remarked, in which they are not only unpleasant but unwholesome for food. What injures young Lettuces more than anything else at this season is the transplanting, which should be avoided, for, however carefully it may be done, it destroys the tap-root, which root is almost

indispensable during a dry time, as it goes down to a great depth in quest of moisture, whereas others that are formed after this is broken feed near the surface, where they feel any change that may take place in the weather. If the seeds are sown in drill rows at a proper distance apart there is no necessity to transplant, as the plants may be thinned out and allowed to stand, and when this is done it will be found that they rarely "bolt," but grow to a great size and turn in with close hearts which blanch without any tying. Should the ground be dry at the time of sowing, the best way is to draw the drills over-night and water, when in the morning the soil will be in a fit state for receiving the seed, which should be scattered thinly and lightly covered with a sprinkling of fine earth, for should the plants be below the general level all the better, as then they can have water or liquid manure given more readily: this latter is a great help in growing good Lettuces. In cases where there are no shady borders at liberty on which to sow, it will be advisable to have them between the rows of Peas, but when this is done it must be at wide intervals, or the Lettuces will not have sufficient light and air to keep them from drawing. I have been very successful with them in beds, where I could shade with a few branches of evergreens stuck in the ground; and this is a plan I can strongly recommend, as the branches just break the solar rays sufficiently, and the plants being near together may be kept watered without the expenditure of much time or trouble. As a summer Lettuce I know of none to equal the Paris White Cos, which is tender and delicately flavoured, and therefore makes a fine salad. To stand the winter there are none to equal the old White-seeded Bath Cos and Hick's Hardy Green, both of which are sterling kinds that may always be depended on. These should be sown about the middle of August, and the best and strongest plants drawn from the bed and planted nearly close to the foot of a south wall, or on a warm sloping border where they will be safe for the winter, and come in for cutting during April and May. A later planting made from the same bed will succeed these, and carry on the supply till the spring sown ones are ready for use. *J. S.*

Veronicas.—Your correspondent, Mr. Dod (p. 816, vol. xiii.) will, I have no doubt, find that most of his thirty cultivated Veronicas are forms of the four following species, all of which are perennials, with dense racemes of blue flowers:—

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|---|--------------------------|
| 1. Main stem ending in a raceme. | |
| Leaves green, acute, sharply toothed. | x. <i>V. longifolia.</i> |
| Leaves green, much less sharply toothed (in botanical language incised-crenate) | 2. <i>V. spicata.</i> |
| Leaves shaped as in the last, but covered with white tomentum | 3. <i>V. incana.</i> |
| 2. Racemes produced from the axils of the leaves, never terminal on the main stem | 4. <i>V. Teucrium</i> |

—of which latter *latifolia*, *austriaca*, and *prostrata* are not more than varieties, *prostrata* marked by its dwarfer habit, and *austriaca* by its pinnatifid leaves. *J. G. Baker.*

Fruit Growing at the Cape.—At p. 524 of your last volume a correspondent gives a description of fruit growing at the Cape, and ends his notes thus:—"Any persons not farmers, but with gardening tastes, might embrace the liberal offers of the Cape Government through their London agent, and form at the Cape as healthy and happy a home as could be had in any colony of the empire." Would your correspondent kindly say what is the lowest amount of capital necessary, in his opinion, for a working gardener to go out with, and what would be the most necessary things for him to take out, say in seeds and gardening tools, and would he (the emigrant) be located near a town where he could market his surplus produce, and what would be the best time of the year to go out from England, supposing the man had a small family? The desired information I am sure would interest many of our overstocked class now turning their attention to emigration. *H. W. H.*

Sorrel.—In Russia Sorrel forms one of the most important herbs in the kitchen garden, and a *puie* of Sorrel, or Sorrel cooked in the same way as the French prepare Spinach, and dished with poached eggs, are favourite forms for placing this vegetable on the luncheon or dinner-table. During the just past spring we have largely used the common Sorrel gathered from the fields, it being especially palatable with roast or boiled pork: to the exceeding richness of this meat the strong acid flavour of the Sorrel forms a delightful ameliorative. In preparing Sorrel for the table there are two important points to be borne in mind—the first, that only the young, fresh leaves have a pleasant flavour, and also that, to soften the very strong acid of the plant, a portion of sugar should be incorporated with it in the cooking. To those who have not yet eaten Sorrel, a word or two as to its culinary preparation may be useful. The leaves should be gathered one by one, short—that is to say, without

any of the stem. If necessary, it must be well washed before being put into the saucepan; at the bottom of the pan there may be placed about half a pint of boiling water—this, however, is not absolutely necessary, as Sorrel is one of those vegetables easily cooked in their own juices. When the Sorrel is thrown into the saucepan a little salt should be added; it will be quite tender after from five to ten minutes' boiling. Like Spinach, it requires thorough straining and pressing out of all water, after which it should be chopped fine and have mixed with it from two to three or even four tablespoonfuls of refined sugar, and a lump of butter about the size of a Walnut, after which it should be replaced in the pan, or put between two plates in the oven for a few minutes, that it may be perfectly hot when served. *Croûtons*, small squares of bread as large as dice, fried in butter or salad oil to a light golden colour and perfectly crisp, may be dished in it. If to be served with poached eggs the Sorrel should be laid neatly on slices of buttered toast, each mound being sufficiently large to receive one egg. *T. S. Ferrol.*

Double Pyrethrums.—No one seeing the magnificent flowers of these can fail to be struck with their beauty, for not only are they large and handsome but they are well formed, varied and brilliant in colour, and in all respects quite equal in appearance to Asters, which they greatly resemble, except that they are more refined and not so coarse in the petals. As border plants they are quite unrivalled, for not only are they exceedingly free, but they come into bloom at a time when they are of great value, which is during May and June, a season of the year when gardens have not much in the flower way outdoors to render them attractive. To think of raising these Pyrethrums from seed is a mistake and causes disappointment, for although one or two fairly good ones may be got in a batch, the major part are sure to be comparatively worthless, the tendency among them being to come single. The cheapest and best way therefore is to start with a dozen or so of good sorts, which may be had in pots from any nurseryman. If got now and planted out at once they will establish themselves by the autumn and yield a quantity of blossoms next year. To grow Pyrethrums well they must have deep rich soil, for of all plants I know of none have, for their size, so much root, as may be seen on taking them up, when it will be found a difficult matter to shake the earth from them, which shows unmistakably how great their requirements are in the way of food. It is advisable, therefore, if they are to be planted singly in borders, to dig holes a couple of feet or so across, and the same in depth, and in passing the soil back to work in with it some short decomposed manure, which should be kept towards the bottom, that the feeders may be encouraged to make their way there, where they can find moisture during dry weather. If intended to be grown in beds or masses, in which they may produce a fine effect, the ground should be thoroughly prepared by trenching, when it may be enriched at the same time. In spring, as soon as the plants are fairly on the move and pushing up their flowers, it will be found a great help if they are well soaked with liquid-manure, repeating the same later on; but before doing this it is advisable to mulch round about them, so as to shade the soil and prevent evaporation by keeping it cool. Favoured in this way, the difference made in the size and appearance of the blooms is surprising, as they come large and full, and hold their colour well under bright sun, instead of fading and losing it as they do when they are distressed through suffering from an insufficient supply of moisture at the roots. As regards sorts the following are, according to my judgment, superior to any, they being selected from numerous others side by side, where they have the same advantages as to soil, &c., and are treated exactly alike:—Captain Nares and J. N. Tweedy are two very fine crimsons, with large bold half globular flowers, and Duchesse de Brabant an equally well-formed rose; Cleopatra is a rich buff; Carnea plena, pale; and alba plena the best white. Gloire d'Italie, Madame Gilliard, Nemesis, Paul Juarez, and Maxima plena are all good and distinct, and such as are sure to give satisfaction. In cases where it is desired to increase any of these double Pyrethrums, their propagation may be easily effected by division, the best time for doing this is just as the plants are starting, when by shaking them out of the soil they may be pulled apart with a certainty that each portion will grow. *J. S.*

Spinach.—It is worth knowing that the round-leaved variety, called summer Spinach, is quite as hardy as the prickly or winter Spinach. Last autumn the slugs thinned out our crop of the prickly variety intended for winter supply to a much greater extent than was desirable. Having some seed of the round variety left from the spring sowings, we sowed two beds of it, one of them in a low situation much exposed to the east winds. Although the winter has been so severe, we have picked excellent leaves from

these two beds, in fact much finer than the prickly variety ever produces, not a plant having suffered apparently. *G. Dugell, Winchmore Hill, N.*

The Alexander Peach.—This new American, introduced to us by Mr. Rivers, has again been foremost to ripen in an unheated orchard-house. It ripened before the 20th of this month, which, considering the last season's wood, is no bad test of a Peach. It was of fair size, but deficient in colour. Several of the other well known very early varieties show colour at this date, but, as yet, none have matured their fruit. The other new American, the Amsden June, is not so forward, and I consider, judging from the experience of three years, that the Alexander is one of the very best very early Peaches. The only doubt I have at present is, whether it is prolific or not. Does any one know? *Thos. C. Brehaut, Richmond House, Guernsey.*

Lilium giganteum.—A plant of this fine Lily growing among dwarf Roses in a south border here was cut down two seasons by spring frosts. Among evergreen shrubs the plant might perhaps have escaped as the shrubs not only ward off the frost to a great extent but also protect the plant from the sun's rays while it is in a frozen condition. However, I took up the plant last summer and potted it, and early this spring, when it began to grow freely, I shifted it into a small tub. It has since in a north house thrown up a noble spike, 6 feet high bearing nine flowers. *Geo. Duffield, Winchmore Hill, N.*

English Gardeners.—I am very pleased to see this matter taken up by Mr. Mackay, but allow me to inform him that I had no wish to disparage nurserymen, as the tone of his remarks (p. 816, vol. xiii.) seems to imply. For my part I fail to see how it would injure a nurseryman doing a legitimate trade if did he not fill a single place; I think it would be rather to the contrary, judging from the amount of stationery and stamps expended by them in their endeavours to supply an employer with a man immediately they hear of a vacancy. Nurserymen must live, and nurseries are a necessity so long as gardens exist. There is one point on which we agree, and that is, that the evil exists in what he terms the "muff" element and low-priced men, but he does not explain how this element got into the craft. I venture an opinion that in nine cases out of ten the one is but a slightly advanced stage of the other; a man gets a place for which he is totally unsuited, through the fact of his accepting a low salary, and to make up for his want of ability and to keep up his charge to a certain standard he is obliged to have frequent recourse to a nurseryman. Now a good gardener tries to obtain a maximum result at a minimum cost from his charge, and makes the most of whatever is at hand in many things that a man not bred to his profession would never dream of utilising; and there are hundreds of such working in comparative obscurity and who seldom trouble a nursery save for a few seeds. Given these two applying to a nurseryman for assistance, which is the most "suitable" man in his estimation? It is hardly fair to the nurseryman to suppose he would give the gardener the preference. It is in such cases (and there are plenty of them) that a self-supporting association of gardeners, such as I mentioned in my last note, would be a boon, not only to gardeners but to employers also, for if such were formed and adhered to a code of rules, with a certain standard of merit for its members, I think that the evil which Mr. Mackay admits in the shape of "muffs" might in time be weeded out, or at least kept within bounds. *J. W. Chapman.*

Propagating the Fuchsia.—A rather novel [or rather, unusual] way of propagating the Fuchsia, which is practised among cottagers in the West of England may, interest some readers. The *modus operandi* is as follows:—In the autumn, after the frost has destroyed the foliage, the wood of the present season is cut off close to the ground and laid like a sheaf of corn in a trench a foot deep. The bundle is covered with a few inches of soil, and here it remains till spring, when a multitude of young shoots may be seen pushing their way through. The soil is then carefully moved, and with a sharp knife a cut is made each side of a joint, and the result is rooted plants enough for the parish. The old stool throws up more vigorously than before, to be served in the same way the following autumn. *E. C.*

Campanula pulla.—This beautiful dwarf Harebell is finely in flower at the base of our rock garden, and the charming effect produced by an oblong patch, 1 foot by 3 feet, can scarcely be imagined unless seen. It succeeds admirably in a close retentive clayey loam, containing, I should guess from its rusty appearance, a large percentage of iron. So retentive is the soil, that during the wet summer of 1879 the patch was occasionally immersed, and afterwards remaining partially covered for several days, during which time it grew rapidly. These plants, turned out of 60-size pots

fifteen months ago, now cover the space mentioned above, and the greatest surprise to me is, that the plants should have luxuriated in such a soil. *T. D. Hatfield, The Gardens, Southwood, Bickley, Kent.*

Cauliflower, Veitch's Extra Early Forcing.—The firm whose name this Cauliflower bears deserves the thanks of all gardeners for having introduced so valuable a vegetable. It is quite an acquisition, and for earliness, which is its great recommendation, I have no hesitation in saying is unsurpassed. When I state that from seed sown January 12 we cut our first head on May 28, it will at once be seen that, except for the sake of having two strings to one's bow, autumn sowing for an early crop is unnecessary. The heads are rather small but very close and white, the right sort for the dining-room, the plant also is of a very dwarf and compact growth, and may be planted from 12 to 15 inches apart each way. Those who have not given it a trial this season would do well to make a note of it, for in all probability it will become quite as popular as the Autumn Giant. *J. Horsefield, Helyesbury.*

The Cuckoo-spit Insect.—This insect (figured in the *Gardeners' Chronicle*, 1842, p. 508, and here reproduced—fig. 7) is unusually abundant this season, and, as will be seen by our Notices to Correspondents, has been especially injurious to the young shoots of Osiers, several acres having in some places been attacked and much injured by the shrivelling up and distortion of the shoots and young leaves. In my own garden they have been very abundant on the Chrysanthemums, injuring the tips of the shoots, the pale green insect within the froth or cuckoo-spit, as it is vulgarly believed to be, rapidly growing in size and acquiring rudimentary wings and assuming the perfect state in a few days afterwards, when it leaves the froth and may be seen as a rather pretty insect, with four pale

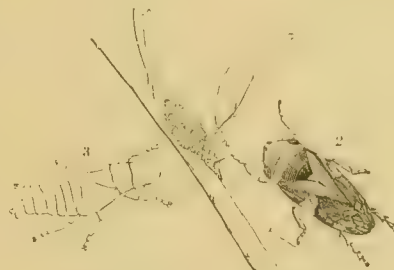


FIG. 7.—THE CUCKOO-SPIT INSECT.

spots on its wing-covers, about the size of a largish grain of Wheat, sitting in the fold of the leaf near which it has previously been enclosed in the froth. It is now extremely active, springing to the distance of many inches on the slightest motion, so that great caution is necessary if it be desirous to catch and kill it. The frothy matter, it need scarcely be said, is the fluid excrement of the insect, which has done nothing but suck the juices of the plant for its food. *I. O. W., Oxford.*

Trees for South Africa.—A correspondent, who lives at Hanover, South Africa, which is 550 miles N.E. by E. of Cape Town and 250 miles due north of Port Elizabeth, on high ground between 8000 and 9000 feet above sea level, desires to establish some trees, with a view to mitigate the effects of drought, from which they suffer much. In a dry season the grass perishes, and the sheep are fed on "the bush," which strikes deeply down and never entirely fails. My correspondent wishes to know if I can send him seeds of any trees that will succeed, as if he can only grow a bit of firewood it will be a boon. In the winter they sometimes get three-quarters of an inch of ice in a night, but on clear days in winter it is warm and pleasant and it is generally clear. He suggests that some quick-growing Firs would succeed, but I expect that their winter is too mild for any of the Coniferae generally grown here, such as Spruce, Austrian, Larch, or Douglasii. Perhaps Wellingtonia might do. Can you oblige me with information, or is there any office in London connected with the colony to which I can apply? *William Foster, Stroud.* [Some of the Australian Acacias would answer the purpose. The proper persons to apply to are the directors of the Botanic Gardens at Cape Town or Porth Elizabeth. Eds.]

The Stopping of Laterals on Grape Vines.—Although two excellent letters have emanated from my inquiry as to the real benefits derivable from the process of stopping the laterals upon Vines, I fear that little of a really practical nature has thus far resulted. My own theory, or to speak more properly,

the basis of my own practice, has been that explained so lucidly by Mr. Fish, somewhat in opposition to Mr. Hinds. Before every consideration of size, however, as regards the leaf, I place its texture or quality. If you can insure a large leaf of "leathery texture," its size is but a too evident gain. On the contrary, young gross leaves, thin in texture, such as are produced upon gross sappy young shoots, illustrate all that Mr. Hinds has advanced; they never did or will produce first-class fruit. But to return to my original enquiry. It is based upon two primary considerations, viz., 1, reciprocal root formation; 2, texture, as already suggested. In practice, therefore, the question is, shall we attain to these ends better by stopping each lateral immediately it is seen where the flower-spikes are, or by so permitting each to grow till the two leaves beyond each flower-spike have grown into form and moderate size also? What I maintain is, that the former practice is one of error. By following the latter plan we assist at once the formation of uniformly fine leaves and beneficial or reciprocal root-action. By pinching the points of the laterals out as soon as possible after the flowers are seen we necessarily check the flow of sap in that direction, and the leaves which remain have to enlarge, increase, and develop themselves under these conditions. Such early pinching back proves equally detrimental to quickened root-action. On the contrary, by permitting the shoots to move, and the two leaves beyond the flowers to form—having a stronger shoot and foot-stalk to work upon—we materially enlarge and strengthen the leaves, whilst we place an early and powerful incentive on root activity. And whatever Mr. Hinds may advance about the Vine not rooting until the wood is ripening, depend upon it those Grape Vines alone which root early and readily win the race in so far as finely grown leaves and their concomitant finely finished berries and bunches are concerned. Compare the general practice of stopping laterals immediately it is seen where the fruit is to be with all other pruning practices. It may also be remarked that no other fruits are subject to such a check upon growth as is this. *William Earley.*

—An instance similar to that noted by Mr. Fish came under my notice some time ago, where an old Vine was cut down, and failed to push a young cane till the third season. I could assign no other cause than that there were no dormant buds so near the base, and that time was required to form them, especially as the young shoots (there were several of them) were all pushed from the new bark formed over the wound. As to the best time for cutting back old Vines, although I have no wish to uphold my opinion in the face of such an eminent horticulturist as Mr. Fish, my experience proves (from results obtained) that after the Vines have started is the better time, by disbudbing the rod to the lowest or best placed break, and directly it begins to push ahead to cut back. The main objection to this method is bleeding; but if the operation is performed in a judicious manner little of that will follow; or, if it does occur, a hot iron and a little styptic will cure it. *J. W. Chapman.*

—There is a wide-spread opinion abroad that the extension of the Vine branches and laterals during the growing season is equivalent to laying up an extra store of food for the Vine to start with the following season. As the Vine develops leaves and branches it also makes roots, and the extra roots formed in consequence of the growth of laterals is supposed to furnish an increased number of feeders. The argument, I admit, is plausible upon the face of it. No one will deny that root and branch growth progress in a relative degree the one to the other, but leaf growth takes place prior to root growth. I want Mr. Fish to note this. He admits that the action between root and branch is reciprocal, so also must the condition of the root partake of that of the branch that called it into existence. I may as well bring Mr. Fish to the chalk line at once. I submit that no roots that owe their existence to a swarm of immature half-developed laterals ever survive the winter, and if the roots exist only in theory where is the advantage? That such roots exist for a time I do not dispute, but the "outer cuticle" does not get hard and brown, and therefore does not live to perform the function it is supposed to fulfil. Now as leaves and shoots are admittedly made prior to root-growth, these latter also must be wasting the vigour of the Vine in useless appendages which in point of fact supply nothing, but waste a good deal, inasmuch as there is no compensating return from their action to the fruit-producing parts of the Vine. I now come to another point which has a vital bearing upon the subject, and to which Mr. Fish does not seem to attach much importance, and that is the "concentration" of the vigour of the Vine within certain circumscribed limits—a thing your correspondent appears to ignore. I am not aware that Mr. Fish desires to indicate a difference between the matter that goes to produce fruit and that which produces wood and leaves—at all events, it is an abstract question, if a question at all—that can be readily determined upon the same basis, because the leaf influences the root and the root the leaf in both cases.

Practical cultivators do not care to travel beyond their depth in search of science, but prefer to base their opinions upon "cause and effect." [Is not that the very essence of science? Eds.] We start a Vine eye in the spring and grow it two or more yards long; we then stop it in order to "concentrate" the whole vigour of the Vine roots into a certain length of cane, but according to Mr. Fish we should let it grow on *ad infinitum* in order to recreate and redistribute vital force. Now when the Vine is stopped the cane thickens rapidly, and with this development the "fruiting eyes" grow prominent also. But I am far from saying that this stopping would be good practice in all cases; for instance, if a Vine promises to be of average growth or below it, the stopping will be beneficial because during the time the Vine is not extending itself in length it is swelling in thickness. On the other hand, if the Vine is very vigorous, and it is stopped at the point where it is intended to be pruned back in winter, the probability is that with the force of the sudden influx of sap from the roots some of the best fruiting eyes would not only break away into growth but the cane might also develop into a size which, in our dull variable climate, might not get properly matured, and the result would be "bulk of fruit" of inferior appearance and quality. Had this Vine been allowed to nearly exhaust in growth before it was stopped, or even if it were not stopped at all, there would be a cane of medium thickness thoroughly ripened, having roots like a Box bush, and this would be a case in which Mr. Fish's redistribution of vital force would come into full play, because the feeders produced by this class of wood not only survive the winter, but also extract from the soil three times the nourishment that a coarser class of roots could possibly do, even supposing they retained their thread-like fibres through the winter. In a house of Vines planted, say, 2½ feet apart, which is the maximum distance allowed to Vines cultivated upon our restricted system, laterals are never fully exposed to the maturing influence of sun and air, and the extension of the Vine at the top and bottom of the rafters so frequently seen in vineries is a practice which, in my opinion, cannot be too severely condemned, for the same reason that I object to lateral growth: it drains the Vine of its resources without doing any corresponding amount of good, because, as I have previously pointed out, the unripened roots of unripened wood do not survive the winter, and are therefore valueless as factors in searching for or distributing food for the Vines. As a practical example of what I mean, take a house of Vines that are overcrowded, thin out the Vines to a reasonable distance, and also thin the spurs to within 18 inches apart on the stem, and see if the principle of "concentration" does not yield results of a very creditable description. And, lastly, Mr. Fish demurs to my statement, that large leaves are not conducive to the highest degree of cultivation. He says, leaves properly ripened and placed, the larger the better—because size is an element in the measurement of working force—is best; and he goes on to prove that this is so by giving an illustration of the nut-brown bud, nut-like in size as well as colour, produced at the base of the big leaf. Now it is a well known fact that the biggest leaves are not furnished at their base with the "largest bud," nor do Vines producing or bearing such leaves ever yield such "quality" of fruit as those of less grossness and apparent vigour. The big bud spoken of by Mr. Fish is too often "tinged with green" to be perfectly finished, and as the quality and quantity of the matter in the bud is so will the fruit be. If a thick cane can be well ripened in our climate as one of less girth, and if a large leaf can be as well and as easily ripened as a medium-sized one, I could agree with Mr. Fish, but until he proves to me that this has been done with success I must regard his statement as one of theory and not of fact. *W. Hinds.*

—As having some relation to the subject of Vine stopping now being discussed, Mr. Wm. Cole, of the Grove Vineyard, Feltham, offers as his belief that it is of the first importance in connection with keeping Grapes, that the bunch leaf—that is, the leaf which belongs to the same joint as the bunch—should be always preserved intact, and that the longer its existence is prolonged the longer will the bunch of Grapes attached hang fresh and plump. If this be so—and it is the opinion of an experienced and successful grower—then it is well that the utmost care should be exercised to keep all such leaves from coming into contact with the glass or getting scalded or prematurely injured by early frosts. It would be interesting to learn how far this opinion coincides with that of other growers. Mr. Cole now grows for market no other kind but the Muscat of Alexandria, and these not early but rather kept as late as possible, as it is his experience that the excessive cost of early forcing is not repaid when compared with the prices obtained for good Muscats, well ripened and coloured in the late autumn. Either because of situation, or from cultural experience, or both, Muscats are done remarkably well at the Grove Vineyard, and the long lean-to range of over 200 feet will presently

show an unwonted sight in Grape culture with its splendid crop of fruit. An interesting result of inarching Muscats upon strong established canes of Lady Downe's and Gros Colmar can be seen at one end, the growth produced last year on some stocks consisting of three magnificent rods of great size, and splendidly ripened. All these are now producing a fine lot of bunches, and the effects of the diverse stocks on the Muscats, if any, are looked for with interest. Already there appears more shoulder to the bunches on the Gros Colmar stocks than is naturally the case, but a few weeks will soon show whether, beyond giving unwonted strength, the stocks have otherwise influenced the produce. *A. D.*

Select Hardy Perennials: Southwood "Flower List," June 26:—

Antirrhinum Asarina	Geranium lancastricense
Aretia Vitaliana	" sanguineum
Amianthemum nuscatoxicum	" argenteum
Androsace lanuginosa	" cinereum
Anchusa incarnata	" Endresii
Armeria maritima rosea alba	" ibericum
" purpurea	" asphodeloides
Aquilegia chrysantha	Geum montanum
" grata	Gypsophila cerastoides
" Bertoloni	" dubia
" Bürgeriana	" prostrata
Anthericum Liliago	" repens
Allium azureum	Gnaphalium arenarium
" Moly	Leontopodium
" cernuum	Gallardia aristata
Achillea aurea	Hippocrepis helvetica
Arenaria laricifolia	Hieracium aurantiacum
" triflora	Hormium pyrenaicum
" cespitosa	Hutchinsia alpina
" norvegica	Hemerocallis fulva
Æthionema cordifolia	" flava
Anemone rivularis	Linum perenne
Aubrieta croatica	" narbonense
" Columne	Lithospermum prostratum
" Campbelli	" petraeum
Alyssum spinosum	Linaria alpina
Astrantia carniolica	" pilosa
Aster ramosus	" purpurea
" alpinus altaicus	" aureo reticulata
Bahia lanata	" saxatilis
Borago laxiflora	" origanifolia
Brodiaea congesta	Lychnis Lagasce
" coccinea	Lilium elegans var.
Campanula Wanneri	" pomponium (?)
" Barleri	" pyrenaicum (?)
" fragilis gargarica	Nepeta Reichenbachiana
" collina	Omphalodes Lucilia
" macrantha alba	Oxytropis lactea
" pulla	Onosma taurica
" muralis	Orchis filiosa
" rupestris	Ornithogalum pyrenaicum
" floribunda	Oenothera pumila
" persicifolia alba	Potentilla aurea
" Van Houttei	" nepalensis
" turbinata	" Russelliana
" hybrida	Phyteuma orbiculare
" carpatia	" Charnelii
" pallida	" comosum
Centaurea montana	Papaver alpinum var.
" stricta	" nudicaule
Cerastium Biebersteinii	" pyrenaicum
Cyclobotria pulchella	" ambrustum
Cynoglossum apenninum	" orientale
Crucianella styiosa	" pilosum
Coronilla iberica	" armeniacum
Claytonia sibirica	Phlox Carolina
Caltha leptostella	" ovata
Dielytra eximia	Primula rosea (second time)
" spectabilis	" Munroii (second time)
Delphinium Madame H. Jaco-	Polemonium Richardsoniana
tot	Parnassia palustris
" Belladonna	Prunella grandiflora
" Nabamah	Reseda glauca
" Barlowii	Ranunculus Bertoloni (second
" cashmirianum	time)
" nudicaule	Rubus arcticus
Dianthus corsicus	Rosa rugosa
" suavis	" pyrenaica
" cæsius	Saxifraga tridentata
" fimbriatus	" cochlearis
" atrorubens	" pubescens
" deltoideus glaucus	" cernua
Draba bruniaefolia	" flagellaris
Erinus alpinus	Scutellaria Bolanderi
" hirsutus	" altaica
" albus	" alpestris
" hispanicus	" pennsylvanica
Erigeron alpinus	" Elizabethæ
" uniflorus	" maritima rosea
" speciosus	" alpestris
Erpeton reniforme	" quadrifida
Eryngium Bourgatii	Saponaria ocymoides
" amethystina	Sagina Linnei (?)
" glaciale	Spergula nodosa (?)
Erodium moschatum	Tulbaghia violacea
" macradenium	Verbascum phoeniceum
" petraeum	Veronica virginica
" romanum	" austriaca pinnatifida
" cheilanthesifolium	" saxatilis Grievei
Epilobium angustifolium al-	" orientalis
bum	" amethystina
Geranium nodosum	" officinalis rosea
" armenium	
" striatum	

T. D. H.

Lilium auratum.—Perhaps some of the readers of the *Gardeners' Chronicle* of July 12, 1879, may remember my making mention of a single bulb with one stem, having thirty-four flowers, growing in a 14-inch pot. This season, in a 16-inch pot, it has two very strong spikes, both measuring 6 feet 6 inches in height, from the top of the pot; one spike has thirty-one and the other twenty-seven large well-formed flower-buds, fourteen of which are at the time of writing quite open, and the rest will be open in a few days. *G. Bristol, Gr. to A. Kleinvoort, Esq., The Glebe, Champion Hill, S.E.*

Lilium giganteum.—I have fourteen bulbs now showing flower, the tallest already above 10 feet high. They are planted in a border with Rhododendrons, have been out all the winter without injury, and will be in full bloom in a week or ten days, when I shall be happy to show them to any one interested. *Charles Noble, Bagshot.*

Cold Orchard-houses.—As further proof of the great value of these in seasons like the present, I would mention one now to be seen at the Chantry, near Ipswich, under the care of Mr. Hobson, in which house the trees from end to end are laden with fruit, and as healthy and clean in the foliage as it is possible for any to be. This satisfactory state of things has not been brought about without considerable attention, for on passing through with the painstaking intelligent gardener I noticed that his eye was on the watch, and that his hands were not idle, as wherever the smallest patch of anything suspiciously like black-fly showed itself, he was at it giving it a rub or a squeeze, and this no doubt is the only effectual way of dealing with these pests, for, unlike the common aphid, they do not confine themselves to the tips of the young tender shoots, but are to be found in rings and small colonies round the bark, on the walls, and in the most unlikely places, where to think of reaching or killing them with tobacco-smoke, as may be done with their delicate-looking green-skinned congeners, is quite out of the question. Tobacco-dust, however, they cannot stand, and with this Mr. Hobson continually assails them, and to the application of this and plenty of clean water, with an abundant supply of pure fresh air whenever the weather will admit of its being on, may be attributed his great success. The structure is as plain and common-place as it is possible for a building of that kind to be, as it is simply a flattish lean-to, glazed into fixed bars, with hanging sashes to push open in front, and ventilators of board in the wall close under the roof. These, when the front sashes are open, admit of a quick current of air passing right through among the trees, and by keeping both wide open in winter and early spring to retard the blossom-buds they are safe from late frosts, which are often so fatal to unheated orchard-houses. The mistake many make who have these is in endeavouring to do too much with them, for, not being content to use them for the purpose for which they were erected, they crowd them with bedding plants and all sorts of things, and the result is, that from keeping them close and warm to accommodate these the trees are brought on at a time when the weather is bad, which ends in the loss of the crop. With a flow and return pipe of course this might be obviated, but then thousands who would not mind so much the cost of a house shrink from this extra expense, cheap though it may be in the end. In the structure referred to at the Chantry there are no pipes or means of heating it, and the secret of getting a good set is the keeping of the trees scrupulously clean, the wood thin and regular as to growth, that thorough ripeness may be secured; and lastly, as adverted to above, free ventilation before the flower-buds expand, and after, to strengthen them and ripen and distribute the pollen. The trees, as I can testify from my knowledge of them before the present gardener took charge of them, were not in a good state, but from the top-dressing of fresh horse-droppings and loam mixed the border throughout has received, they have recovered wonderfully, as is evidenced from what I am now able to state respecting them. The only unsatisfactory thing about them is, that, having grown so freely, they are much too thick, for, although the house is only about 10 feet wide, there are three rows of trees in it besides those on the wall, and it would therefore be a great benefit to them if half were removed. The trees consist principally of Peaches and Nectarines, and Plums, and the crops on these latter are something prodigious, as they hang in such a way that, without severe thinning, the branches are in great danger of breaking under their load. Seeing that this would be likely to take place, Mr. Hobson has slung up those of some Peaches and Nectarines, and it is to be hoped that he will have them photographed, so that they may be sent for illustration to show what may be done with trees grown as standards. That fruit gathered from such as are trained flat on a trellis under the roof is better flavoured there, can I think, be no question; but managed as Mr. Hobson does his, and grown in a house where there is abundance of light and sun, fruit obtained under such circumstances cannot be very inferior, for after all they get nearly as much solar heat and light, and it is these agents working together that convert the crude juices, and render them luscious to the palate. Pot trees are, in my opinion, an abomination, as they involve no end of labour in watering, and after all it is done the fruit, compared to that obtained from those planted out, is worthless, especially as regards Peaches and Nectarines, which are nearly always insipid. Much of this inferiority arises from the constant slopping the soil undergoes to keep the small body of earth sufficiently moist for the roots, whereas, when planted out, the ground may be allowed to become moderately dry before the

final ripening, which greatly improves the quality of the fruit. The harm wet does to this is very noticeable in that picked outdoors after heavy rain, which deteriorates it greatly. *J. Sheppard.*

Oak-apples.—These galls or excrescences on the Oak trees are remarkably plentiful this year in the part of Hampshire where I am residing, and I want to know which really is the true Apple—the soft spongy excrescence which is usually met with, about the size of a Medlar, or the round, smooth, hard ball that resembles a large marble in appearance. I am aware that both are produced by insects, and that the true gall-nuts of commerce are the product of an eastern Oak tree, effected by an insect called the *Diplolepis*, but my question is simply this: What are our native Oak-apples? for I have lately heard several disputes on the subject, and I shall be very much obliged for some reliable information. *Helen G. Watney.* [The hard, marble-like gall is of comparatively recent introduction near London. *E.H.S.*]

The Potato Disease.—I am not aware that any reliable reports have ever been furnished at any time as to the respective periods at which the Potato disease is first seen in a tangible form in diverse parts of the country. We are now in daily expectation of hearing of its appearance. All circumstances, whether atmospheric or physical, are in its favour—the soil almost like a hotbed, the air full of humidity, rainfalls with electrical storms frequent, and haulm growth almost resembling tropical vegetation, so rapid has been its recent development and so full is it of sap and tender leafage. Upon such plant-life the *Peronospora*, when it appears, will burst and spread with great rapidity unless there speedily comes a change to constant dry weather, and such conditions of plant-life as shall put a check upon this undesirable rank vegetable growth. It will, therefore, this year most probably be easy to ascertain to a day, almost to an hour, when in any given locality the disease first makes its appearance. Gardeners are generally intelligent observers, and as such their evidence would be more reliable than would be that of irregular reporters, and as the *Gardeners' Chronicle* is read by most gardeners of intelligence, it would be, with their assistance, easy to ascertain during the next few weeks exact statements as to the first visits of the disease in their respective localities. We should then be able to note whether such appearance was simultaneous generally, whether it moved across the country from point to point, or whether its movements, like electrical storms, were eccentric. Such data as were thus afforded could not fail to be of value, and the present season bids fair to specially supply the needed phenomena. *A. D.*

Fruit Prospects at Merriott, Somerset.—Now that we can write confidently as to the prospects of a fruit supply this season, perhaps a few remarks may interest some of your readers. After the past sunless summer of cold persistent wet, the woeful appearance that all kinds of fruit trees presented last autumn cannot be wondered at, scarcely any of the growth maturing itself, and none really ripening—following this came a most severe winter, nipping the late growth back to almost the last bud. It is therefore not surprising that the trees should not be able to mature the few blossoms they produced this spring, and we must be content to let this season pass as an almost fruitless one. But I am pleased to state that in this locality the trees are rapidly recovering themselves, the dry weather we are experiencing being all in favour of a plentiful promise of fruit next year. The varieties that did well with us last year, and are doing so again this season are—Apples: Lord Suffolk, Tom Put, Royal Somerset, Golden Winter Pearmain, Pott's Seedling, Roundway Magnum Bonum, Stibbert, Golden Spire, Golden Noble, Annie Elizabeth, Keswick Codlin, London Pippin, Cockle Pippin, Small's Admirable, and Alfriston. Plums: Prince of Wales, Golden Gage, Nectarine, Isabella, Victoria, Orleans, Standard of England, Pond's Seedling, Autumn Compôte, Syston, Jefferson, Early Prolific, Lawson's Golden, and Yellow Impératrice. Pears are a very light crop. Cherries: May Duke, good crop; other kinds short. Strawberries abundant. *J. G. Hill, Merriott Nurseries.*

Cymbidium Parishii, &c.—This scarce and most beautiful Orchid is now finely in bloom in the Orchid-houses of W. Leech, Esq., Oakley, Fallowfield, near Manchester. This is the same plant that we bloomed just two years ago. Since that time it has continued growing freely, but in the spring and summer of last year it showed no signs of flowering. In regard to the time of its blooming, it appears naturally to come in somewhat later in the season than *eburneum*, just as *Cypripedium Parishii*, that was discovered by the same collector, would appear to come to perfection about a couple of months later than *C. villosum*, which latter is met with in near proximity in its native habitat to *Cymbidium eburneum*. I find *Cymbidium Parishii* succeeds well in the Cattleya-house, in

fact I grow it adjoining the *Cypripedium caudatum*, which are always placed in the Cattleya-house, and, like the latter, it enjoys an abundance of water when growing. In habit it much resembles *Cymbidium eburneum*, but is stouter in its growth, and the leaves are also much broader. I have the plant potted in moss, loam, peat, and sand, well mixed together; the pot is about a third part filled with crocks: whilst the drainage is good it will take large quantities of water, and the thick fleshy roots that are pushing away are a good indication that the plant is receiving what it requires. The spike, which is about a foot high, has brought two blooms; the sepals and petals are of a rich creamy white; the lip also is creamy white, the throat being of a deep orange colour, and the sides of the labellum covered with blotches of a bright purple. It is also highly fragrant, and lasts several weeks in perfection. We have also a fine plant of *Cypripedium Parishii* in flower just now; on several spikes on the one plant we have six and seven blooms, and now that all are open it makes a highly attractive and at the same time most singular plant. Whether it would be considered as effective on an exhibition stage as some things of a more showy and highly coloured character I am not prepared to say, though to my mind it is quite as meritorious. We have also in flower here in our greenhouses a number of plants of that fine *Carnation Souvenir de la Malmaison*. I can confidently recommend this, as one deserving of culture, to any having a desire to furnish their conservatory with things of a rich and choice nature. Some flowers we have cut measured over 4 inches across. *W. Swan, June 28.*

The Hyacinth at Home.—Mr. James Cutbush, writing under this heading some weeks ago, makes a statement which I must take exception to—it is this: "After the experience of two wet seasons, a later time should be fixed for our spring exhibitions, at any rate for a year or two;" and then says, "that a good bloom cannot be obtained under the hard forcing they are subjected to." Now there is only one exhibition where prizes are offered for Hyacinths in London, and that is usually held about the end of March. Is it possible that it has been necessary during the last few years to "force hard" to get them in by that date? I have not had to force at all except in the case of two or three very late flowering varieties, and the year before last could scarcely keep them back for the show. I would rather gently force Hyacinths to get them in by a certain date; and I am certain it would be a great mistake to make the date of the exhibitions of Hyacinths later than they have been in years past. I may further say that all the large collections of Hyacinths but one were past their best this year at Newcastle, and that show was held at the same date for the North; they are ten days later than us. *J. Douglas.*

Reports of Societies.

Royal Horticultural: June 29.—Pelargoniums, Roses and Vegetables were the great specialties of the exhibition held to-day. The display of the first-named flower was held under the auspices of the Pelargonium Society, and it proved to be the best that the Society has ever had. The vegetables were shown in competition for special prizes offered by Messrs. Sutton & Sons and Messrs. Edward Webb & Sons, and for the liberal sums offered by the first-named firm there were no less than ten competitors who staged collectively as fine a lot of culinary vegetables as could well be brought out at any season. The Rose show was to some extent a failure. The Southern growers, Messrs. Paul & Son and Mr. Turner, were "not in;" and of the flowers shown by other nurserymen it can only be said that they were fair, being deficient mostly in substance and brightness. Mr. R. N. G. Baker's Roses have, we understand, been in good condition for about three weeks, and the blooms which he staged to-day were certainly much finer than those of any other competitor. The new Roses were very poor. The awards of the judges were given as follows:—

NURSERYMEN.—Forty-eight Roses, single trusses, distinct.—1st, Cranston's Nursery and Seed Co., Hereford, with Etienne Levet, La France, Horace Vernet, Star of Waltham, Mons. E. Y. Teas, Madame Nachury, Prince Camille de Rohan, Marguerite de St. Amand, Dr. Andry, Mons. Noman, Fisher Holmes, Madame Lacharme, Général Jacqueminot, Centifolia rosea, Auguste Neumann, Madame la Baronne de Rothschild, John Hopper, Madame Bravy, Exposition de Brie, Madame Noman, Charles Lefebvre, Duchess de Vallombrosa, J. S. Mill, Louise de Savoie, Dupuy Jamin, Souvenir de la Malmaison, Marie Baumann, Souvenir d'Elise Vardon, Hippolyte Jamin, Louis Van Houtte, Madame Thérèse Levet, Madame Victor Verdier, Princess Beatrice, La Rosière, Madame Hippolyte Jamin, Marquise de Castellane, Le Havre, Catherine Mermet, Xavier Olibo, Elie Morel, Mrs. Baker, Mdle.

Marie Finger, Mons. Gabriel Tournier, Miss Hassard, Madame C. Wood, François Michelin, Madame Marie Cointet, and Countess of Oxford. 2d, Messrs. Curtis, Sandford & Co., Torquay; 3d, Mr. F. Cant, the Mile End Nursery, Colchester.

Twenty-four Roses, distinct, three trusses of each.—1st, Cranston's Nursery and Seed Company, with Etienne Levet, La France, Madame C. Wood, Mdle. Marie Finger, Mons. E. Y. Teas, Etienne Levet, La France, Le Havre, Mons. Noman, Marquise de Castellane, Fisher Holmes, Hippolyte Jamin, La Rosière, Madame Lacharme, Exposition de Brie, Madame la Baronne de Rothschild, Madame C. Wood, Madame Marie Cointet, Mons. Gabriel Tournier, Mdle. Marie Finger, Princess Beatrice, Maurice Bernardin, Miss Hassard, Général Jacqueminot, Madame Noman, Prince Camille de Rohan, and Marguerite de St. Amand. 2d, Messrs. Curtis, Sandford & Co.; 3d, Messrs. Keynes & Co., Salisbury.

Twenty-four single blooms, distinct.—1st, Cranston's Nursery and Seed Company, with Etienne Levet, La France, Madame C. Wood, Mdle. Marie Finger, Mons. E. Y. Teas, Madame Marie Cointet, Xavier Olibo, Mons. Noman, Louis Van Houtte, Mrs. Baker, Général Jacqueminot, Madame Lacharme, Lord Macaulay, François Michelin, Exposition de Brie, John Hopper, Fisher Holmes, Louise de Savoie, Prince Camille de Rohan, Annie Laxton, Le Havre, Catherine Mermet, Dupuy Jamin, and Ferdinand de Lesseps. 2d, Messrs. Curtis, Sandford & Co.; 3d, Messrs. Kinmont & Kidd, Canterbury.

Twelve Roses, distinct, single trusses.—1st, Cranston's Nursery and Seed Company, with Etienne Levet, Madame Marie Finger, Madame C. Wood, François Michelin, Sir Garnet Wolseley, La France, Marie Baumann, Marquise de Castellane, Lord Macaulay, Madame Lacharme, Jean Liabaud, and Star of Waltham. 2d, Messrs. Kinmont & Kidd; 3d, Messrs. Keynes & Co.

AMATEURS.—Twenty-four single trusses, distinct.—1st, R. N. G. Baker, Esq., Heavitree, Exeter, with Clothilde Roland, Fisher Holmes, Captain Christy, Charles Lefebvre, Hippolyte Jamin, Marie Baumann, Madame la Baronne de Rothschild. Mdle. Marie Finger, Monsieur Gabriel Tournier, Duke of Edinburgh, La France, Monsieur E. Y. Teas, Marie Van Houtte, Auguste Rigotaud, Marquise de Mortemart, Sir G. Wolseley, Centifolia rosea, Mr. Baker, Comte de Raimbault, Sultan of Zanzibar, Madame Victor Verdier, Maurice Bernardin, Duchess de Vallombrosa, and Duchess de Caylus. 2d, T. Jowitt, Esq., Old Weir, Hereford. 3d, Mr. J. Brown, gr. to A. J. Waterlow, Esq., Reigate.

Twelve Roses, distinct, three trusses of each.—1st, R. N. G. Baker, Esq., with Chas. Lefebvre, Dr. Andry, Madame la Baronne de Rothschild, Duc de Wellington, La France, Marie Baumann, Auguste Rigotaud, Xavier Olibo, Duchess de Vallombrosa, Lord Macaulay, Madame Lacharme, and Etienne Levet. 2d, T. Jowitt, Esq.; 3d, G. P. Hawtry, Esq., Slough.

Twelve Roses, distinct, single trusses.—1st, Mr. J. Ridout, gr. to T. B. Haywood, Esq., Reigate, with Marquise de Castellane, Alfred Colomb, Mons. E. Y. Teas, Edouard Morren, Chas. Lefebvre, La France, Etienne Levet, Beauty of Waltham, Pierre Notting, Annie Wood, A. K. Williams, and Sénateur Vaise; 2d, T. Jowitt, Esq.; 3d, Rev. E. L. Fellowes, Wimpole Rectory, Royston; extra, R. N. G. Baker, Esq., and J. H. Pemberton, Esq., Romford.

OPEN CLASSES.—Twelve Tea or Noisette Roses, distinct.—1st, the Rev. E. L. Fellowes, with Marie Van Houtte, Comtesse de Nadaillac, Devoniensis, Catherine Mermet, Jean Ducher, Madame Villermoz, Bouquet d'Or, Madame Bravy, Souvenir de Paul Neron, Adam, Perle des Jardins, and Annie Olivier. 2d, C. Davies, Esq., Aynhoe, Banbury; 3d, Cranston's Nursery and Seed Co.

Six blooms of any one sort of H.P.—1st, R. N. G. Baker, Esq., with Marie Baumann; 2d, Messrs. Curtis, Sandford & Co., with La France; and 3d, Cranston's Nursery and Seed Co., with the same variety.

Six blooms of any Tea or Noisette Rose.—1st, Mr. J. Davis, Wilton, with Maréchal Niel; 2d, Cranston's Nursery and Seed Co., with Souvenir d'Elise Vardon; and 3d, R. N. G. Baker, Esq., with Marie Van Houtte.

NEW ROSES.—Six distinct new Roses of 1877-78, open.—1st, Cranston's Nursery and Seed Co., with Souvenir de Adolphe Thiers, Constantin Tretiakoff, Léon Renault, Madame Gabriel Luizet, Gaston Lévêque, and Marchioness of Exeter. 2d, Mr. G. W. Piper, Uckfield; 3d, Messrs. Curtis, Sandford & Co.

Messrs. Paul & Son, Cheshunt, exhibited cut blooms of a remarkably pure bright scarlet Rose named Glory of Cheshunt, which appears also to have a good constitution and to be a vigorous grower.

In addition to the Roses there were a number of other interesting contributions of a miscellaneous character, that added much to the general effect.

Most prominent amongst these was a remarkable collection of tuberous-rooted Begonias staged in the entrance hall by Mr. Cannell, who was awarded a Gold Medal. Messrs. Barr & Sugden showed a large group of cut Irises and Lilliums, together with a choice assortment of hardy Sempervivums and other plants of a similar character. Mr. Hooper, of Bath, was again irrepressible with his Pansies and Carnations. Messrs. James Carter & Co. had a large group of showy annuals, arranged in the form of an oval bed on one of the lawns.

VEGETABLES.—Messrs. Sutton & Sons' special prizes for the best collection of twelve distinct kinds of vegetables brought out a remarkably good competition, and consequently an exceedingly fine display of vegetables, there being no less than ten exhibitors, who each staged collections that were most creditable to the growers. The 1st prize was won by Mr. Miles, gr. to Lord Carington, but he was run very close by Mr. Meads, gr. to Lord Barrington, Beckett Park, Shrivensham, who took the 2d honours. Mr. Miles had Victoria Cabbage Lettuce, Nantes Horn Carrots, Fine-apple Beet, Culverwell's Telegraph Peas, Early Nonsuch Turnips, Tender and True Cucumbers, Walcheren Broccoli, Early White Naples Onions, Seville Longpod Broad Beans, Improved Lapstone Potatoes, Willmot's White Cos Lettuce, and Canadian Wonder French Beans, and every sample was of the very best quality. Mr. Haines, gr. to the Earl of Radnor, Coleshill House, came in 3d; Mr. J. Muir, gr. to C. R. M. Talbot, Esq., M.P., Margam Park, 4th; Mr. W. Iggulden, gr. to Captain Wingfield, Orsett Hall, Romford, 5th; and Mr. Austin, gr. to Sir G. Smythe, Ashton Court, Bristol, 6th. Messrs. Edward Webb & Sons, Wordsley, offered special prizes for a collection of six distinct kinds of vegetables, to include a dish of "Webb's Triumph Pea" and "Webb's Improved Banbury Onion," but there were only two competitors, and the date being too early for the specialties, neither were shown in exhibition form. The 1st prize was won by Mr. Iggulden, and the 2d by Mr. Crump, gr. to the Duke of Marlborough, Blenheim, who had both very nice collections.

For Messrs. James Carter & Co.'s special prize for the best dishes of "Carter's Stratagem, Carter's Telephone, and Culverwell's Telegraph Peas," there was a better competition than might have been expected, and the awards went in the order named to Mr. Muir, Mr. Richardson, Boston; Mr. Miles, Mr. R. Phillips, gr. to Captain Jackson, Meopham, Kent; and Mr. Iggulden.

MESSRS. WEBBER'S PRIZE.—The two very liberal prizes offered by Messrs. Webber & Co., Central Avenue, Covent Garden, for the best packed three boxes of fruit, were contested for by five competitors, viz., Mr. Crump, Blenheim; Mr. Wallis, gr., Keele Hall, Staffordshire; Mr. Sage, Ashridge; Mr. Wilson, The Gardens, Colston Bassett, Notts; and Mr. G. Phillips, gr. to Lord A. G. Lennox, Stoke Farm, Bucks; and the prizes were taken by Mr. Crump and Mr. Wallis. Mr. Crump's 18 lb. of Grapes and large box of Peaches were thoroughly well packed, the boxes being lined with soft dry moss, and the Strawberries were laid on cotton wadding after being folded separately in leaves of the Lime tree. Good soft moss, when well dried and cleaned, is no doubt the best of all packing materials; and none know this better than the market salesmen. Each bunch of Mr. Wallis' Grapes was tied separately to the sides of the box; the Peaches packed in cotton wadding, and the Strawberries in Vine leaves. Both lots, when opened, proved to be in excellent condition.

Pelargonium: June 29.—The best of the annual exhibitions that have been organised by this Society was undoubtedly the one held on Tuesday last in conjunction with the Royal Horticultural Society's Rose show at South Kensington. Collectively the display was a more extensive one than any that has yet been held, and we are glad to note that on the score of cultivation there was some improvement, though, with the exception of Mr. Catlin's splendid examples of single and double flowered Zonals, the average of merit was still below what is seen in the North. The schedule was divided into three sections, with eight classes for new varieties not in commerce, ten for specimen and semi-specimen plants, and four for cut flowers. The most interesting, and commercially considered the most important section, was the first one, for new varieties, and to that we shall turn our attention first. The first class was for three hybrid Pelargoniums of a distinct character bred between any Cape species and a variety of the other types of the Pelargonium family, but only one competitor entered the lists—M. Victor Lemoine, of Nancy, but his plants were merely poor forms of the "Decorative" type, and the prizes were withheld. For three large-flowered Show Pelargoniums, distinct, Mr. Turner gained the 1st prize, with Maid of Perth (Foster), Hector (Foster), a well-shaped flower, of

large size, red with maroon blotch, and a white throat; and Mountain of Light (Foster), a plant of good habit, and scarlet flowers with a dark blotch. For two plants of the same type the 1st prize was awarded to H. Little, Esq., Hillingdon Place, Uxbridge (Mr. J. Wiggins, gr.), for Ruth Little (Jackson), a variety of good habit, and rosy-red flowers with dark blotch, evidently a seedling from Ruth; and Formosa (Jackson), a dwarf-habited plant, with well-shaped flowers produced in large trusses. For one distinct large-flowered (Show) variety the Rev. A. Matthews, Gumley, Market Harborough, took the highest award, with a seedling of his own raising, named Sir Walter Scott, a well-shaped scarlet flower with maroon blotch. Mr. Turner was also awarded the 1st prize in a class for three small-flowered (Fancy) varieties, with Lady Harvey (Turner), Jenny Howlett (Turner), and Queen of the Hellenes (Turner), a novel flower, white with rose blotch on the upper petals, and distinct spots on the three lower ones—which was also awarded a First-class Certificate.

For three large-flowered (Show type) Pelargoniums of the Decorative class, Messrs. J. & J. Hayes, of Edmonton, were awarded the 1st prize for Lady Isabel (Hayes), a very pleasing flower of full size, soft rosy-purple in colour, with reddish-maroon blotch; Mr. John Hayes, and Mrs. John Hayes, blush with a red blotch, and very pretty. For two plants of the same type, the highest award was given to H. Little, Esq., for Rosy Morn and Bridesmaid, both raised by the Messrs. Jackson; and the last-named variety was voted a First-class Certificate, an honour which it was scarcely worth, as, although dwarf in habit and free flowering, the blossoms are crumpled and of bad shape. For one Mr. Turner had the highest award for Macbeth, a dark flower with blotches on the lower petals.

Dr. Denny was awarded the highest prize in the class for three Zonal varieties, distinct, for Lalla Rookh, a plant of tall habit, with a fine truss of scarlet flowers; Cynthia, a good free-flowering variety, with large trusses of crimson-lake flowers; and Prima Donna, a very fine pure white flower, with slightly zonate foliage, and a plant of dwarf and compact habit. This, too, was awarded a First-class Certificate. In a corresponding class for double Zonal varieties, Dr. Denny was beaten in a close competition by Messrs. Saltmarsh, of Chelmsford, who staged Lord Cecil, a variety with immense trusses of reddish scarlet flowers, which gained a First-class Certificate; Mrs. Arthur Tatley, which bore large trusses of bright rose-coloured flowers; and Sultan, crimson. Dr. Denny had a very fine deep rose-coloured flower named Enchanting, which gained a First-class Certificate. For two doubles, Mr. Turner took the highest honours with Nancy Lee, a scarlet-flowered variety with very finely variegated leaves; and Kensington, a bronze Zonal with white flowers.

The best Ivy-leaved variety was Beauté de Lyon (Sisley), shown by Mr. H. Cannell, Swanley, and which bore good trusses of large scarlet flowers. The double-flowered Ivy-leaved varieties, which was a collection shown by M. Lemoine, were excluded, in consequence of their being in commerce.

First-class Certificates were also awarded to the following varieties belonging to the large-flowered or show section:—Constitution (Foster), exhibited by Mr. Turner—a plant of rather tall habit, but the flowers are distinct and of fine form; Belle Hélène, exhibited by its raiser, the Rev. T. C. Bréhaut, Guernsey, a darker and brighter flower than Amethyst, shown by the same raiser; and Minotaur (Foster), shown by Mr. Turner, a flower with very smooth petals, the upper petals dark maroon, and the lower ones crimson with maroon blotch. In the Decorative section the plants which received First-class Certificates were Mrs. Ashby, shown by Messrs. J. & J. Hayes, one of the most floriferous of varieties, with large trusses of well shaped flowers, soft rose in colour with a dark blotch. Eclipse, raised and exhibited by Mr. Brown, of Hendon, crimson with maroon blotches and spot, a good free grower, with large trusses. Criterion (Jackson), shown by H. Little, Esq., a glowing reddish-scarlet, with red blotches; and Hayes' Seedling, also shown by Mr. Little, a fine rose-coloured flower with a bluish tinge near the throat, and large trusses. The only Zonal variety that gained a similar award was Progress, a double variety, raised and shown by Dr. Denny, with very large trusses of bright scarlet flowers.

For six large flowered (Show) Pelargoniums, Mr. J. Wiggins, gr. to H. Little, Esq., was 1st, and Mr. Turner 2d, the first-named showing large plants from 3 to 4 feet over, and well bloomed, of Snowflake, Victory, Mary Hoyle, Sultana, Jannette, and Illuminator, while Mr. Turner's plants were smaller, though well bloomed and the flowers very richly coloured. Mr. F. Hunt, York Lodge, Stamford Hill, was 3d. For eighteen plants of the same type Mr. Turner was 1st, and Mr. Wiggins a very good 2d, the former having a little the best of his rival on the point of quality of the flowers, which, in the case of such sorts as Amethyst, Fortitude, Premier, Lord of the Isles, Emperor William, Auto-

crat, Queen of Scots, Alice, Joe, Partisan, Valiant, and Meteor, was of a high order. Mr. Turner also took the lead in the class for six small-flowered (Fancy) Pelargoniums, well-bloomed plants, about 2 feet over, of Thomas King, Duchess of Edinburgh, East Lynn, Princess of Teck, The Shah, and Jewess. Mr. Wiggins, who was 2d, had plenty of flowers, which, however, lacked the freshness of the Slough blooms; Mr. Weir, gr. to Mrs. Hodgson, The Elms, Hampstead, was 3d.

The class for nine large-flowered Pelargoniums of the Decorative type brought out excellent groups from Mr. Wiggins, Mr. Turner, and Messrs. J. & J. Hayes, who took the prizes in the order named. Mr. Wiggins staged five large, well-bloomed plants of Digby Grand, Kingston Beauty (Jackson), Miss Andre (Jackson), Magenta Queen (Hayes), Duchess de Morny, Triomphe de St. Mandé, Braid's Duchesse of Edinburgh, and Hayes' Black Prince and Harlequin. Several of these were shown also in good form by Mr. Turner, who had besides Quadron, white, with a dark blotch; Captain Raikes, Duchess of Bedford, and William Bull. For eighteen plants of the same type, Messrs. J. & J. Hayes were well 1st with well-grown market plants, carrying grand heads of bloom, the leading varieties being Black Prince, Princess of Wales, Nellie Hayes, Delicata, Triomphe de St. Mandé, Lady Blanche, Sultana, Lady Isabel, Miss Alice, Harlequin, Princess Hortense, Mermerus, &c. Mr. Wiggins was 2d.

Mr. Catlin, gr. to Mrs. Lermite, Finchley, had no difficulty in securing the highest awards in the classes for nine single and double-flowered Zonals, his plants being a long way ahead of those shown by his competitors. The group of nine, singles, was, we believe, the best that has yet been shown, being about 3 feet over, superbly bloomed, and very bright in colour. The varieties were—Alice Burton, Fanny Catlin, Lizzie Brooks, Mrs. Leavers, Rev. — Atkinson, Ellen, Mrs. Pearson, Titania, and Lucy Bosworth. In this class Mr. Weston, gr. to D. Martineau, Esq., Clapham Park, was 2d; and Mr. W. Meadmore, Romford, 3d. The double varieties, though equally well grown as the former, were not nearly so bright or so effective. Mr. Catlin's varieties were La Cygne, Gorgeous, Pioneer, Henri Beaurriur, Madame Thibaut, Aliande Blanchard, Progress, Némie, and Modesty. Mr. King, gr. to G. Simpson, Esq., Wray Park, Reigate, was 2d; and Mr. W. Meadmore 3d. The classes for eighteen singles and eighteen doubles brought out a lot of small plants, amongst which were to be found many of the latest novelties, though few of them called for special remark. Mr. Catlin took the lead in both classes.

The prizes offered for cut flowers of all the types of Pelargoniums brought out a most beautiful lot of blooms, which were greatly admired. The most successful competitors in this department were Mr. Turner, Messrs. Saltmarsh, Chelmsford; Mr. Cannell, Mr. Meadmore, Mr. Duffield, gr. to H. K. Mayor, Esq., Winchmore Hill; and Mr. George, gr. to the Misses Nicholson, Putney Heath, who had the most taking lot of blooms of the Ivy-leaved varieties that we have ever seen. Mr. Turner, Mr. Pearson, of Chilwell; Mr. J. Balaam, Lower Clapton; and Messrs. F. & A. Smith, of Dulwich, also contributed groups of Pelargoniums of various kinds, which added much to the interest of the exhibition.

Leeds Horticultural: June 23, 24, and 25.—An excellent exhibition, but most unfortunate weather. Extreme regret was felt by every one that continued wet weather should have prevented thousands from seeing the really fine display of plants, fruits, &c., staged on this occasion. The great feature of the exhibition was the principal tent, close upon 400 feet long by 50 feet wide, in which eleven groups of plants were arranged for effect in competition in the three classes respectively of 100, 150, and 300 square feet, and the arrangement of this tent produced an effect which surprised a great many old frequenters of horticultural exhibitions. In the open class for 300 square feet, Mr. John Barran, M.P., stood 1st; Mr. Cypher, Cheltenham, 2d; and Mr. R. Simpson, Selby, 3d; and each group deserved all the praise given to them. Local exhibitors took the honours in the two other classes, whilst those groups arranged by the unsuccessful competitors were well deserving of prizes, although not of course equal in merit to those placed before them. All these groups were arranged on the grass along the centre of the large tent, and half-way along was a raised circular platform on which the two twelves of stove and greenhouse plants were staged—1st, Mr. Tudy, gr. to Mr. Williams; and 2d, Mrs. Cole & Sons. The same platform also accommodated three sixes of stove and greenhouse plants from, 1st, Mr. Williams; 2d, Mr. H. Samson; 3d, Mr. G. Gilder. Some grand Ixoras, Dipladenias, Eriacs, and Anthuriums, were staged in these collections. Placed alternately with the large groups, were two grand groups of ornamental plants, in which Mr. Williams was placed 1st, Mrs. Cole & Sons 2d, and Mr. Samson 3d. The attractions of this tent did not end here, for at one end a fine bank of Roses in pots were staged, not large, but well done, and of a useful decorative size. In the class for twelve Roses in pots Mr. H. May, Bedale, was 1st; but it will be advisable for him to discard these

old plants another year, or they will stand no chance beside the younger ones of the other growers. Messrs. Jackson & Co.'s 2d prize lot were younger and well grown, and ran the first lot closely, and Messrs. Pybus & Son were a good third. In the class for fifteen varieties in 8-inch pots, Messrs. Jackson & Son were 1st, Mr. H. May 2d, and Messrs. Pybus & Son 3d. Along the sides of the large tent were groups of Ferns, Fuchsias, and stove and greenhouse plants, and the committee had ample reason to be proud of the magnificent display contained in this enormous tent.

In the classes for Orchids, Dr. Ainsworth, of Manchester, took the 1st prize with a superb plant of *Epipedium vitellinum majus*, *Aerides Dayanum*, *Phalaenopsis Ludemanniana*, and three other kinds; Mr. Rolleston, gr. to Mr. Walter Bateman, of Harrogate, 2d; and Mr. Frankland, gr. to Mr. John Barran, M.P., 3d. For three Orchids, Dr. Ainsworth was again 1st, showing in this lot a very fine *Aerides Lobbii* with four spikes.

For a single specimen Orchid, Mr. Hemming, gr. to Mr. Henry Oxley, was 1st, with a grand plant of *Cypripedium barbatum*; Mr. Cypher 2d, with *Saccolabium Blumei*; and Mr. Roper, gr. to Mr. John Rhodes, Potternewton, with a grand plant of *Aerides odoratum* with twenty spikes. The most interesting plant amongst the Orchids was a *Stanhopea* with some magnificent flowers protruding from the bottom of the basket, but the exhibitor's name was not attached.

From the centre of the large tent two other tents branched right and left, one containing the Pelargoniums, Ferns, &c., the other the fruit, cut flowers, Orchids, and other plants. Pelargoniums were not so numerous as at York, but equally good, Mr. May being 1st, Mr. C. Rylance 2d, and Messrs. Lazenby & Son 3d, for twelve. In the class for six Pelargoniums (amateurs) Mr. F. W. Teley was 1st, Mr. Joy 2d, Mr. Simpson 3d. In the class for six French and spotted Pelargoniums there was a close competition with some grand plants beautifully flowered. Messrs. Lazenby & Son were placed 1st, Mr. C. Rylance 2d, Mr. H. May 3d. A few good Fancy Pelargoniums were also staged. Some excellent Gloxinias were much admired, especially a collection staged by Mr. Hodgson, gr. to Mr. W. L. Jackson, M.P. These were medium sized, well grown, and grandly flowered plants of good telling varieties. Other good collections were staged, and Mr. S. May, seedsman, Leeds, staged a nice lot of flowers of good seedling Gloxinias.

The Rev. A. Standridge, of Adel, near Leeds, had a nice group of seedling Athyriums, of which three of a distinctive character were selected by the judges as worthy of notice.

A miscellaneous group, exhibited by Mr. B. S. Williams, of Holloway, consisted of many of the newest and choicest plants of recent introduction, including *Adiantum Williamsi*, the Golden Maidenhair, a native of Peru, which grows at about 12,000 feet altitude, consequently is one of the most hardy; another compact-growing specimen was *Adiantum Mendelli*. The *Crotons* were represented by C. Wilsoni, a light narrow-leaved graceful-growing kind, which will be useful for table decoration; also C. Stewarti, a bold, rich golden-variegated kind, that will be seen on the exhibition tables. C. Queen Victoria, the first English seedling sent out, was well represented here and in other parts of the show. Of the most recent *Dracaenas*, *superba* is the most distinct, having narrow, richly-coloured leaves, the best for table decoration. In this collection were some excellently grown Orchids that ought to have been in competition in another part of the show, but Mr. Williams very commendably did not compete in open classes, so as not to come in contact with amateur cultivators. Amongst them was a magnificent plant of *Cypripedium superbum*, by far the first plant in the show; *Laelia purpurata*, *Dendrobium Parishii*, *Masdevallia Harryana splendens*, a very rich variety; *Odonoglossum Alexandræ*, *Cattleya Warneri*, *Aerides odoratum*, and *Cypripedium Parishii*. *Anacochilus*, or variegated Orchids—a class of plants almost lost—were here well represented in A. Petola, intermedia, Lowii, Rollestoni, and others; also carnivorous plants—*Sarracenias*, *Darlingtonias*, *Nepenthes*, *Dionæas*, *Cephalotus*, *Droseras*, &c. Another interesting plant, the Indian *Lycopodium ulcifolium* from Kashgar, growing on a Tree Fern, from which its long graceful fronds or growths depended. *Coleus* Mrs. George Simpson is another great acquisition in this most useful class of plants, being of quite a new and distinct type.

Some good bouquets were staged, also three nicely arranged groups of flowers for table decoration. For forty-eight Roses the Cranston Nursery Company were 1st, and Mr. H. May 2d; and for thirty-six the positions were reversed. In the amateurs' class Messrs. Jowett, Tetley, and Allanby took prizes in the order in which their names stand. Cut stove and greenhouse flowers were sent by Mr. Samson and Mrs. Cole & Sons.

FRUIT.—In this department of the show the Pines from Grimston Park and the Grapes from Kirby Hall stood out conspicuously above all other exhibits, and as a matter of course took the premier awards in their respective classes. The competition in some of the classes was very limited, but except Strawberries the whole of the exhibits were of superior quality, certainly equal to any that is ever seen at the metropolitan shows. In a special class for a collection of four dishes of fruit, the prizes for which were offered by the Mayor's daughters, Mr. Clayton, gr. to John Fielden, Esq., Grimston, won 1st honours, with moderate-sized and well-finished bunches of Black Hamburg and Muscat of Alexandria Grapes, extra good Queen Pines, and Abce Peaches; the 2d award going to Mr. Taylor, gr. to Sir Henry Ripley, Bart., Apperley. In the class for six dishes there were three competitors, Mr. Clark, gr. to

the Marquis of Ripon, Studley, being 1st, with good bunches of Golden Champion Grape (lacking colour), nice bunches of Black Hamburg, a superb dish of Figs (Brown Turkey), medium-sized well-coloured Royal George Peaches, *Violette Hative* Nectarines, and a good Melon (Blankney Hero), Mr. Clayton taking the 2d place, but so nearly equal to the 1st that the judges must have had some difficulty in deciding between them—his Pine, Muscat Grapes, and Nectarines being super-excellent. Mr. Westcott, gr. to the Duke of Cleveland, Raby Castle, was 3d, his best dishes being Hamburg Grapes, Peaches, and Melons. In the class for two dishes of Grapes, one black and one white, Mr. Wallis, gr. to Sir H. M. Thompson, Bart., Kirby Hall, was 1st, with superb examples of Black Hamburg and Buckland Sweetwater. For four varieties of fruits, only one kind of Grape allowed, there were four competitors, the awards going to Mr. Clark, Mr. Clayton, and Mr. Wallis in the order named, all showing excellently. The class for a single dish of black Grapes was a good one, eight competing, and not a bad dish among them. The 1st award went to Messrs. Noble & Ridsdale, Boston Spa, for large bunches, wanting slightly in colour; the 2d to W. H. Golt, Esq., Armley, for smaller bunches but carrying a fine bloom; and the 3d to Mr. Wallis, who had compact bunches but wanting a little denser bloom to have placed them higher in the prize list. In the corresponding class for white Grapes Mr. Wallis was a long way ahead of the other competitors, with moderate sized but the finest finished bunches of Buckland Sweetwater we have seen for years; the 2d award going to Mr. Taylor, for unripe Muscat of Alexandria. The heaviest bunch class was a poor one, and another year the authorities would do well to exclude this from the schedule, or else to stipulate that the exhibits should be ripe and worthy of exhibition. In the class for a single Pineapple there were but three competitors, Mr. Clayton taking 1st honours with a well swelled Queen of at least 4 lb. weight, but the others were poor. For a dish of six Peaches, eight lots were staged, and all were fairly good, as also were the Nectarines in the corresponding class. Of Melons there were only two, but both were very good, Mr. Cypher, of Cheltenham, taking the premier award for a scarlet variety, called Victory of Bristol. There were classes for orchard-house trees, Vines in pots, and Strawberries, but none of these exhibits call for special remark.

Much sympathy is felt for the committee, as a loss of fully £400 has fallen upon them. It would be a great misfortune for Leeds and the district were those important annual displays of horticultural skill to come to an end, but it will be gratifying to many to know that the committee have made an appeal to the public, and a subscription list shows that within three days of the exhibition £100 had been contributed, and a supplementary exhibition in August next, with other attractions, is to take place for the purpose of supplying the means for putting the Society on a sound financial basis, on which occasion the willing help of all friends of the Society will be fully appreciated.



Law Notes.

CHARLES KAVANAGH v. SIR J. W. MACKEY.—This was an action recently tried in Dublin, before Lord Chief Justice Morris and a special jury, in which the plaintiff sought to recover damages, laid at £100, for alleged breach of warranty in the sale of Onion seed. The plaintiff occupies a farm of some 40 acres of land, the bulk of which is used for growing vegetables for market purposes. The defendant is the eminent seed merchant carrying on business at 23, Upper Sackville Street, Dublin.

From the opening statement, made by Mr. Hemphill, Q.C., plaintiff's counsel, it appears that plaintiff purchased, in the spring of 1879, a quantity of Onion seed from defendant. The first purchase of 6 lb. of seed was made on February 27, the second, of 10 lb., on March 15, and the third and last, of 5 lb., on the 22d of same month. On each occasion the variety ordered was Strasburg. That ordered in February was all right and true to name, but the two parcels ordered in March turned out to be Blood Red, instead of Strasburg. Mr. Hemphill then proceeded to say that the plaintiff suffered loss and damage to the amount sued for, owing to the defendant's negligence, in that red Onions are not saleable at all in the Dublin market; further, that a quantity of them run to what is technically known in the trade as "bull necks," and that in consequence of this he was obliged to dispose of them for less than half what he would have got had they been the variety ordered.

For the defence Sir J. W. Mackey was examined, and in reply to Mr. Heron candidly admitted the mistake—through no fault of his—of supplying to the plaintiff Red Onion for Strasburg. When complaint was first made to him he went out and inspected the crop in company with the plaintiff and some other parties

well versed in such matters. In reply to the question, "was the crop a good one?" Sir James swore that it was excellent, and in every respect superior to the crop of Strasburg, growing beside them. Defendant further stated that he requested plaintiff not to dispose of the Onions before letting him know, as he would probably obtain a good market for him. With regard to the non-warranty clause, the defendant stated that in common with the rest of the trade he was forced to adopt it to protect himself.

In summing up, his lordship said that the case had after all been brought within very narrow limits. With regard to the legality of the non-warranty clause, that was altogether a question of law, and not for the jury to decide. The questions which he would send to the jury for their consideration were three in number, namely—was the plaintiff aware of the existence of this non-warranty clause; was he aware of its existence at the time of the purchase of the seed which was the cause of action; and lastly, what amount of loss and damage did he suffer, and if any? With regard to the latter question his lordship made some remarks on the fact of the plaintiff having sold the Strasburg Onion he had, at the rate of £4 10s. per ton, whereas he expected double that amount for those which did not grow at all.

The jury then retired, and after about twenty minutes' absence returned with the following verdict:—That the plaintiff was fully aware of the non-warranty clause, both on the occasion of the purchase of the seed in question and previously. And further, that he suffered no loss or damage whatever owing to the mistake.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JUNE 30, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLASHEATH'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 48 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.	Degree of Humidity: Sat. = 100.	
June 24	In. 29.59	-.02	72.3	59.3	13.0	59.5	-1.6	52.9	79	WSW .25
25	29.65	-.17	73.4	48.6	24.8	58.6	-2.5	53.7	83	WSW .00
26	29.78	-.04	68.5	50.5	18.0	57.0	-4.2	55.1	93	N.E. .10
27	30.04	+0.22	72.8	50.0	22.8	60.6	-0.7	53.9	79	W. .00
28	30.02	+0.20	78.3	55.1	23.2	64.5	+3.2	57.7	79	WSW .00
29	29.83	+0.02	80.3	54.5	25.8	64.5	+3.2	57.0	79	S.W. .00
30	29.60	-.22	79.7	52.7	27.0	62.3	+1.1	54.0	78	WSW .00
Mean	29.79	-.03	75.1	51.7	23.4	61.0	-0.2	55.1	81	WSW sum .35

- June 24.—Fine and bright generally, though occasionally dull with slight showers till 6 P.M. Heavy rain between 6 and 7 P.M. Lightning at night.
- 25.—A fine day. Heavy clouds at times. Occasional thunder between 3 and 5 P.M. Few drops of rain at times.
- 26.—Generally dull, but fine at times. Occasional rain in afternoon, heavy rain at 8 P.M. Thunderstorm in afternoon.
- 27.—A fine bright day, partially cloudy. Warmer. Clear at night.
- 28.—A very fine bright warm day. Cloudless at night. Windy.
- 29.—A very fine warm day. Clear. Cloudless at night.
- 30.—A fine bright day, partially cloudy till evening. Overcast at night.

LONDON: Barometer.—During the week ending Saturday, June 26, in the suburbs of London, the reading of the barometer at the level of the sea decreased from 29.69 inches at the beginning of the week to 29.63 inches by the morning of the 20th; increased to 29.80 inches by the evening of the 22d; decreased to 29.75 inches by the evening of the 23d; and increased to 30.04 inches by the end of the week. The mean reading for the week at sea level was 29.77 inches, being 0.22 inch below that of the preceding week, and 0.21 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 75° on the 21st, to 60° on the 22d; the mean value for the week was 70°.

The lowest temperatures of the air observed by night varied from $48\frac{1}{2}^{\circ}$ on the 25th, to 55° on the 20th; the mean value for the week was $51\frac{1}{2}^{\circ}$. The mean daily range of temperature in the week was $18\frac{1}{2}^{\circ}$, the greatest range in the day being $25\frac{1}{2}^{\circ}$, on the 21st, and the least $7\frac{1}{2}^{\circ}$, on the 22d.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—20th, 60° , + 0.1 ; 21st, 60° , + 0.6 ; 22d, 55.9 , - 4.5 ; 23d, 58.7 , - 2 ; 24th, 59.5 , - 1.6 ; 25th, 58.6 , - 2.5 ; 26th, 57° , - 4.2 . The mean temperature of the air for the week was 58.6 , being 2° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were $157\frac{1}{2}^{\circ}$ on the 21st, $146\frac{1}{2}^{\circ}$ on the 25th, and 144° on the 23d; on the 22d the reading did not rise above 70° . The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 45° on the 21st and 26th, and 47° on the 25th, the mean of the seven lowest readings was 48° .

Wind.—The direction of the wind was S.W., and its strength gentle in motion.

The weather during the week was fine, though frequently dull and showery. **Lightning** was seen at Blackheath on the 24th, and **thunder** heard on the 25th and 26th.

Rain fell on five days during the week at Blackheath; the amount measured was 0.73 inch.

Rather severe **thunderstorms** occurred on the 25th and 26th at the northern parts of London. On the 25th at Hackney and Kingsland the rain was very heavy, causing floods, but at Blackheath no rain fell on this day. Very heavy rain also fell at Kentish Town on the 26th, but at Blackheath only one-tenth of an inch was measured.

ENGLAND: Temperature.—During the week ending Saturday, June 26, the highest temperatures of the air observed by day were above 74° at London, Leicester, Cambridge, Norwich, and Nottingham, and below 69° at Bristol; the mean value from all stations was $72\frac{1}{2}^{\circ}$. The lowest temperatures of the air observed by night were below 49° at Truro, Bristol, London, Leicester, Cambridge, Wolverhampton, Nottingham, and Hull; and above 53° at Plymouth, Liverpool, and Bradford; the general mean from all places was 49° . The extreme range of temperature in the week was above 26° at London, Leicester, Cambridge, and Nottingham, and below 18° at Plymouth and Liverpool; the mean range of temperature from all stations was $22\frac{1}{2}^{\circ}$.

The mean of the seven high day temperatures was above 70° at London, Cambridge, and Nottingham, and below 66° at Plymouth, Sheffield, Liverpool, and Sunderland; the general mean from all places was 68° . The mean of the seven low night temperatures was below 52° at Bristol, London, Wolverhampton, Nottingham, and Hull; the mean value from all stations was $52\frac{1}{2}^{\circ}$. The mean daily range of temperature in the week was above 19° at Cambridge and Nottingham, and below 12° at Plymouth, Liverpool, and Bradford; the mean daily range from all places was $15\frac{1}{2}^{\circ}$.

The mean temperature of the air for the week from all stations was 59° , being $3\frac{1}{2}^{\circ}$ higher than the value for the corresponding week in 1879. The mean temperature was above 60° at Cambridge and Nottingham, and below 58° at Bristol, Wolverhampton, Sheffield, and Sunderland.

Rain.—The heaviest falls of rain were at Nottingham, 4.08 inches, of which 3.52 inches fell on the 23d, 24th, and 25th; Sheffield, 2.34 inches; Leicester, 1.61 inch; and Leeds, 1.64 inch; and the least falls were at Truro, Plymouth, Liverpool, and Sunderland, all below 0.30 inch; the average fall over the country was 1.07 inch.

The weather during the week was fine, but frequently dull and wet.

Thunderstorms were frequent at many places.

SCOTLAND: Temperature.—During the week ending Saturday, June 26, the highest temperatures of the air observed by day varied from $74\frac{1}{2}^{\circ}$ at Greenock to $64\frac{1}{2}^{\circ}$ at Aberdeen; the mean from all stations was $68\frac{1}{2}^{\circ}$. The lowest temperatures of the air observed by night varied from 45° at Leith to $48\frac{1}{2}^{\circ}$ at Greenock; the general mean from all places was $46\frac{1}{2}^{\circ}$. The mean range of temperature from all places was 22° .

The mean temperature in the week from all stations was $57\frac{1}{2}^{\circ}$, being $2\frac{1}{2}^{\circ}$ higher than the value for the corresponding week in 1879. The highest was 60° at Greenock, and the lowest $55\frac{1}{2}^{\circ}$ at Aberdeen.

Rain.—The amounts of rain varied from 0.70 inch at Greenock to 0.07 inch at Aberdeen; the average fall over the country was 0.28 inch.

DUBLIN.—The highest temperature of the air was $68\frac{1}{2}^{\circ}$, the lowest $47\frac{1}{2}^{\circ}$, the extreme range 21° , the mean $58\frac{1}{2}^{\circ}$, and the fall of rain 1.22 inch.

JAMES GLAISHER, F.R.S.

Obituary.

WE regret to record the death, on June 27, at his residence, Eaton Rise, Ealing, of Mr. JOHN HUNTER, one of the honorary secretaries of the British Beekeepers' Association, the author of *A Manual of Bee-keeping* (the third edition of which, revised and much enlarged, was published last year), and an occasional contributor to our columns on apianian subjects.

Enquiries.

He that questioneth much shall learn much.—BACON.

GINKGO ADIANTIFOLIA in HEREFORDSHIRE.—Can any of your readers give information as to a Ginkgo tree, Salisburia (in a garden at Whitfield in Herefordshire), said to have been planted in 1770, and in 1864 to have been 50 feet high, with a circumference of 8 feet? (Henkel, *Synopsis der Nadelholzer*). G. Bath.

VINE CULTURE IN TROPICAL CLIMATES.—Will any one of the correspondents of the *Gardeners' Chronicle* be so kind as to give instructions for the culture of the Vine in tropical climates, and state which sorts are most suitable to plant at an altitude of 5000 feet above the sea, with a rainy and a dry season each of six months? Any information on this subject will much oblige. Richard Pfau, Alajuela, Costa-Rica, Central America.

Answers to Correspondents.

ASTILBE (OR HOTEIA) JAPONICA: W. J. B. This is a perfectly hardy herbaceous plant, and therefore is not eligible to be shown in a collection of stove and greenhouse cut flowers. It is only grown in the stove or greenhouse when brought in as a forced plant.

BELL-SHAPED FOXGLOVE: W. T. The running together of several of the end flowers of the raceme, so as to form one large cup or bell shaped flower, is not uncommon.

CYCLAMENS: W. C. Will find his Cyclamens do well planted out in a half-shady border in light soil consisting principally of leaf-mould and refuse peat, but as the season is now rather advanced it will be better if they can be protected and helped on by the use of an ordinary garden-frame, which should be placed in a similar situation to that above named, and be closed early in the afternoons when the plants have been damped overhead. As they are in large pots, it will be advisable to reduce the balls, that they may be got into the same sizes again when lifted late in the autumn. J. S.

DAVALIA MOOREANA: W. J. B. This is certainly eligible to be shown in a class for ornamental-foliaged plants, unless by any note or rule Ferns are expressly excluded in the particular case in question.

EXOTICS: W. J. B. The exact meaning of the word "exotic," as applied to Ferns in a schedule, is the same as its meaning in all other cases. It means foreign, not native.

FERN SPORES: T. C. They may be sown at any time when you can procure them. Well-drained fine nobby gritty soil is best, and the temperature should be that proper to the species. It is best to scatter the spores on the surface of the soil. Set the pot in a pan of water, and lay a flat glass over the top.

FOSTER'S SEEDLING GRAPE: Ignoramus. Probably the stock is too rank for this variety, or the roots have been kept too wet. These are the most likely reasons we can suggest for the berries splitting as you describe. It is a failing to which this Grape is not generally liable. It will do better on the Black Hamburg.

HOSE-IN-HOSE MIMULUS: W. R. A petaloid condition of the calyx is not infrequent in this plant, but the variety is worth preserving.

INSECTS: A. W. The green fly found in the white froth on the tips of your Osier shoots is the common Cuckoo-spit insect, or Frog-hopper (Aphrophora spumaria), the white froth being the fluid of the tree which has passed through the body of the insect. A cloth smeared with tar or birdlime drawn over the plants will catch the insects, which are very active. I. O. W.—J. H. Your Mangel are attacked by the larvae of a two-winged fly which feeds between the two surfaces of the leaf, causing large dead blotches, and so injuring the healthy action of the leaf. Pick off the blistered leaves, and burn them, before the grubs have gone into the ground to turn to chrysalids. I. O. W.

KALE: W. G. T. There is nothing unusual about your specimens. The leaf branches in a vertical direction, thus forming crests on the surface of the original leaf. Such cases show the close relationship there is between the leaf and the branches, and the difficulty there is of drawing any absolute line of demarcation between them.

NAMES OF PLANTS: W. D. Chrysanthemum Leucanthemum (Ox-eye Daisy).—H. Lepidium Draba.—Geo. Wall. 1. Lilium chalcidonicum; 2. Betonica grandiflora; 3. Campanula persicifolia.—F. Rawdon Smith. Oncidium Kappleri, and Aerides odoratum.—G. E. Bulger. 1. Prunus virginiana; 2. Amelanchier canadensis; 3. Antennaria plantaginifolia; 4. Cornus canadensis.—John Wright. Your specimens are too poor to name, but No. 4 appears to be Mesem-

bryanthemum falciforme. Send better specimens another time.—K. N. Spiraea canescens.—A. Vasey. 1. Poa trivialis; 2. Hordeum murinum; 3. Arrhenatherum avenaceum; 4. Bromus sterilis; 5. Cynosurus cristatus; 6. Poa trivialis. The others next week.—H. Woodmansey. Vanda Roxburghii; the other not recognised. The orange-coloured Begonia is B. Sutherlandii; the other B. Evansiana.—E. A. 1. Tanacetum vulgare crispum; 2. Meconopsis cambrica; 3. Hemerocallis flava; 4. Sedum Sieboldii medio-picta; 5. Genista anglica.—S. B. 1. Caryota urens; 2. Microlepis platyphylia; 3. Gymnogramma; send a better specimen; 4. Francoa sonchifolia.—W. S. Aquilegia canadensis.—Robert Andrews. Daphne Mezereum. The berries are poisonous.—J. Fox. 1. Tradescantia virginica; 2. Linaria Cymbalaria; 3. Sempervivum tectorum; 4. Spiraea Aruncus; 5 and 6, variety of Begonia of the Rex section; 7. Veronica Teucrium.—E. W. 1. Campanula glomerata; 2. Thalictrum Aquilegifolium; 3. Veronica Teucrium, var.; 4. Phyteuma orbiculare; 5. Silene inflata; 6. Alchemilla conjuncta; 7. Lilium Martagon; 8. Corydalis lutea; 9, not recognised—send a complete specimen.—F. Milson. Coleuses are far too numerous to admit of the naming of cut specimens. Take them to a good collection, such as Bull's or Carter's, and compare them with growing plants.—W. N. Bradway. 1, a new species of Albica; 2. Bowiea volubilis; 3. Pedicularis silvatica; 4. Stangeria paradoxa.—J. P. Highgate. Plomis fruticosus.

* Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Thomas Methven & Sons (15, Princes Street, Edinburgh), Catalogue of Dutch and other Flower Roots.

COMMUNICATIONS RECEIVED.—C. J. A.—W. F. R.—C. W. D.—L. Allegri.—A. T.—E. B.—A. M.—A Lover of Orchids.—M. & F. J. H.—A. O.—G. D.—W. D. (many thanks).—C. M. H.—W. T.—W. R.—R. McL.—J. C. S.

Markets.

COVENT GARDEN, July 1.

We have this week to report the commencement of the soft fruit season, large quantities of Strawberries reaching us from Middlesex, Kent, and Essex, and arriving in exceptionally good condition. They are, besides, being sold at prices within the reach of all. Greenstuff is plentiful, and making low prices. Trade better. James Webber, Wholesale Apple Market.

FRUIT.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Apricots, per box	1 0-1 6	Lemons, per 100	6 0-10 0
Cherries, per box	1 6-2 6	Melons, each	3 6-7 0
Cob Nuts, per lb.	1 0-1 6	Oranges, per 100	0 0-12 0
Currants, black,		Peaches, per doz.	12 0-18 0
½-sieve	8 0-9 0	Pine-apples, per lb.	2 0-5 0
Gooseberries, green,		Raspberries, per lb.	0 4-5 0
per ½-sieve	4 6-5 0	Strawberries, per lb.	1 0-5 0
Grapes, per lb.	1 6-5 0		

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue,		Horse Radish, p. bun.	4 0-5 0
per bundle	1 0-2 0	Lettuces, Cabbage,	
—English, p. 100.	5 0-6 0	per doz.	0 6-1 6
Aubergines, per doz.	3 0-4 0	Mint, green, bunch.	0 4-1 0
Beans, French, p. lb.	0 9-1 0	Mushrooms, p. basket.	1 6-2 0
Beet, per doz.	2 0-4 0	Onions, per bushel.	5 0-7 0
Cabbages, per doz.	1 0-2 0	—Spring, per bun.	0 6-1 0
Carrots, new, bunch	0 9-1 0	Parsley, per lb.	0 9-1 0
Cauliflowers, doz.	3 0-6 0	Peas, English, per qt.	2 0-3 0
—English, each	1 0-2 0	Potatoes (new), per lb.	0 2-0 6
Celery, per bundle	1 6-2 0	Radishes, per bun.	0 2-1 0
Chilis, per 100	3 0-4 0	Small salading, pun.	0 4-1 0
Cucumbers, per doz.	8 0-12 0	Spinach, per bushel	2 6-3 0
Endive, per doz.	1 6-3 0	Tomatos, per dozen	2 0-3 0
Garlic, per lb.	1 0-2 0	Turnips, new, bunch.	0 8-1 0
Herbs, per bunch	0 2-0 4	Veget. Marrows, doz.	6 0-1 0

New Potatoes.—Jersey Kidney, 8s. to 10s. per cwt.; Round, 6s. to 8s.; French Round, 7s. to 8s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0-12 0	Hydrangea, per doz.	12 0-24 0
Bedding Plants, various, per doz.	1 6-2 6	Lilium eximium, doz.	30 0-60 0
Begonias, per doz.	6 0-18 0	Lobelia, per dozen	4 0-8 0
Bouvardias, per doz.	12 0-24 0	Mignonette, per doz.	5 0-9 0
Calceolarias, per doz.	6 0-12 0	Musk, per dozen	2 6-6 0
—Herbaceous, doz.	6 0-12 0	Myrtles, per doz.	6 0-12 0
Cyperus, per dozen	4 0-9 0	Nasturtiums, doz.	4 0-6 0
Dracena terminalis	30 0-60 0	Palms in variety,	
—viridis, per doz.	12 0-24 0	each	8 6-21 0
Erica various, per dozen	12 0-30 0	Pelargoniums, dozen	9 0-24 0
Euonymus, various, per dozen	6 0-18 0	—Ivy-leaved, doz.	4 0-8 0
Ferns, in var., doz.	4 0-18 0	—Tricolor	4 0-12 0
Ficus elasticus, each	1 6-7 6	—scarlet, per doz.	4 0-9 0
Foliage Plants, various each	2 0-10 6	Roses, Hybrid Perpetual, per doz.	18 0-36 0
Fuchsias, per dozen	9 0-15 0	—Fairy, per dozen	6 0-10 0
		Spiraea, per dozen	6 0-18 0
		—palmata, doz.	18 0-30 0
		Stocks, per dozen	4 0-8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	4-0-6	Mignonette, 12 bun.	6-0-0
Anemone, 12 bun.	3-0-6	Pansies, 12 bunches	2-0-6
Arum Lilies, per dozen	3-0-6	Pelargoniums, 12	3-0-0
Azalea, 12 sprays	0-1-0	— zonal, 12 sprays	0-1-0
Bougardias, per bun.	1-0-4	Pinks, white, 12 bun.	3-0-9
Calceolarias, per bunch	0-1-0	Primula, double, per bunch	1-0-1
Caranations, per dozen	1-0-3	Ranunculus, p. doz.	4-0-8
C. ranflower, per doz.	6-0-9	Roses (indoor), doz.	1-0-0
Eucharis, per doz.	4-0-0	— Roses, Fr., doz.	2-0-0
Forget-me-not, 12 bunches	3-0-0	Spiraea, 12 sprays	0-1-0
Gardenias, 12 blms.	2-0-8	Stephanotis, 12 spr.	3-0-6
Heliotropes, 12 sp.	0-1-0	Tropaeolum, 12 bun.	1-0-3
Lily of the Valley, per bunch	1-6-2	Tuberose, per dozen	2-0-4
		Wallflowers	4-0-9

SEEDS.

LONDON: June 30.—The state of affairs on the seed market is unchanged since our last, and the amount of business doing most limited. In the absence of transactions Clover seed must be noted unchanged. Mustard and Rape seed move off steadily, but with no great briskness. A little more attention is being devoted to Canary seed, the low prices now current inducing many dealers to buy more freely. The trade for Hemp continues dull. Holders of yearling Trifolium are firm, their position being materially strengthened by the high prices asked in France. Blue Peas still move off freely. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was dull at Mark Lane on Monday, and English Wheat sustained a fall of from 1s. to 2s. per quarter compared with the prices of the previous Monday. Foreign Wheat underwent a similar decline; the chief fall, however, was in white descriptions. Barley, without meeting with much attention, moved off steadily at previous rates. Malt was quiet and unaltered. Oats were firm, at an advance of about 6d. per quarter on the week, while Maize fully supported the prices of last week. Beans and Peas were taken off quietly on former terms. The flour trade was heavy, and quotations went down about 1s. per sack and barrel.—On Wednesday the trade for Wheat continued dull. Barley was quiet, but prices were fairly well maintained. Malt was neglected. Oats were as dear as on Monday, and for certain descriptions there was a moderate inquiry. Maize, Beans, and Peas continued fully as dear, although there was not much doing. Flour continued heavy at the late decline.—Average prices of corn for the week ending June 26:—Wheat, 44s. 8d.; Barley, 28s. 3d.; Oats, 26s. 9d. For the corresponding period last year:—Wheat, 42s. 6d.; Barley, 28s. 1d.; Oats, 22s. 1d.

CATTLE.

At the Metropolitan Market on Monday the deficiency in the supply of English beasts was pretty well made up by a large consignment of Canadian. Prices advanced on all kinds, and some choicest qualities made rather over our top quotation. There was also a short supply of sheep, and an early clearance was made at advanced rates. Lambs and calves sold about as on Thursday last. Quotations:—Beasts, 4s. 6d. to 5s. 2d., and 5s. 6d. to 6s. 2d.; calves, 5s. to 6s.; sheep, 5s. 2d. to 5s. 10d., and 6s. 6d. to 7s. 2d.; lambs, 6s. 6d. to 7s. 8d.; pigs, 4s. to 5s. 4d.—On Thursday the cattle trade was quiet, and without fresh feature. Supplies of beasts were moderate, and the sale for them slow, at the above prices; but the tone was not strong. Sheep and lambs were quiet, at late rates, and calves sold at previous currencies.

HAY.

Tuesday's Whitechapel Market report states that supplies of fodder were generally shorter, and cleared off at the annexed quotations:—Prime Clover, 100s. to 130s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 102s. 6d.; inferior, 30s. to 70s.; and straw, 30s. to 39s. per load.—On Thursday there was again a short supply of hay and straw on sale, with a trade for good stuff, and prices were rather dearer for hay and Clover.—Cumberland Market quotations:—Superior meadow hay, 100s. to 110s.; inferior, 40s. to 75s.; superior Clover, 120s. to 138s.; inferior, 80s. to 100s.; and straw, 34s. to 40s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that the supplies on sale have been moderate, and business progressed slowly at the following quotations:—Champions, 120s. per ton; Victorias, 120s. per ton; New Lisbon, 75s. per cwt.; Malta new, 75s. per cwt.; Jersey kidneys, 10s. per cwt.; Cherbourg round, 8s. per cwt.; ditto, kidneys, 10s. per cwt.—The imports into London last week were 3411 packages from Lisbon, 200 bags Hamburg, 16 bags New York, 304 bags Harlingen, 490 baskets Rotterdam, 1394 packages from Jersey, 148 barrels Bermuda, 1327 boxes Barfleur, and 1265 Cherbourg.

Government Stock.—The closing price of Consols on Monday was 98½ to 98½, for both delivery and account. The same figures were returned on Tuesday. On Wednesday the closing figures were, for delivery, 98½ to 98½, and 98½ to 98½ for the account. The final quotations on Thursday were, for delivery, 98½ to 98½, and 98½ to 98½ for the account.

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4 bushels for 15s. bag included. Orders by post punctually attended to.—G. HARDING, 23, Stepney Green, E.

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COCOA-NUT FIBRE REFUSE,
4 bushels, 15s.; 120 for 20s.
Truck, 25s.
BEST BROWN FIBROUS PEAT,
5s. per Sack, 5 for 22s. 6d.
BLACK FIBROUS PEAT 4s. 6d. per Sack, 5 for 20s. Sacks
COARSE SILVER SAND, 1s. 6d. per Bushel. [4d. each.
YELLOW FIBROUS LOAM, splendid LEAF-MOULD and
PEAT-MOULD, 1s. per bushel. **TOBACCO CLOTH**
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7d.; Roll Paper, best quality, 1s. Write for Price List.
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For Stimulating and Quickening the Growth of Plants, and producing a rapid and high development of blossoms.
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Inches.	Inches.	
15-oz., 6 x 4 to 7½ x 5½, 9s., 10s., 11s., 12s.		
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10½ x 8½ to 14 x 10, 10s., 12s., 13s., 14s.		
15 x 10 to 18 x 12, 11s., 13s., 14s., 15s.		
20 x 12 to 24 x 16, 11s. 6d., 13s. 6d., 14s. 6d., 15s. 6d.		
20 x 17 to 24 x 18, 12s., 14s., 15s., 16s.		

21-oz., Orchard House, 20 x 12, 20 x 15, 16s., 17s. 3d.,
20 x 13, 20 x 16, 18s. 3d., 20s.
20 x 14, 20 x 17, 18s. 3d., 20s.

15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case.
21-oz., for Cutting up, 34s., 41s., 50s., 66s. per 200 feet case.

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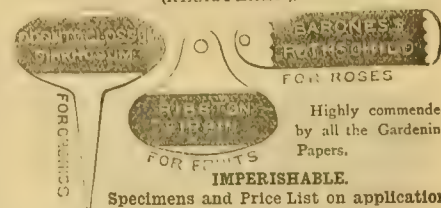
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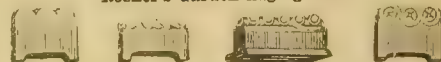
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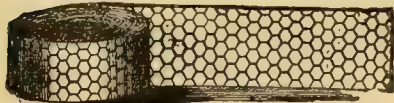
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1½ inch	0 3	0 3½	0 4½	0 5½
1¼ inch	0 3½	0 4½	0 5½	0 7
1½ inch	0 5½	0 7	0 9	1 0
1 inch	0 7	0 8½	0 11	1 3
¾ inch	0 9	0 11	1 2	1 6

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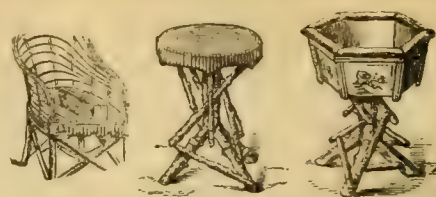
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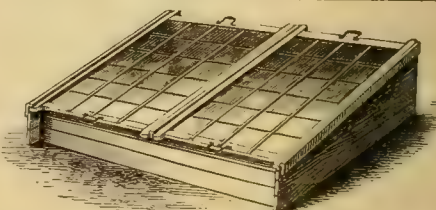
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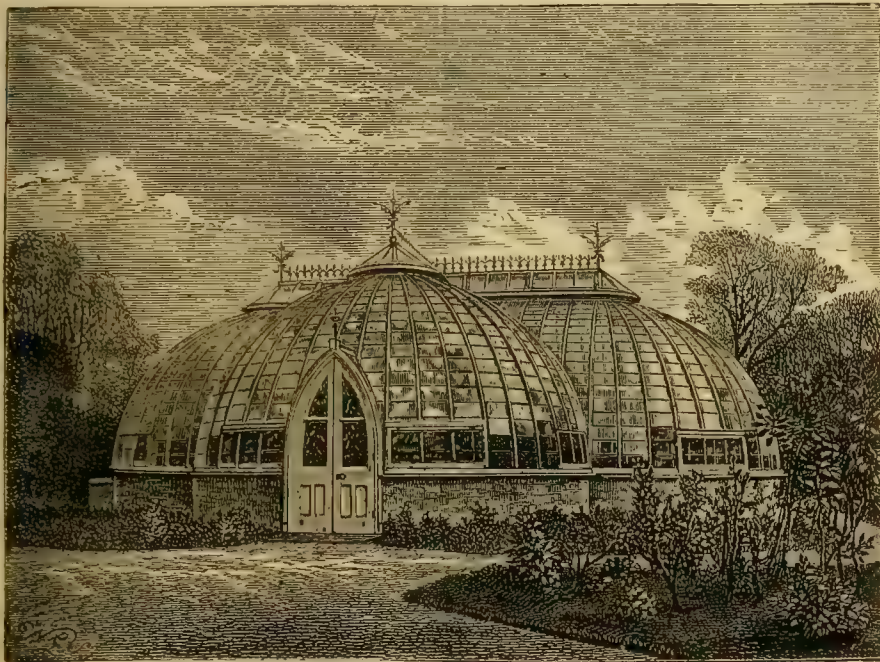
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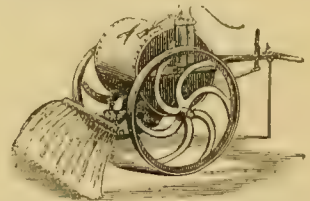
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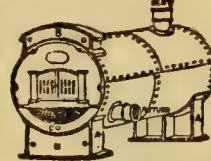
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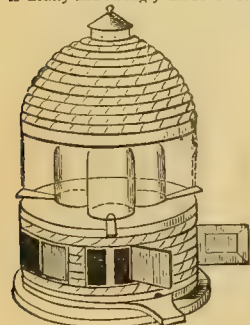
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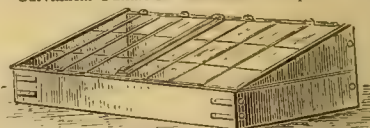
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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SOUTH KENSINGTON, S.W.

NOTICE! COMMITTEES' MEETINGS.—Fruit and
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for Election of Fellows at 3 P.M., Band at 4 o'clock, on
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These are NOW FINELY IN BLOOM at the Waltham
Cross Nurseries, adjoining Waltham Station, Great Eastern
Railway. Half an hour's ride from London.
The Roses of Mr. Paul are things to see and dream of
for ever. *Athenæum.*
WM. PAUL and SON, Paul's Nurseries, Waltham Cross.

To the Trade and Amateur Rosarians.
NEW ROSES in POTS:
TEA and NOISETE ROSES in Pots.—One of the
most extensive, most select, and perhaps the most thriving
stock of young plants in the country.
Special LIST will be sent gratis and post-free to applicants.
EWING and CO., Eaton, near Norwich.

The Largest Rose Gardens in England.
**CRANSTON'S NURSERIES, HERE-
FORD.** (Established 1785.)
Descriptive CATALOGUES on application. Address
CRANSTON'S NURSERY and SEED COMPANY
(Limited), King's Acre, near Hereford.

Roses in Bloom.

PAUL and SON, the "Old" Nurseries,
Cheshunt, have their Roses now finely in bloom. One
mile from the Cheshunt Station of the Great Eastern Railway,
where are frys. The London Terminus is Liverpool Street.

CUT ROSES of choice quality and immense
variety. Blooms and buds, 6s. per 100; sample dozen,
1s. 3d., free. BUDS FOR BUDDING, 200 finest varieties,
same price.
W. CAUDWELL, F.R.H.S., The Ivies, Wantage.

WHITE CAPE FLOWERS.—200,000, just
imported, to be sold cheap. Sample and price on
application.
GEO. P. DARBY, Hertfordshire Seed and Plant Establish-
ment, Watford.

STRAWBERRIES.—The fact of my
being located in the midst of hundreds of acres of all the
best Strawberries and Raspberries, enables me to supply them
both cheap, good and correct to name; and all requiring Runners
should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

STRAWBERRY RUNNERS,
strong, healthy, and well-rooted, from V. H. de Thury,
President, Sir J. Paxton, Rivers' Eliza, and other good varieties.
Price LIST, &c., on application. MANUAL ON STRAW-
BERRY CULTURE, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

WM. CUTBUSH and SON
beg to announce that their
GENERAL PLANT CATALOGUE
is now ready for the ensuing season, and may be had post-free
on application.
Highgate, London, N.; and Barnet, Herts.

SPIRÆA ULMARIA VARIEGATA.—
Beautiful golden variegated foliage (see the Garden, of
June 12, 1880, p. 513).
Messrs. BUDDENBORG BROS., Hillegom, near Haarlem,
Holland, offer fine plants of the above at 20s. per 100.

Begonias.

JOHN LAING and CO.'S unrivalled Gold
Medal Collection is now in bloom. Inspection invited.
Young plants, free by post, 4s. and 6s. per dozen. The "coming
flower" for Conservatory, Window Decoration, and Bedding-out.
LISTS free on application.
The Nurseries, Forest Hill, London, S.E.

Hyacinths, Tulips, &c.

BUDDENBORG BROS., Bulb Growers,
House Bloomsward, Hillegom, near Haarlem, Holland,
beg to announce that their WHOLESALE CATALOGUE of
the above is now ready, and will be sent post-free on application.

OSBORN and SONS
call attention to their collection of
HARDY HERBACEOUS ALPINE BULBOUS PLANTS,
Hardy FERNS, &c., a CATALOGUE of which will be
forwarded Post-free on application.
OSBORN and SONS, The Fulham Nurseries, London, S.W.

Myosotis elegantissima.

The new Silver-edged, Blue-flowered Forget-me-not.
RODGER, McCLELLAND and CO. are
now sending out this superb Novelty for the Spring
Garden. Good plants 3s. 6d. each, 36s. per dozen. Can be sent
by post. 64, Hill Street, Newry.

Orchids.

**THE NEW PLANT and BULB COM-
PANY** beg to announce that their SPECIAL LIST,
No. 47, is just published. Contents:—Importations from New
Grenada, East Indies, Brazil, and a fine lot of Established
Orchids. Sent Post-free on application.
Lion Walk, Colchester.

MUSHROOM SPAWN.—Best Milltrack is
now ready for immediate use.—For price and further
particulars, apply to H. THORNTON and CO. (late
A. Dancer), Seedsmen, &c., Fulham, S.W.

SALES BY AUCTION.

Highly Important Sale of Established Orchids,
The property of F. A. Philbrick, Esq., Q.C., Avenue Road,
Regent's Park.

MR. J. C. STEVENS has been favoured with instructions from F. A. Philbrick, Esq., Q.C. (who is leaving his residence), to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **TUESDAY and WEDNESDAY, July 13 and 14**, at half-past 12 o'clock precisely each day, his valuable COLLECTION of **ESTABLISHED ORCHIDS**, which has been formed during the last seven years regardless of expense, and comprising most of the finest species and varieties in existence. Amongst other grand things will be found *Aerides Schoderii*, *Veitchii*, *Fieldingii*, *quinquevenerum*, *rubrum*, *affine superbum*, *Lobbi*; splendid specimen *Angræcums*; *Phalænopsis* in grand variety; *Cattleya Gigas*, *Dowiana*, *dolosa*, *labiata*, *Warneri*; *Cypripedium*, *Dayanum*, *stelligerum*, *superbum*; *Dendrobium Schoderii*, *Griffithianum*, &c.; *Lælia anceps*, *Dawsoni*, *Schilleriana*, *superbissima*; *Masdevallia Towarensis*, *Lindeni*, *superba*, &c.; *Odontoglossum nevium majus*, *Andersonianum*, *pulchellum*, &c.; *Saccolabium*, including *Holfordi* (true), *Dayanum*, *violaceum*; *Vanda suavis*, *Veitchii*, *Rolissoni*, &c. All the plants are in the finest possible condition.

May be viewed the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, July 15**, at half-past 12 o'clock precisely, without reserve, the COLLECTION of **ESTABLISHED ORCHIDS** formed by D. G. STAIGHT, Esq. (who is now giving up their culture), comprising many rare and valuable sorts, and which have taken prizes at the Crystal Palace, and exhibited at the Horticultural Shows.

May be viewed the morning of Sale, and Catalogues had.

"Westwood," Beulah Hill, Upper Norwood.

MR. J. C. STEVENS has received instructions from Henry Moser, Esq., to SELL by AUCTION, on the Premises as above, on **SATURDAY, July 17**, at half-past 12 o'clock precisely, without the least reserve (in consequence of the freehold having been disposed of), his entire COLLECTION of **STOVE and GREENHOUSE PLANTS**, consisting of magnificent specimen Ferns, which have taken 1st Prize at Crystal Palace and other Shows; good Crotons, Camellias and Azaleas, Specimen Coleus, Fuchsias, Tree Ferns, Eucharis, Pancratiums, a few Orchids, FRAMES, LIGHTS, MOWING MACHINES, and other GARDEN TOOLS, &c.

May be viewed the day prior and morning of Sale, and Catalogues had on the Premises, and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Important Orchid and Ornamental Plant Sale,

THURSDAY, JULY 15.

MR. DAVID MITCHELL, HORTICULTURAL AUCTIONEER and VALUATOR, has been instructed to DISPOSE OF, by PUBLIC AUCTION, in the Freemasons' Hall, 98, George Street, Edinburgh, on **THURSDAY, July 15**, at 12 o'clock noon, a very choice collection of **ESTABLISHED ORCHIDS**, the property of a gentleman near Manchester, comprising a fine lot of *Dendrobiums*, *Pleione maculata*, *laganaria*, and *Wallichii*, all fine pieces; *Saccolabium*, *Lælia superbum*, grand plant; *Lælia anceps alba* and *Dawsoni*, good plants (true); *Odontoglossum* *Kichias*, variety; *Oncidium*, *Masdevallia*, leading kind; *Trichopilia*, *Lycastes*, *Chysis bracteensis*, fine plant; *Miltonia* and *Cypripedium*, *Vanda cærulea*, *Aerides*, *Cattleya Warneri*, original variety. Also a very fine lot of beautifully-grown Conservatory Plants, from the same establishment, consisting of *Thrinax elegans*, *Kentia Belmoreana*, 6 feet; *Araucaria excelsa*, from 3 to 4 feet in height, splendid plants; *Cocos Weddelliana*, 3 to 4 feet; *Phormium tenax Veitchii*, 4 feet; and *Anthurium Scherzerianum*, splendid plant; *Geonoma gracilis*, 5 feet, grand example; *Crotons*, *Dracænas*, *Dipladenias*, *Caladiums*, &c.

N.B. Mr. MITCHELL would be glad to draw the attention of cultivators to this important Sale of Plants. The Orchids are very choice, and the Ornamental Plants are superb.

Catalogues ready on Monday, and will be forwarded free on application.

D. MITCHELL, 6, Comely Bank, Edinburgh.—June 29.

To Nurserymen, Florists, and Others.

HIGHLY IMPORTANT SALE OF THE LEASE AND GOODWILL OF THE OLD-ESTABLISHED BUSINESS carried on at 46, Harborne Road, Edgbaston, near Birmingham, and called the "Birmingham Nursery," together with the splendid collection of **STOVE and GREENHOUSE PLANTS**. By order of Messrs. Felton & Sons, who are giving up the business.

MR. JOHN WARD has received instructions to offer for SALE by AUCTION as a going concern (unless previously disposed of by private contract), at the Grand Hotel, Colmore Row, Birmingham, on **THURSDAY, July 22**, at 6 o'clock in the evening, in one lot, and subject to conditions then to be read, the valuable LEASE, GOODWILL, and STOCK-IN-TRADE of the above first-class Business. The Premises consist of a substantially-built Residence, containing Dining, Drawing, and Breakfast-rooms, Two Kitchens, Five Good Bedrooms, and Two Dressing-rooms, and the usual Out-offices, and a Small Three-roomed Cottage adjoining same. The Glass, which covers an area of about 25,000 superficial feet, consists of Sixteen Houses, varying from 90 to 60 feet in length, together with Two Large Potting-sheds, Office and Seed-rooms fitted with Mahogany Counters, Nests of Drawers, and Iron Safe, &c.; Six Pits, each 70 feet long; and Fourteen Two-light Frames. The whole of the Houses and some of the Pits are heated with Hot Water by Four Boilers constructed on most approved principles for the Propagating and Growing of Stove and Greenhouse Plants and Flowers. The Stock, which is a most extensive one, comprises all the newest Stove and Greenhouse Plants in every variety. The Property, which occupies an area of over an acre, is leasehold for a term of forty years unexpired, at the absurdly low ground rent of £27 per annum. Immediate possession can be had on completion of the purchase.

N.B.—The Auctioneer begs to call the special attention of Exotic Nurserymen and Florists to the Sale of the above Business, which is situated in the very heart of Edgbaston, and has a first-class connection, which is capable of great extension.

The Premises and Stock may be viewed at any time prior to Sale. For further particulars apply to B. T. CARTWRIGHT, Esq., Solicitor, 59, Colmore Row; to T. E. SPENCER, Esq., Solicitor, 14, Bennett's Hill; or to the Auctioneer, 84, Colmore Row, all of Birmingham.

Wood Green, Middlesex, N.

By order of the Mortgagee of James Norris, deceased, acting under power of Sale, with permission of the Vice-Chancellor, Sir James Bacon.

A valuable FREEHOLD VINERY, with upwards of three-quarters of an Acre of Capital LAND, situate within five minutes' walk of Wood Green and Palace Gates Railway Stations. Possession on completion of the purchase.

MESSRS. GREEN AND SON will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on **FRIDAY, July 30**, at 12 o'clock, in one lot, the valuable FREEHOLD PROPERTY known as The Vineries, Wood Green, possessing a frontage of 120 feet to Nightingale Road, and a frontage of 90 feet to Truro Road; having erected thereon eight Span-roof Greenhouses, containing about 500 established Vines and Peaches, Propagating House, Plant and Fern Houses, Pits, Boiler Houses, &c., Detached Cottage Residence, Office, Stabling, &c.; the whole forming a compact set of Horticultural Premises of the estimated rental value of £150 per annum. The Property is situated in the midst of a steadily developing neighbourhood, and possessing such good frontages is admirably adapted for the Erection of several Houses without interfering with the horticultural position of the property.

May be viewed. Particulars of Messrs. HENSMAN and NICHOLSON, Solicitors, 25, College Hill, E.C.; and of Messrs. GREEN AND SON, Auctioneers and Surveyors, 10, St. Swithin's Lane, E.C.

FOR SALE, the LEASE of an old-established NURSERY, in the North of London; about 9000 feet of Glass, with first-class Home Trade and Jobbing Connection. Cottage, long Lease, and every convenience, with immediate possession. Apply,

1, Hanley Road West, Upper Holloway, London, N.

Nursery, Florist, and Seed Business.

TO BE DISPOSED OF, IMMEDIATELY, by reason of the death of one of the partners, a genuine well-established BUSINESS in Essex, and within half a mile of Rail, comprising good Residence, Seed Shop, convenient Offices, Four good Houses heated with hot water, and about 7 Acres of Ground planted with thriving Nursery Stock, including about 7000 Roses, for which the Nursery bears a high reputation, and orders for the whole are already secured. Incoming by Valuation or as may be agreed upon. Apply to

Mr. J. MAYN, Accountant, Sible Hedingham, Halstead, Essex.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 38, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

NOTICE TO THE TRADE.—On and after

July 1, the Business of Nurserymen, &c., lately carried on under the style of Thomas Bunnard & Sons, will be continued at the

ROSE NURSERIES, ASHFORD, by THOMAS BUNYARD, JUN., while the Maidstone concern will be carried on separately under the name of

GEORGE BUNYARD AND CO., GEORGE BUNYARD being Manager. The Trade are particularly requested to keep all accounts separately, and post Catalogues to each firm, as in future the Businesses will be quite distinct. Maidstone, June 28, 1880.

To the Trade.

CHARLES SHARPE and CO., have to offer, of their own saving:—
SHARPE'S NONPAREIL CABBAGE.
ROBINSON'S DRUMHEAD CABBAGE.
GIBSON'S DRUMHEAD CABBAGE.
ENFIELD MARKET CABBAGE.

Price on application, Seafoard, July, 1880.

JULES DE COCK, NURSERYMAN,

Ghent, Belgium, offers:—
PALMS, seedlings, in store pots, per 100:—*Areca alba*, 60s.; *A. madagascariensis*, 60s.; *A. rubra*, 30s.; *Chamærops exelsa* and *humilis*, 8s.; *Corypha australis*, 22s.; *Latania borbonica*, 10s.; *Pandanus utilis*, 20s.; *Phoenix reclinata*, 10s.; *P. tenuis*, 10s.; *Ptychosperma Alexandria*, 60s.; *Seaforthia elegans*, 20s.

FERNS, in small pots, per 100:—*Adiantum cuneatum*, 30s.; *A. gracillima*, 40s.; *Cibotium regalis*, 70s.; *Dicksonia antarctica*, 30s.; *Lomaria gibba*, 25s.; *L. zameoides*, 40s.; *Nephrodium racemosum*, 30s.; *Pteris argyrea*, 25s.; *P. serrulata cristata*, 30s.; *Dracæna indivisa*, 15 to 20 inches high, 1s. each.

Important to Purchasers of First-class Stove Plants.

A Gentleman who is giving up the culture of a beautiful Collection of about 170 of the better kinds of

HOT-HOUSE PLANTS, wishes to dispose of them in one lot. The collection contains excellent specimens of *Stephanotis floribunda*, *Eucharis amazzonica*, *Crotoceras reflexa*, *Gynogramma Lauchæana aurea*, *Allamanda Wardleiana*, *Adiantum Farleyense*, *Croton Weismanni*, *Maranta Veitchii*, and others equally good. As this collection of plants is for absolute sale, the prices are fixed at the very lowest rate. Apply for further particulars to JOHN FRASER, The Nurseries, Lea Bridge Road, Leyton, Essex.

CAULIFLOWER, &c., PLANTS,

very cheap and good.
CAULIFLOWER, Walcheren and Early London, 5s. per 1000, 60s. per 10,000.
BROCCOLI, Early and Late White (for succession), 4s. per 1000, 35s. per 10,000; Purple Sprouting, 3s. per 1000, 25s. per 10,000.

BRUSSELS SPROUTS, Giant; SAVOY, Drumhead; CABBAGE, Thousand-head, Large York, Enfield, Nonpareil, and Robinson's Drumhead; KALE, Cottagers', &c., 2s. 6d. per 1000, 20s. per 10,000.
Well packed, package included.

N.B. Lower quotation for larger quantities.
Apply, EDWARD LEIGH, Norcote Farm, near Guildford.

To the Trade.

ALTERNANTHERA MAGNIFICA, *MENTHA PULEGIUM GIBALTARICUM*, strong, from single pots, 8s. per 100.
COLEUS VERSCHAFFELTII, and others, 16s. per 100.
COBEA, *TROPÆOLUM*, and other Climbers, 5s. per dozen.

For Carpet Bedding:—
SEMPERVIVUM CALIFORNICUM,
ECHEVERIA SECUNDA GLAUCUM,
SEDUM GLAUCUM and *LYDIUM*.

H. STROUD AND SONS, Nurseries, Green Lanes, Stoke Newington, N.

Cheap



Orchids.

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application. Victoria and Paradise Nurseries, Upper Holloway, London, N.

Cabbage Plants.—Cabbage Plants.

WIRGO can now supply at reduced prices extra strong well-rooted plants of the following:—
Robinson's Champion Drumhead, Early Ox-Heart, Early Enfield Market, Wheeler's Imperial and Drumhead Savoy, all at 3s. per 1000; also BROCCOLI, CAULIFLOWER, BRUSSELS SPROUTS, WINTER KALES, GREEN CURLED SAVOY and EARLY CABBAGE—the above in any quantity at 4s. per 1000, made up of different kinds. Cash or reference from unknown correspondents. Delivered free on rail, package included. N.B. Samples if required.
Wonsers Nurseries, near Guildford, Surrey.

CHARLES B. SAUNDERS, NURSERYMAN, &c., Jersey, respectfully offers to the Trade:—
CAMELLIA STOCKS, good plants, from cutting beds, at 20s. per 100.

strong ditto, established in small pots, 30s. per 100.
ASPLENIUM MARINUM, or Sea Spleenwort, 5s. per dozen.
GYMNOGRAMMA LEPTOPHYLLA, or Annual Maiden-hair Fern, 5s. per dozen.

Also a large quantity of MAIDENHAIR FERNS of various varieties.

HELLEBORUS NIGER, the Christmas Rose. This beautiful white flower, coming to perfection at Christmas time, is already much too little grown, being hitherto too scarce and dear. Millions of its fine blossoms should be ready for the markets in mid-winter, where only hundreds are now to be found, and would always prove the most profitable thing it is possible to grow. It requires no heat nor care. We are prepared to supply for immediate orders any quantity of fine roots at one-sixth the usual prices, and we believe that investment in them will prove the finest speculation possible. For terms apply to
HOOPER AND CO., Covent Garden, London, W.C.

THOMAS RIVERS and SON have now a large and fine Stock of Fruiting ORANGE TREES to offer, of various sizes. Sorts:—

St. Michael's	Sustain
Tangerine	Long Orange
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Prices on application.
The Nurseries, Sawbridgeworth, Herts.

BULBS, DIELYTRAS, SPIRÆAS,
At Lowest Prices.

Wholesale Lists free on application.

A. M. C. JONGKINDT CONINCK,
TOTTENHAM NURSERIES,
Dedemsvaart, near Zwolle, Netherlands.

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CHOICE FLORISTS' FLOWERS.

Free and Safe
by Post.



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All carefully transplanted and in fine healthy condition, from our own superb strains.

	s. d.	per 100	per doz.	s. d.
AURICULAS	10	6	1	6
CALCEOLARIAS	10	6	1	6
CINERARIAS	10	6	1	6
CARNATIONS, very fine	10	6	1	6
PANSIES, Show and Fancy	7	6	1	0
superb Blotched	10	6	1	6
PICOTEES, very choice	10	6	1	6
PRIMULAS, choicest red fringed	10	6	1	6
„ white	10	6	1	6
„ mixed	10	6	1	6
SWEET WILLIAMS, very choice	5	0	1	0

Not less than fifty will be supplied at the rate per 100.

DANIELS BROS.,
THE ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

SEEMANN & GOEPEL,

Nurserymen, have to offer:—

ARALIA SIEBOLDII—This year's seedlings,
20s. per 1000.

LILY OF THE VALLEY—Price by letter.

Our numerous Customers are kindly requested to send their Orders as early as possible.

SEEMANN & GOEPEL,
The Nurseries, Marienthal,

WANDSBEK, near HAMBURG.

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The Publisher of the *Gardeners' Chronicle* recommends Subscribers who wish to have extra Copies of the Numbers containing the

SELECT INDEX of PLANTS from 1841 to THE END of 1878,
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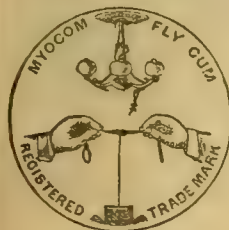
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NEW IMPROVED FRAME,
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SILVER MEDAL
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This singular substance has been tested with great success, last season, in London, in ridding Rooms, Hospital Wards, and Fruit Houses of the pest of Flies. It is invaluable for eastward bound vessels and to the inhabitants of all hot climates.

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R. MAY, The Nurseries, Leyburn, Bedale, has for Disposal the undermentioned, in grand strong plants, which have been all carefully transplanted into fine soil:—
CAULIFLOWER PLANTS, Walcheren and Early London, 7s. 6d. per 1000.
BROCCOLI, Early and Late, 7s. 6d., per 1000.
Curled KALE, Imported **BRUSSELS SPROUTS,** Drumhead, Green and Golden Globe **SAVOY,** 5s. per 1000, for cash.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES,
KING'S ACRE, HEREFORD.
(Established 1785.)

MANY ACRES OF
ROSES NOW IN FULL BLOOM.

Intending Purchasers should visit these Nurseries before purchasing Roses for the coming planting season. 500,000 to select from. Catalogues free.

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POST-FREE.  POST-FREE.

DANIELS' DEFIANCE CABBAGE. The most magnificent variety ever sent out, weight 12 to 15 lb., remarkably early, short-legged and compact, and of the most delicious marrow flavour. Should be in every garden. Per packet, 1s. 6d.



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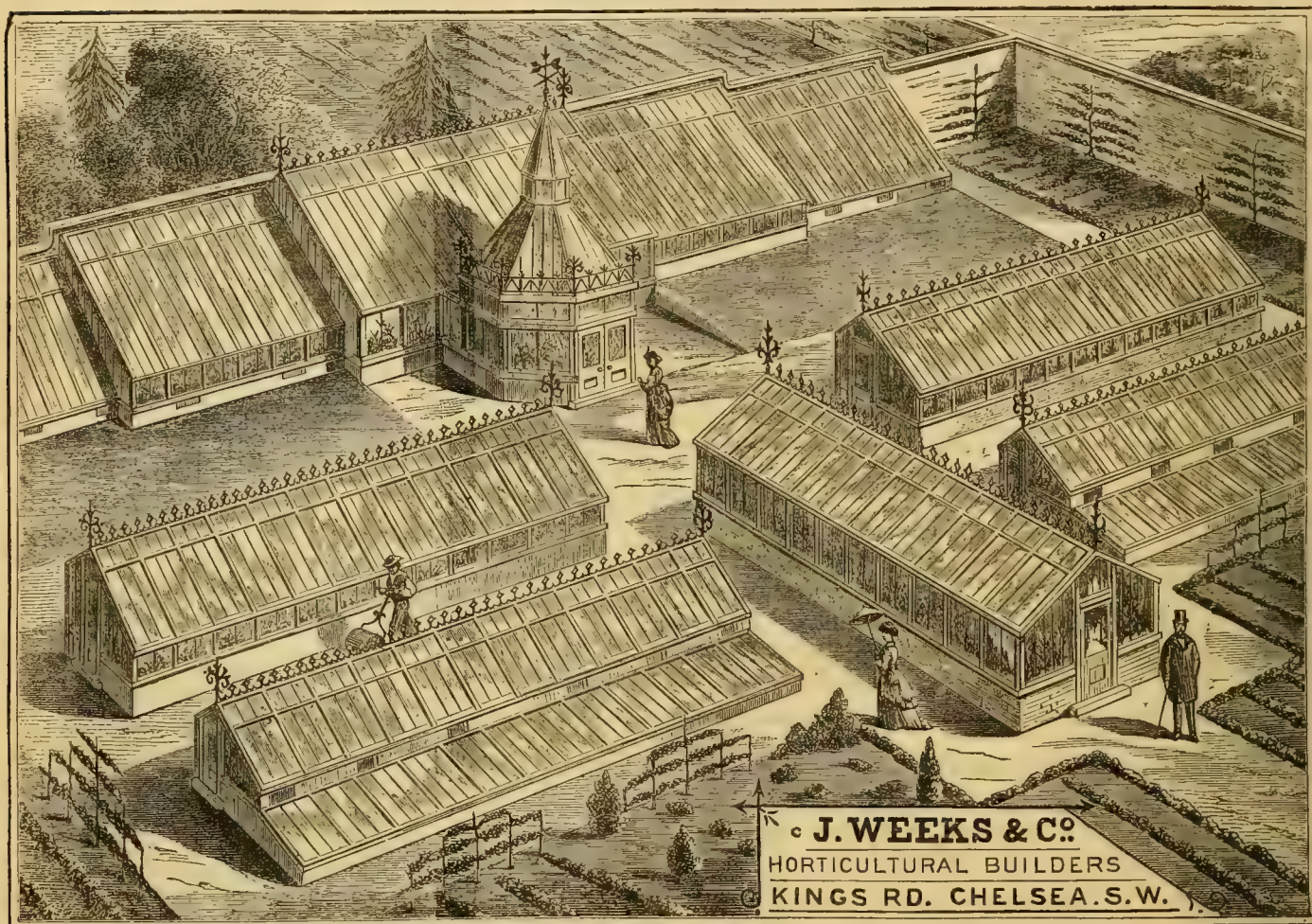
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DANIELS BROS.,
The Royal Norfolk Seed Establishment, Norwich.

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COCOA-NUT FIBRE REFUSE,
3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
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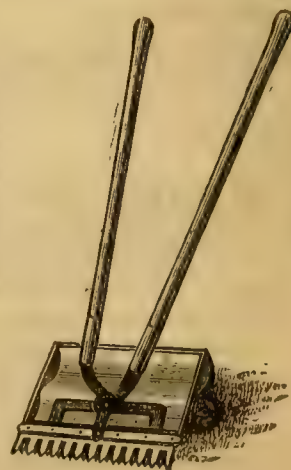
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THE

Gardeners' Chronicle.

SATURDAY, JULY 10, 1880.

PENSHURST.

AMONG the names of noble Englishmen few have proved more fascinating to his countrymen for several centuries past than that of Sir Philip Sidney, and among the historic homes and halls which stand thick in every county few compare in interest with that of this illustrious family at Penshurst. Lord de L'Isle, the heir and descendant of the Sidneys, throws his doors open to the world twice a week; and the present world, instead of coming to Tunbridge by coach, like its predecessor, and then taking the road, or following the course of the winding Medway on foot, reaches Penshurst station by the railway.

After strolling 2 miles through some very pretty country lanes and copses planted with Chestnut, which grows quickly into hop-poles in this soil, you pass a very pretty lodge at the entrance to Redleaf, on the right, and then enter a park on the left by a wicket gate. You stand here on the classic ground of Penshurst. At a little distance, across a sweep of well-timbered turf, is the home of the Sidneys, with the church and village near it, and the Medway and its strip of meadows in the rear. The "Sidney Oak" stands near the wicket gate on the left, and immediately before you are Ben Jonson's Chestnuts and Saccharissa's Beeches.

"Arcadia," as Sir Philip Sidney pictured it in his famous pastoral romance, lies around. Here are the hills not very high, "garnished" with wood, the humble valleys "comforted" with meadows below, and the "refreshing" Medway with the thickets, and, in spring time, the tuneful birds, the sheep and "pretty lambs with bleating oratory." Penshurst is a grey and stately pile, two-storeyed and battlemented, with high peaked roofs, turrets, and mullioned windows, an old gateway, and numerous armorial devices, carved in stone, on the walls.

It is a house, not a palace, built of Kentish ragstone, not of marble, and though stately in size and appointments, it was built for comfort, not for show. There is nothing polished, gilt, nor golden on the outside of this ancient pile—nothing borrowed from Venice, nor from Rome, or Sydenham. It stands an ancient pile, grey and honoured, in all the dignity of a lordly English mansion, bigger than any house around and larger in its hospitality. It stands, too, on a capital site, where the land is good and the timber large, and where the Beech, the Elm, the Chestnut, and the Oak all flourish. A good many Chestnut copses have been planted on the Sidney property for hop-poles, which more than repay the increased cost of fish since the stew-ponds which served the Sidneys ran dry and the Medway's "tribute" ceased to be esteemed.

The massive Oak tables in the dining-hall, where all remains as of old, and the faggots are still piled in the centre of the room, bespeak the hospitality which Elizabeth herself experienced here. The Sidneys were their own pro-

viders, they caught their own carp and pike, grew their own corn and fruits and plucked their own flowers, "new as are the hours" Ben Jonson tells us. He tells us, too, of a well-provided garden at Penshurst—Cherries and Plums, Figs, Grapes, and Quinces, blushing Apricots and woolly Peaches. The whole county was entertained here. Lady Sidney's house-keeping was famous. James I. and Prince Charles were hunting in the neighbourhood late when they saw Penshurst in the distance, lighted up and fires on every hearth. Though unexpected, they found nothing wanting. They dined, no doubt, at the cross table at the upper end of the hall, where Sir Philip and others of his noble house for generations sat with their friends. There is a charming picture in the gallery of Sir Philip at the age of sixteen, with his arm linked in that of his younger brother Robert, afterwards Earl of Leicester. These two noble boys, with the red tinge in their hair common to the Sidneys, sat at that board with their father Sir Henry, who used to say to Robert, "Follow the advice of your most loving brother—imitate his virtues, exercises, studies, and action. In truth, I speak it without flattery of him or myself, he hath the most virtues that I ever found in any man." They sat here with Sir Fulke Greville, who had it inscribed on his monument that he was the friend of Sir Philip Sidney.

At this table were gathered the patriots and poets of England, and her greatest nobles during several centuries. Algernon Sidney, Ben Jonson, Spencer, perhaps Shakespeare, Edward VI., Leicester, Essex, Cecil, Burleigh, Bacon, and their mistress, and her Scotch successors. The Dudleys and Percys have dined here, and the artful Robert Spencer, first Earl of Sunderland and husband of Saccharissa; Dorothy Sidney, whom you may see in the picture gallery; with Barbara Gamage, Countess of Leicester, Robert's wife, and numerous others, famous and unfamous.

When Robert Sidney was created Earl of Leicester, he took for his second title that of Viscount Lisle. The line of Sidneys ended with the seventh Earl, and the estate passed with the marriage of his daughter to the Percys, and afterwards by the marriage of the heiress, in default of sons, to Sir Bysshe Shelley. The name of Sidney and the title of De Lisle were afterwards revived.

One of the Kentish heronries was established at Penshurst early in the reign of James I., when Lord Leicester's steward brought some young birds from Coity Castle, in Wales. Owing to the felling of some trees the descendants of the original birds migrated, after two hundred years' association of herons at Penshurst, and founded a new colony at Michelgrove, the seat of the Shelleys, between Worthing and Arundel. In 1845 the Duke of Norfolk became the owner of Michelgrove, and the herons soon after departed over the hill, and, after a shorter flight than before, settled at Parham, Lord De La Touche's place, immediately under the downs on the north side. The colony still remains here, in a wood of Scotch Fir, Spruce, and other trees. They assemble in February and repair their nests, lay early in March, and forage for their young day and night, and feed them through the summer, their care and labour in this respect outlasting that of any other British bird. The felling of trees on which some nests were established, occasioned the second migration, as it had done the first.

A curious household book was long kept at Penshurst, and perhaps time and other circumstances may have rendered the following extracts worth reading:—"1625.—12th of November, breakfast for La. Percy and La. Carlisle, and people going away." Then at a later date, "Ladie Carlisle, with ten attendants, who stayed fourteen days." Then several distinguished

people or their attendants, and then "thirty neighbours at dinner," &c. This entry follows: "Prices for this week—Kitchen, for flesh, fish, poultry, butter, eggs, groceries, £29 17s. 10d. Pantry and seller—in bread, beere, sack, claret, &c., £14 13s. 10d. Laundry—soape and starge (starch), 1s. 11d. Stables—for hay and oats, £1 14s. 8d. Charcoal and billets, £3 9s." Only a very hospitable family could have possibly expended £50 a week for provisions and home-grown fuel at the prices of that time. H. E.

New Garden Plants.

SEDUM RETUSUM.*

A neat species of the shrubby type, allied to *S. oxypetalum*, H.B.K., which also is now cultivated in some English gardens. I had previously described this from dried specimens collected in San Luis Potosi, Mexico, by Parry and Palmer, and the description is repeated below, with some slight modifications consequent on the examination of a 1-year old seedling, raised in the Royal Gardens, Kew, from seeds collected by the gentlemen named. *S. oxypetalum* forms a dense, much-branched shrub, sometimes as much as 6 feet high, and *S. retusum* may possibly attain equally large dimensions, but I have seen only one small dried specimen, and the living plant alluded to, which is very little more than 6 inches high. It has fleshy, grey branches, farinaceous when young, and leafy only at the tip; leaves alternate, spreading, sessile, fleshy, green, shining, obovate-oblong or spatulate, the largest from $\frac{1}{2}$ — $\frac{3}{4}$ inch long; flowers about $\frac{1}{4}$ inch across, white, with a rosy centre, arranged in small dense clusters at the ends of the branches. *Sedum retusum* is not showy, but it deserves a place in a collection of succulent plants. W. B. H.

SEDUM LIEBMANNIANUM.†

A tufted herbaceous species, with small crowded spreading conical leaves, and few, very small, white flowers tinged with red. From the same source as *S. retusum*, and one of the least ornamental of the genus. The description has been enlarged from the living plant at Kew. W. B. H.

DENDROBIUM PHALÆNOPSIS, Fitzgerald.

To Captain Broomfield, of Balmain, I am indebted for the opportunity of describing a new and very beautiful Orchid, and of directing the attention of horticulturists to another of the charming lilac *Dendrobies* procured only within the last few years from Northern Australia and New Guinea. This Orchid, which is at present in flower in Captain Broomfield's collection of rare plants, is closely allied to *Dendrobium bigibbium*, *D. superbiens*, and *D. Goldiei*. It is easily distinguished from *D. bigibbium* by the absence of the convex form in the flowers, or recurving of the perianth, of the cluster of white glands or calli on the disc of the labellum, of the emarginate termination to the labellum, and of the drooping carriage of the flowers; from *D. superbiens* by the broadness of the parts of the perianth, and by the sepals not being undulate, and the absence of ridges or plates on the labellum, and the presence of a few dark calli. It is also markedly distinguished by being only slightly more robust than *D. bigibbium*, and very much less robust than *D. superbiens*, which resembles *D. undulatum* in all but colour. *D. Goldiei* of New Guinea appears from the figure in the *Garden*, September 14, 1878, No. 356 (for I have seen no description), to be unlike it in the form of the labellum, the narrowness of the parts of the perianth, the drooping habit of the flowers, length of spikes, form of the leaves, and banded stems. I have given this finest of the Australian *Dendrobies* the name *Phalænopsis*, from the likeness of its flowers to moths, and also their likeness to those of the genus *Phalænopsis*. It was obtained near Cooktown, Queensland, and flowers in April.

* *Sedum retusum*.—Frutex glaber, erectus (exemplum nostrum ad 6 poll. altum); ramis crassis, carnosiss, cuneatis, junioribus farinaceis, ad apices tantum foliosis. Folia alterna, patentia, sessilia, carnosia, viridia, nitida, obovato-oblonga vel spatulata, maxima 6-8 lineas longa; basi soluta et deorsum brevissime producta; apice sessipime retusa, interdum rotundata. Flores albi, 5-6 lineas diametro, conferti, dichotomocymosi, subsessiles; cymæ paucifloræ; bractæe foliaceæ; sepalâ carnosâ, lineari-oblonga, basi soluta, utrinque obtusa; petalâ oblongo-lanceolata, apiculatâ, dorso supra medium carinatâ, sepalis fere duplo longiora; stamina petalis fere æquilongâ, petalâ petalis basi adnatis; squamulæ parvæ truncatæ aurantiacæ. Carpella 6, immatura basi rosea, matura subinflata, stylis elongatis rectis coronata.—Hemsley, *Diag. Pl. Nov. Mex. &c.* pars tertia, p. 51; et in Godman et Salvin, *Biologia Centrali-Americana*, Botany, I., p. 358.

† *Sedum Liebmannianum*.—Herba perennis, glabra, dense ramosa, 3-4 poll. alta, ramis rubris, subcarnosiss, ascendens. Folia sessilia, conferta carnosia, nitida patentia, conica, 2-12 lineas longa, vix acuta, basi soluta. Flores minimi, roseo-albi, sessiles; cymæ terminales, 3-5 floræ; sepalâ carnosâ, oblonga, concavo-convexa, dorso subcarinata, apice obtusa et leviter incurva; petalâ oblongo-lanceolata, dorso carinata et infra apicem apiculatâ, sepalis duplo longiora; filamenta filiformia; squamulæ minutæ. Carpella (immatura tantum visa) subinflata.—Hemsley, *Diag. Pl. Nov. Mex. &c.* pars prima, p. 12; et in Godman et Salvin, *Biologia Centrali-Americana*, Botany, I., p. 356.

Dendrobium Phalænopsis.—Stems about 20 inches, slightly contracted towards the base; leaves about eight or ten on the upper 8 inches of the stem, lanceolate, reaching 5 inches; racemes at least half the length of the stems, terminal on upright peduncles of about 10 inches; flowers about fifteen, on pedicels of about 1 inch, lilac, 2 to 2½ inches across; sepals lanceolate acute, 1 inch long, about five lines broad; petals obovate acute, 1 inch broad; labellum 1 inch long, acute, with broad wings meeting over the column, its base forming at the hinge a second spur, reaching $\frac{1}{4}$ inch, curved and compressed laterally. A few small dark calli on the disc of the labellum, which is only slightly ridged at the base; two large white glands at the base of the column close to the hinge of the labellum, pollen masses more concave than is general in the genus.

SARCOCHILUS RUBRICENTRUM, Fitzgerald.

Through the kindness of Mr. E. Ramsay, F.L.S., I am enabled to describe a very pretty *Sarcophilus*, which I believe to be new, though closely allied to *S. Fitzgeraldi* (Mueller). The plant obtained at Cairns, Queensland, was flowered in the greenhouse at the Museum by Mr. Ramsay, and given to me by that gentleman. The habit of this Orchid is not decumbent, as in *S. Fitzgeraldi*. The flowers are much more numerous, smaller, and borne on more robust and upright peduncles, the general appearance being more that of a Crucifer than an Orchid. The pure white flowers and bright red centres (from which I have given the name) make it a very attractive species. It flowers in September.

Sarcophilus rubricentrum.—Stems erect, about 2 inches, retaining the old bases of the leaves; leaves oblong, about 5 inches, the portion on one side of the midrib longer and broader than the other; flowers from twelve to twenty, about 8 lines across, on pedicels of from 2-4 lines, white with red centre, spotted with darker red; peduncles rising from below the bases of the old leaves, 6 inches, crest much stouter than in *S. Fitzgeraldi*; sepals larger than the petals, oblong, contracted towards the base, about 4 lines long; petals more ovate than the sepals, smaller, about 3 lines long; labellum having a band of red across the front, broader and shorter than in *S. Fitzgeraldi*; the wings shorter and more ovate; the large gland on the disc not slightly notched, but deeply cut to half its length; the small gland at the base also more deeply cut; the base of the column shorter, banded with deep red; pollen masses on a short caudicle.

Robt. D. Fitzgerald, Hunter's Hill.

GARDEN GOSSIP.

BY A LADY.

BOTANICAL MILLINERY.—Last year the *Gardeners' Chronicle* deigned to take notice of a fashion, prevalent at that time among ladies, of wearing moss in their hats, and pointed out the appropriateness of this style of trimming in a wet season like that of 1879.

A brighter year calls for a different decoration, better suited to sunny skies, and we meet with it in the "Mentone hats" which have been introduced among us this spring. They are of coarse straw, or Leghorn, trimmed with a wreath of dried grasses, among which *Briza maxima*, Oats, and a grass somewhat resembling our Foxtail, are the chief favourites.

Many varieties of these trimmings are displayed for sale in Mentone, and they may be bought made up into separate wreaths, or put together on the hats. As a hat trimmed with one of these wreaths costs but 3 fr. 30 c., the price is not ruinous. Sometimes the grasses are dyed black, blue, or brown, and wreaths are made up of alternate bunches of black and white, or blue and white; and sometimes the *Briza* is tipped with scarlet; but I cannot fancy that the artificial colouring is an improvement, as it destroys the simplicity and natural appearance, which is the chief charm of these wreaths. In the hat which has reached me the grasses are simply bleached—whether by the sun alone, or by the usual process of bleaching straw, I do not know.

Although my friends who imported this hat from Mentone did not see them exposed for sale anywhere except in the Riviera, they discovered that the preparation of the dried grasses is not peculiar to that district, if even it is carried on there at all. A few weeks after leaving Mentone, when staying at Florence, they drove out one day to Fiesole, and while exploring that ancient town, where the remains of Etruscan walls carry our thoughts back to a time when Rome itself was not yet built, they accidentally stumbled on this most modern of manufactures.

They chanced to pass a large building, apparently something between a manufactory and an industrial school, through the open windows of which issued the sound of singing. Italian voices are generally melodious, and they stopped to listen; but, being perceived, the singing instantly stopped, and a woman came to the door and invited them in.

On entering, they found themselves in a room full of young girls and women, all engaged in straw-work. Long plaits hung from the ceiling, and some were making it up into baskets, bags, fans, &c., while others were employed in packing up the finished articles for the shops. In an adjoining room was a quantity of the materials used in their work, and among them there were large baskets containing these dried grasses neatly tied up into bunches, ready for wreath-making or hat-trimming.

I regret that my friends did not ask to visit the other workrooms in the building; had they done so, they might possibly have learnt a little more about the matter.

Straw-work is so essentially the occupation of the women of that neighbourhood, that it is probable that the whole process of drying these grasses, and preparing them for use, takes place at that spot. In all the country round Florence the women and children at the cottage doors are seen engaged in plaiting straw, just as in certain districts of England, such as the neighbourhood of St. Albans; and on the road between Florence and Fiesole (a road swarming with beggars) articles of straw-work are offered for sale by old women, who always begin by asking exorbitant prices, but finally sell their goods at a far cheaper rate than that at which they can be purchased in the Florence shops.

In the Museum at Florence, among numerous other Etruscan remains, there is the stone figure of an Etruscan lady. Her tight-fitting garments and scanty skirts might have emanated from the workroom of a fashionable London dressmaker of the present day. Have we borrowed our ideas of beauty in dress from ancient Etruria, as we get our hat-trimmings from the site of one of its principal cities? A. B.

WEST INDIAN FRUITS.

ANONA muricata, *A. squamosa*, *A. reticulata*, and *A. cherimolia* are the only four of this genus here used as edible fruits. The colonists are very fond of them, but Europeans do not as a rule admire them, especially when first visiting or becoming resident in the tropics. It is found, however, that a relish for them can be acquired, even by those who at first disliked them, if they are tried again some twelve months after first arrival, when the palate begins to miss the natural fruit it has been accustomed to for years in a temperate climate. *A. Cherimolia*, DC. (Cherimoyer), is considered to produce the best fruit of all the species belonging to the genus. It is a tree of rather loose habit, from 15 to 20 feet high, producing flowers which, in common with the other species, are unattractive in appearance, and produces fruit in size ranging from 2 to 5 inches in the larger diameter, and of variable form, bearing a greater resemblance to *A. reticulata* than any of its congeners, being of a light green colour, sometimes becoming rosy on the side exposed to the sun, with white pulp, the seeds few, black, and shining. It succeeds best at an elevation of between 2000 and 3000 feet above sea level, refusing to grow at all on the plains.

A. reticulata, on the contrary, together with *A. squamosa*, is abundant on the plains, becoming rarer as the elevation increases. *A. reticulata*, DC., or Custard Apple, at a short distance resembles in growth very closely the appearance of a dwarf standard Peach tree, but is much larger; it ripens its fruit during the months of February, March, and April, which in shape reminds one of an Oxheart, hence the name given it by French colonists—*Cœur-de-Bœuf*. The pulp is yellowish-white, sometimes rather gritty if picked too soon, and containing many seeds.

A. squamosa, L. (Sweet Sop), as its name denotes, presents a very scaly appearance, is very hard, and softens only after being removed from the tree. It possesses a fine luscious flavour, but is mostly objected to on account of the large number of seeds it contains.

A. muricata, L. (Sour Sop), is a tree 15 to 20 feet in height, which, when covered with its glabrous shining leaves, in suitable localities produces a fine effect. It flourishes well in good soil on the plains and lower hills up to 3000 feet. Its fruit is the largest borne by any of the genus, being often from 6 to 9 inches in diameter, and, like the Cherimoyer, it is very variable in shape, though, like all the other species, the cordate form predominates; in this species, however, the apex is slightly incurved.

Its pulp is woolly in appearance, but contains a refreshing and agreeable sub-acid juice. It may be eaten fresh or made into (perhaps I may be excused for coining the word) ananade, by the addition of sugar and nutmeg. By non-temperance individuals it is greatly relished as one of the components of West Indian punch. When mixed with the pulp of the Star Apple (*Chrysophyllum Cainito*, L.) it forms what is called "matrimony" by the colonists, and is, though in appearance only, very much like Strawberries and cream. Like most West Indian fruits Anonas should be removed from the tree when "full," a period only to be learnt from experience. If allowed to remain on the tree they lose all flavour, and become insipid and useless, while if picked too soon they never have any; a fact which may account for their being described by many as fruits of no value for dessert. *A. montana* or Wild Sour Sop is, together with a *A. palustris*, entirely useless, and by some both are said to be poisonous. J. Hart, King's House, Kingston, Jamaica.

ACROSS THE WATER.

MACKAYA BELLA.—I agree with your correspondents in regard to the merits of Mackaya bella—[see figure on p. 329, vol. xi.]—it is one of the finest plants of recent introduction. My plants in 6-inch pots have been full of bloom. It requires the same treatment as Bougainvillea, that is, grown vigorously and rapidly in summer, and wintered in a cool house. The plants were in the Azalea-house, where the temperature was rarely above 45° at night, and often as low as 38° or 40°. The plants looked yellow and poorly, but, transferred to the hot-house in March, and thoroughly watered (having previously been kept very dry), they soon took on a dark green colour, and the tips of every shoot terminated with a cluster of blooms, and are now ripening several pods of seeds. The exquisite pale lavender tint of its campanulate blossoms is quite uncommon among hothouse plants. One specimen turned out into the border in one of the warm houses has grown rapidly all the winter, and is now 4 feet high, but it has not shown any signs of bloom. It has had liberal treatment, but another winter I shall withhold water so as to ripen its vigorous shoots.

VIBURNUM PLICATUM.—Among the flowering shrubs the recently introduced *Viburnum plicatum* holds a prominent place; next to *Hydrangea paniculata grandiflora*, I deem it one of our greatest acquisitions. The neat and symmetrical habit of growth, its very handsome plaited leaves (indicated by its specific name), and the profusion of its moderate-sized balls of snowy blossoms, which quite cover the plant, render it unusually attractive and beautiful. As single specimens planted in appropriate situations, it is quite as ornamental as a *Rhododendron* or *Azalea*, and if its foliage were evergreen it would be a formidable rival in ornamental plantations.

THE MAGNOLIAS.—If there is any one class of trees which combines more merits than any other, it is certainly the Magnolias. From that king of arboreal vegetation, *M. grandiflora*, so well described by Michaux, as "most remarkable for the majesty of its form, the magnificence of its foliage, and the beauty of its flowers," through all the native species to the handsome Chinese species and their hybrids, there is more variety, and probably more beauty, than can be found in any genus. I notice that a new variety has been exhibited at a late meeting of the Royal Horticultural Society, called *M. nigra*, which is said to have darker flowers than any other, the petals being of a rich plum colour. Wherein it differs from *M. Lenné* is not stated, for that is of a dark plum colour, and has a wonderfully superb flower, almost equal in size to *M. umbraculifera*, and with a colouring just before opening exceedingly dark, rich, and fine. There is but one tree, a native of the Southern United States, that I care above all others to cultivate. That tree is the *M. grandiflora*, but most unfortunately it is too tender for New England, its northern limit being Philadelphia, where I have seen it finely in flower, but it is uncertain there, only growing in very favourable localities. If it were possible to acclimatise a tree there is none so well worth trying as this, but so far it has not been done. Yet it flourishes in Kentucky, where occasionally the temperature falls to zero. There is, it appears to me, a promising future for the Magnolia, by hybridisation with our hardy northern species or

the Chinese. If we could retain the splendid evergreen foliage, and add it to the *M. Lenné*, would not that make a small tree of inestimable value? In these days of hybridisation this attempt, I think, is well worth trying.

This reminds me that I have just now, in very great beauty, a golden variegated leaved variety of *M. acuminata*, some of the leaves being entirely deep yellow, very conspicuous, and more showy than those of any golden-leaved tree I know. It is an accidental seedling, now about 10 feet high, vigorous and beautiful.

APPLES.—An Apple so well known by Englishmen as the Baldwin, whose exportation to England has increased within a few years from a few hundred barrels to almost as many thousands, would seem to require no additional evidence of its excellence. It is the Apple of the New England States, and I may say of the whole of the Northern United States; and, taking it in all its qualities, has more excellences and fewer faults than any other Apple in the world. That a variety now approaching a century old still keeps in advance of every other variety that has been produced since its origin, shows what a valuable fruit it is. At one time the Newtown Pippin was the only American Apple known in the London market, and though, from its very hard, firm flesh, and long-keeping qualities, it is the best variety for shipping without loss, the greater beauty of the Baldwin, its crisp, tender flesh, and remarkable combination of sweet and acid, are causing it to take the place of the former, which can only be grown in a few favoured localities in the Middle States.

I was therefore quite astonished to see an account in one of your contemporaries, copied from an American paper, stating, upon the authority of Mr. Ellwanger, of Rochester, N.Y., that the Baldwin "as a table fruit is utterly worthless," and could not be eaten without "direful results." As I have not only grown it for forty years, and eaten it before breakfast and after supper during all this time in preference to any of the 200 varieties I cultivate, and have not yet experienced any "direful results," this statement took me by surprise. If this were true I should deem it my duty to caution the English people to purchase no more of the thousands of barrels which will probably find their way to the London market.

However, strange to say, Manning, Downing, and other American pomologists, class the Baldwin as "standing at the head of all New England Apples, and unquestionably a first-rate fruit in all respects." The latest report of the American Pomological Society (N.Y.) says that it has "stood and still stands pre-eminent as a market fruit," and that it continues to be the "leading Apple," and "whatever profit has been made from raising Apples is mainly due to this variety." Even in Rochester, New York, at a meeting of the Western Fruit Growers' Association, it was recommended that in an orchard of 1000 trees at least 700 of the number should be Baldwin.

But I need not occupy space to show its great value. A fruit that regales the people of Calcutta, where it has been shipped for years and years on cargoes of ice, or that supplies the dessert of the intelligent Englishman's table, is too well known and appreciated to be called to-day an Apple "utterly worthless," and if eaten attended with "direful results." C. J. Hovey, Boston, Mass.

THE CREOSOTE PLANT.—According to a note in a recent number of *Land and Water*, the resinous substance found on the branches of *Larrea mexicana* has been proposed as a substitute for lac in the preparation of lac-dye. The plant, which belongs to the natural order Zygophyllæ, is a shrub from 4 to 6 feet high, growing in dense scrub-like masses in Mexico, especially on the borders of the Colorado desert, where its luxuriant growth forms an impenetrable mass of vegetation, effectually preventing the inroads of the drifting sand. The presence of this plant is said to be a sure indication of a sterile soil, little else being found where it flourishes, though the bright green of the foliage imparts a freshness to the surrounding scenery. The common name is derived from the fact that the plant has a strong creosote-like smell, which is so powerful that no animal will touch it. The resinous matter to which the odour is due is abundant in all parts of the plant, the branches being frequently covered with it, in the same manner as true lac. The resin itself is of a light ruby colour. It is used by the natives in the treatment of rheumatism; it is also used by the Indians for fixing their arrowheads to the shafts, and for forming into balls, which they kick before them as they journey from point to point of their trail.

HYBRID NEPENTHES.

HYBRID plants pour in upon us unexpectedly on all sides. A few years since we should scarcely have dreamed of hybrid Orchids, of hybrid *Sarracenias*, of hybrid *Nepenthes*. Now they are familiar amongst us as household words. Mr. Williams has recently exhibited, from his well-filled nursery at Holloway, a rather numerous series of hybrid *Nepenthes*, and though such things are not exactly novelties, thanks to the labours of Mr. Seden, they are sufficiently rare to be full of interest. Some of the more striking of those to which we allude are represented in the accompanying illustrations. They are, we believe, of American origin, and are remarkable for their free habit of growth, and their handsomely marked pitchers. The following particulars respecting them are for the most part gleaned from Mr. Williams' recently issued *Catalogue of New Plants*, supplemented by notes taken at the shows:—

Nepenthes Lawrenceana ×.—A very distinct hybrid between *N. Phyllamphora* and *N. Hookeri*. It is represented by the annexed woodcut (fig. 8). It has pitchers 4 inches long, the ground colour of which is pale green, spotted profusely with dark crimson. The plant is very compact in its habit of growth, and produces its pitchers very freely. The edges of the leaves are slightly serrated.

Nepenthes Outramiana × (fig. 10).—This is a grand Pitcher-plant, a hybrid between *N. Sedenii* and *N. Hookeri*, a very free grower, and producing its pitchers abundantly. The pitchers are 5 inches long, of fine form, broad at the base tapering into a cylindrical neck, of a pale yellowish-green densely spotted with small dark blood-red spots, which in some instances coalesce, and nearly cover the entire surface, while the interior and the mouth are also well marked. It was awarded a First-class Certificate by the Royal Horticultural Society in October last.

Nepenthes robusta × (fig. 11).—A very free growing plant, which was awarded a First-class Certificate by the Royal Horticultural Society, in September last. It is of hybrid origin, and is the result of a cross between *N. Hookeri* and *N. Phyllamphora*, with pitchers intermediate in character between the two, but having the colour and markings of *N. Hookeri*. Mr. Williams remarks that the pitcher in this variety is of a very distinct shape, the lower portion being much wider than the upper, thus having somewhat the appearance of a Pear.

Nepenthes Williamsii ×.—This, it is observed, is indeed a gem, and, with the exception of *N. sanguinea*, has pitchers of a brighter red than any other kind. It is the result of a cross between *N. Sedenii* and *N. Hookeri*, having pitchers intermediate in shape between those of the two parents, these being 4 to 5 inches long, densely spotted with blood-red, the red in many cases predominating, while the interior is marked with the same colour. The under-side of the lid is reddish-brown. The plant is a very compact grower, and bears its pitchers freely while of small size. The accompanying illustration (fig. 9) will show its character. M.

LONDON MARKET PLANTS.

MR. LADDS', BEXLEY.—Those who visit the flower and plant market at Covent Garden sufficiently early, and stay long enough, may form some idea of the extent of business done in flowering and other plants, as also in cut flowers, on a single morning during the spring and summer, in the market; and if the individual happens to have been acquainted with what was done in these departments some twenty-five years ago he cannot fail to marvel at the immense development of the trade, which, like everything else of a similar nature, has been governed by the law of demand, and simply indicates the increased and ever increasing taste for flowers amongst the people. On every side of the metropolis—east, west, north, and south, often in out-of-the-way corners—are innumerable places where cut flowers and plants are grown, frequently under the difficulties of limited and not over-convenient appliances, and in many others where the extent of glass houses devoted to the different things grown may be reckoned by the acre. Though constructed without any view to appearance externally or internally, these houses possess the first essentials of being in the highest degree adapted to the requirements of the plants to be cultivated in them.

In one important matter the houses in use by the market growers of the present day are completely

different from those that did duty for a like purpose in times past, which were such that it used to be said that the market men appeared by the dark character of their houses to ignore the necessity of light for the things they grew. Now all this is so far changed that it would not be possible to devise anything composed of glass with the indispensable wood or iron-work requisite to hold the glass together that would admit more light. This is still further increased by the open situations where the houses are built, away from trees, buildings, or anything that can in any way intercept light. To none engaged in plant growing is the necessity for this brought more forcibly home

building of numbers of houses, each covering an unusually large space, until a few years ago most people possessing a knowledge of this business looked with wonder at its size; and yet it still continues growing to the extent of many thousands of feet each year, until there are now about 9 acres of glass, and the reader must not by any means suppose that this is to be the limit, as Mr. Ladds has in store some 18,000 feet of glass ready to part fill the new houses to be built this summer.

The principal portion of the houses that have been erected for some years are situated at a short distance from Mr. Ladds' residence, on an open piece of



FIG. 8.—NEPENTHES LAWRENCIANA.

FIG. 9.—NEPENTHES WILLIAMSI.

than to the market men. Plants grown for decoration in private places may pass muster even if somewhat weak or drawn up, but not so for the market, as stout, short-jointed growth, and a disposition to flower are inseparable, as well as greater endurance; and when these essentials are at all wanting the price realised is so much less that it will not pay to grow indifferently even the commonest plant or flower which finds favour in the market.

Mr. Ladds' business was at one time principally devoted to bedding plants, of which almost incalculable quantities were grown; these have almost wholly been given up, and now market plants and cut flowers have taken their place. The growth of the establishment has for a considerable time kept on, by the annual

ground, as fully exposed to every ray of light and current of air as it would be on the middle of Salisbury Plain. The houses, all span-roof, are mostly built in blocks, six, eight, or a dozen together, standing side by side, in some cases with a narrow space between each, and in others only just as much as occupied by the side shutters for the admission of air. They may be said to consist wholly of roof, that comes down to the ground, all but the depth of the shutters, which are made in the ordinary way, of wood, hinged at the top, but when shut are not in a perpendicular position as seen in the usual arrangement, but sloping outward at the bottom at a considerable angle, which has many advantages; not the least of which is, that their own weight keeps them

lying close to the timber they shut against, not into, as generally arranged. In this way they need no fastening when shut, and the alternative is avoided of either having them to shut so tight that they are continually getting fast when the wood is swollen by damp, or of having so much play as to let the cold in when it is not wanted. Hinged did I say the shutters are? There is not a hinge about the place, either to the side shutters, or the roof-lights. Hinges, as most people know who have had to do with hot and greenhouses, have a disagreeable tendency to get rusted fast if not opened for a time,

being somewhat slight; but such is not the case, as all the timber employed is of the best quality—red deal and pitch pine. The roof-bars are mostly 3 inches deep by 1½ inch in the knees. Most of the roofs have a stout purline of wood running under the bars the entire length in the usual way, with upright supports let into the floor at intervals, and iron tie-rods across to give more stability. In all that are now being built, instead of wood purlines, gas-piping, 1 inch in diameter, is used, secured with a strong staple to the underside of each of the roof-bars, and with uprights made of the

enough clear space to prevent the least drawing up or weakening influence. A large brick and cement tank to hold the roof-water runs right across the middle of each block of houses, sunk in the ground and level with it, so that the water can be got by dipping, thus avoiding the loss of time where it has to be pumped. The rain-water is used as far as it goes, but is not nearly equal to the requirements; and a pipe from the Company's main is laid on to each house as well, with the water always on.

A great deal of the water which the plants receive, especially in summer, is given them by hose-pipes, which are fitted on in each house. There is a feeling almost general against giving water to plants, particularly to their roots, in the state it is when immediately passed through pipes, without afterwards being exposed to the air; but there is not the slightest ill-effects perceptible in the various descriptions of plants grown in the Bexley establishment, where the health and vigour collectively are such as cannot be explained by a written description. Mr. Ladds uses liquid manure in immense quantities, but not indiscriminately, during the winter time. That which is made from quite fresh cow-dung is preferred, and next sulphate of ammonia and nitrate of soda. Of solid manures cow-dung is liked the best, and eight or ten cows, well fed with plenty of oilcake, are kept principally with a view to always have on the spot a supply of the manure; half-inch bones are also largely used. The soil is the rich yellow loam which is present in this part of Kent, and has no superior for the growth of any plant that requires loam.

The first lot of houses, five in number, each 130 feet long by 12 feet in width, was filled with *Pelargoniums* intended to flower the first; they consisted of the best proved market varieties, or what are generally known as Decorative kinds—*Kingston Beauty*, *Triomphe de Serenye*, *Duchess of Edinburgh*, and others of like character, all naturally of a very compact, short-jointed, profuse flowering habit. In this earliest house the plants the first week in December had quantities of flower-trusses pushing up through the foliage; they were kept warm to get them on, and were models of high-class cultivation, so stout and robust that I can best describe them by saying that if they were growing planted out in an open field in the middle of summer they would not be more stocky. The day I saw them was the coldest during the severe frost we had in December, yet the roof-lights were wide open, which some people would call a waste of fire, for the pipes were so hot that the hand could not bear to touch them, but without the warmth the plants would not be in bloom when wanted, and with it, without this free admission of air, they would become drawn. Such a thing as a stick or a tie had never been near them, nevertheless their diameter was much more than their height. The remainder of these houses were occupied by plants a little later than the above.

Ten other houses, each 200 feet long and 10 feet wide, were also filled with *Pelargoniums* of this description, and a good many others, containing different kinds of stock, will be occupied by them as the smaller successional plants require more room. The rapidity with which they are grown may be judged from the fact that those which were to be marketed in full bloom at the beginning of June were in December in 60-sized pots. Seventy thousand are yearly grown, a good deal from root-cuttings as well as from shoots. Mr. Ladds likes the plants from the former best, as they are more disposed to branch out of their own accord in quantity close above the collar. Another gain with root-cuttings is that the roots of a moderate sized plant will make many more cuttings than the top, the stock plants thus take up much less room, and with a desirable new variety a stock is got up much quicker. I may here observe that every new variety of these and the Zonal kinds that comes out yearly is got in for trial, but there are many more blanks than prizes—the last year has not furnished one that will be kept. Amongst the Zonals a dense habit of growth, profuse disposition to flower, and ability to stand forcing, are indispensable. Mr. Ladds says he has never met with one that would suit his purpose with these properties, that was not an equally good bedder.

Mr. Ladds uses a good deal of bone manure for his *Pelargoniums*, not mixed with the soil as usually done for most things to which bones are given, but as liberal drainage for the roots. At first sight this use of a lasting manure such as bones in the ordinary ½-inch size, that may be said to only be beginning to act in the short time it takes to grow up one of



FIG. 10.—NEPENTHES OUTRAMIANA.

FIG. 11.—NEPENTHES ROBUSTA.

which usually results in the screws that hold them being torn out. Every shutter and roof-light here is hung with four ordinary-shaped iron staples, two driven into the shutter or light, and two others looped into them, driven into the timber to which the shutter or light is hung. With a little care in adjusting them the shutters close just as tight as with hinges. As will be easily seen they can never get rusted fast, and at the same time they cost less and are fixed more quickly, and they will outlast the most durable timber. The whole of the houses, as might be supposed, are built quite plain, and the large size of the glass used (17 inches by 13 inches), giving them a greater proportion of glass than usual to the wood which carries it, conveys an idea of their

same piping let into blocks of cement in the floors. The paths in most cases are sunk and covered with burnt clay ballast, which allows the water to pass off and is clean. In the narrower houses, occupied by *Pelargoniums* and similar plants, there is a single path down the centre, and a stage running right and left about on a level with the eave of the house. Some of these stages are made of trelliswork, consisting of wide strips of wood, others of earth covered with ashes; and in the majority of the houses each plant stands on an inverted pot, the same size as that in which it is growing, thus getting them better up to the light, and in the case of things like *Pelargoniums* allowing the air to circulate more freely amongst them. There is no approach to crowding the plants, each having

these market plants, might be considered a waste, yet Mr. Ladds finds them so used a decided gain, as the roots, getting down in greater quantities at the bottom of the pots than elsewhere within the soil, are enabled to sustain the plants through the winter without the aid of manure-water, which if given during the dull sunless time, combined with the warmth kept up, causes the production of too much leaf.

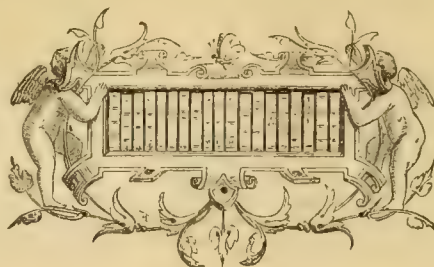
The next group of houses, eight in number, ranging from 160 to 280 feet in length and similar to the last in width, were principally devoted to pink and scarlet Zonal Pelargoniums, perfectly even in the size of the plants, which from end to end were clothed with large trusses of bloom, as it is usual to meet with them in summer.

Another block of twenty-two houses, each 200 feet long by 12 wide, was also about one-half occupied with Zonals—in all cases a whole house confined to one kind, and the mass of colour in these long vistas had a singularly bright appearance when, as at the time I saw them, the ground outside was covered with snow. The sorts that came up to the standard required here are very few. In single scarlets, Vesuvius, Corsair, and a seedling of Mr. Ladds'. Between these three there is little to choose for winter forcing. Single pink kinds: Master Christine and Mrs. Upton bear the palm; Lady Emily has fine flowers and is very free, but the petals fall too quickly. These are the single varieties, of which the immense stock almost wholly consists. Each and all are not equal to the semi-double scarlet Wonderful, and the also partially double pink, Madame Thibaut, which are not likely to be surpassed in any way, either for winter or summer use. Wonderful was first pronounced by some growers as not to force well. Nothing could possibly be better than it is with Mr. Ladds, who attributes failure, where it has occurred, to a want of sufficient heat and to the plants not being properly prepared. Independently of their excellent habit of growth and profusion of flowers, the non-disposition of the petals to fall off is no slight consideration to those who buy the flowers, but still more so to an extensive grower for market, who has to gum every flower of the single kinds before the trusses are cut. The labour involved in this work of gumming at Mr. Ladds' place may be imagined from the fact that six days a week all through the winter some forty dozen bunches are sent away. A market bunch usually consists of twelve trusses. In last Christmas week 1000 dozen bunches were cut, the individual flowers in each truss gummed; and to get through it every man, woman, and boy employed were at it for forty-eight hours uninterruptedly (!), and despite the rapidity with which the gum-stick has to touch the centres of the flowers, it must have been rather sleepy sort of work. One of these houses was filled with Red Gauntlet Pelargonium in full bloom, the only one except Zonals forced into flower during the early winter. The plants were covered with flowers, although like the others cut from daily.

The remainder of this lot of houses contained Cinerarias that would be cleared off early to make way for other things. To those who have not seen what it is possible to do with such plants in 48-pots, these Cinerarias need to be seen to be credited. I measured many that were from 18 to 24 inches across, which will give some idea of their size, and the way they keep their bottom leaves; in height they were not more than 9 or 10 inches, although so far advanced as to show the colour of the flowers; they were furnished with six or eight side shoots, nearly as large as the centre ones. They are of the usual London market strain. The best formed and coloured flowers are every year retained for seed, the blue coloured kept, when in bloom, by themselves, all the others together. They are sown as soon as the seed is ripe in the spring. *T. Baines.*

(To be continued.)

A VETERAN PEACH TREE.—P. M. Augur reports, in the Middletown (Connecticut) *Constitution*, that he examined a Peach tree at the residence of Henry Hart, in Saybrook, Connecticut, which at 2 feet 10 inches above the ground measured 4 feet around. It had four principal branches having the circumferences respectively of 2½ feet, 2.15 feet, 2 feet, and 1.14 feet—a total of 8½ feet, or twice that of the main trunk. The tree has been a constant and abundant bearer. This indicates that the Peach tree is not necessarily a short-lived one, as is generally supposed. *American Agriculturist.*



Notices of Books.

Ponds and Ditches. By Dr. M. C. Cooke. (Society for Promoting Christian Knowledge.)

The Woodlands. By Dr. M. C. Cooke. (Same Publishers.)

It is an incalculable advantage to have works of this character drawn up by actual workers, and not merely superficial *dilettanti*. With the best intentions, perhaps, the latter, when they do put pen to paper, are apt to confuse the reader by their ill-digested statements, and to give him an utterly false idea of the relative importance of different matters. Popular books fail in their aim either because they are written by persons imperfectly acquainted with the subjects they profess to deal with, or because, from fear of becoming too abstruse, they squeeze out or ignore most of what serves to give interest and attract the attention of the intelligent reader. A boy likes well enough to see fireworks go off or a balloon ascend, but his interest is aroused tenfold if you can show him how the feats are performed, and give him, so far as prudence and other circumstances will allow, the means of personally conducting experiments of the same kind.

The subjects treated of in *Ponds and Ditches* comprise notices of the plants and the animals found in such places. These are drawn up carefully, and, so far as the plan of the book and the limits of the space at the author's disposal would allow, completely. The reader is not called on to fish up this mass of green slime from the brook, and put a portion under the microscope and merely admire its beauty as so seen, but he is enticed into the far more useful task of tracing so far as possible the whole life history, the beginnings, the permutations, the endings of the creatures brought under his notice, and to compare them with the corresponding stages in other organisms more or less nearly allied to it. It is obvious that by this method a much more useful knowledge of natural objects will be obtained than by the mere casual purposeless staring which is all that is advocated in some so-called popular books of this class.

Dr. Cooke takes care, so far as possible, to induce the reader to see for himself all that the author describes, and to help him in this task he has been careful to supply a large number of woodcuts, and, better still, to furnish a chapter devoted to the important subjects of collecting and examining. Well may Dr. Cooke expatiate on the interest and the excitement to be got out of a tumbler of pond water. Should it, for instance, comprise a few gnats' larvæ, to mention only a single illustration, we will guarantee to the unaccustomed observer such a measure of astonishment, interest, and admiration, as only Nature's handiwork can excite. *The Woodlands* comprises chapters on forests and their uses, on timber trees, flowers and grasses, Ferns and mosses, and the multitudes of birds and insects found in such situations. These are treated of in the same general manner as are the occupants of ponds and ditches in the work devoted to them. Dr. Cooke is so accurate in his statements in general, and so diligent in collecting information to suit his purpose, that we rather wonder that he still gives circulation to the statement that the Horse Chestnut is a native of Thibet, whence it was brought to England in 1550. It seems almost certain now that the tree in question is a native of the mountains of Northern Greece. Those whose business it will be to settle the new scientific frontier in that region might have a chance of setting this question definitively at rest.

The Amateur Gardener. By Mrs. Loudon. Edited and revised by W. Robinson. (F. Warne & Co.)—A very useful little book for the amateur, so far as practical matters are concerned, telling him what

should be done in each department of the garden in each month. Even in a popular work it is, however, well to be as accurate as possible, so that it seems a pity to describe the action of frost as freezing the sap and bursting the veins that contained it. This passage betrays a lack of knowledge of vegetable structure and vegetable physiology as well as of the action of frost on plants, which might shake confidence in the more practical portion of the book. The sections on manuring are equally misleading.

Florists' Flowers.

ALPINE AURICULAS.—If I were asked to name the finest alpine Auricula shown at the exhibition of the Southern Section of the National Auricula Society at South Kensington in April last, it would be King of the Belgians. I think there was nothing came near this for beauty of expression, size, and substance. It is a good grower, throwing up a strong flower-stem, bearing a large truss, the pips well displayed, large, flat, and of very fine form; the colour rich lustrous maroon, with a centre of the purest gold. I had pips of it of great size, and with that smoothness and flatness peculiar to it. Mr. Turner may have among his many fine seedlings some that transcend King of the Belgians in the possession of general good qualities, but I have no hesitation in designating it the best alpine he has yet sent out.

It is one of the self class, and therefore cannot take a position on the exhibition table at Manchester, because edged flowers, and these only, are admissible for competition. In the North the edged or shaded alpine is the only one admissible for show purposes, and self flowers are looked upon as nondescripts. I think there is reason in this, for the shaded form appears to be the essential characteristic of beauty in an alpine. A self Auricula is admissible only in the show class; in the alpine section it finds no place. In the South a larger latitude is allowed, but I am not at all sure it is wisely done, and for this main reason—that golden-centred flowers are surely taking the precedence over the white and creamy-centred ones, and all the rich and striking maroon self flowers have centres of the brightest gold. In April last but very few flowers indeed having white or custard centres were shown; the large majority had golden centres, and the selfs were conspicuous in the collections.

I am by no means for throwing out the selfs, but I should like to see a class made specially for them. There are several of them, such as Black Prince, Colonel Scott, very fine; Diamond, Etna, King of the Belgians, Mercury, Napoleon III., and Spangle, in addition to others, all being beautiful varieties of unquestionable merit. But I want to see the charming shaded flowers improved, and I would have a class for them also, excluding the selfs as I would exclude the edged flowers from the self class. All the most beautiful of the edged flowers are of delicate colours, such as mauve, pale violet, lavender, &c.; and with scarcely an exception they are associated with pale centres. I have in my mind's eye Dolly Varden, Elcho, Ovid, Tenniel, Conspicua, Beatrice, and others, that when well grown are both lovely and fascinating. I would have these delicate flowers improved upon; and I think we should do wisely in the South in following the lead of the North, and instituting separate classes for golden and white centres. I may be alone in my advocacy of this procedure, but it is advanced in the full belief that it is a correct one.

I would advise all lovers of the Auricula, fearing they are unable to grow through lack of convenience any of the finer show varieties, to turn their attention to cultivating a few of the named alpine. They will derive much enjoyment from doing so. A small collection of good named varieties can be got together at comparatively small cost. Then they are generally of hardy and robust constitution, and can be planted out in a prepared bed during summer, and repotted in the autumn. Beatrice, Conspicua, Bronze Queen, Dazzle, Diadem, Elcho, Mercury, John Leech, Ovid, King of the Belgians, Tenniel and Spangle, represent a dozen varieties that would be a source of delight to any grower. If these, or a portion of them, were obtained now and potted in a good yellow loam, with a little sand, leaf-mould and manure, they would become well established by autumn, and bloom well the following spring. The alpine Auricula can be finely grown in comparatively small pots. All my best flowers this season were from plants grown in large 60-pots, and of my plants in course of being potted this summer, I am putting out very few indeed into a larger size. I believe in potting firmly, after giving a good supply of drainage. If placed in a cold frame and looked after in the matter of watering, allowing a mild shower to fall upon them occasionally, the plants can hardly fail to do well, and become a source of great delight and satisfaction in April next. *R. D.*

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PLANT GOSSIP.

HERBACEOUS PLANTS, &c., AT KEW.—A fine bush of the Kew Zealand *Veronica Traversii* is now flowering nicely at Kew, and its upright racemes of pretty flowers, white, faintly tinged with lilac, contrast well with the small neat foliage. This bush has not received any injury whatever during the last two severe winters, although it is in the open and has at no time been protected in any way. Another interesting shrub, and one not nearly so frequently grown in gardens as its merits certainly deserve, is the South European *Phlomis fruticosa*, with wrinkled sage-green leaves and whorls of large, bright golden-yellow blossoms; it is perfectly hardy, and although nearly three centuries have elapsed since the plant is recorded to have been first introduced to British gardens, it is but rarely met with. The double form of the Dyer's Greenweed, *Genista tinctoria*, makes one of the showiest of dwarf yellow-flowered rock or border plants, and is worthy of the highest praise; it is extremely floriferous, and lasts some time longer in bloom than the normal form. *Habitzia tamnoides* makes an excellent summer covering for rustic arbours, &c.; it is an elegant and graceful but vigorous climber from the Caucasus, with long stalked, glabrous, cordate-acuminate leaves and green flowers in small cymes collected into dense axillary panicles. The Himalayan *Morina longifolia*, with its *Acanthus*-like leaves and long leafy scapes, bearing dense-flowered whorls of charming rose-tinted flowers, is worth a place even in the most select collections of herbaceous plants. During sunshine the little *Grammanthes gentianoides*, from the Cape of Good Hope, is especially attractive, by reason of the peculiar metallic tints of its handsome flowers. *Linaria maroccana*, introduced from Morocco some years ago by Sir Joseph Hooker, is one of the most desirable species of a beautiful genus, the numerous shades of purple, crimson, and rose being very striking. It grows little more than a foot in height. One of the best of the Loosetrifes is *Lysimachia dahurica*, which grows about a foot and a half high. It is a very free-flowering plant, the pyramidal panicles being literally one mass of orange-yellow blossoms. *Wahlenbergia dalmatica*, a charming dwarf Bell-flower, has rosettes of linear, grassy leaves and flower-stems about 4 or 6 inches long, bearing umbels of large blue flowers. *Campanula garganica* and its variety *hirsuta* make good border and rockery plants, and the pretty pale blue saucer-shaped blossoms are produced in great profusion. These also are excellent subjects for cultivation in pots, and make first-rate basket plants. *Malvastrum Munroanum*, a native of North-West America, makes a fine display. It grows about 2 feet high, has neat foliage and bears numberless orange-red flowers. *Ligularia macrophylla* is a striking Composite, with large, glaucous-green, radical leaves, and tall stout almost naked scapes, bearing pyramidal panicles of golden-yellow flower-heads. As a single specimen on a lawn this would make a fine object.

— *ANTHURIUM SCHERZERIANUM*.—Mr. Woolford kindly sends us another bracteate specimen in *Anthurium Scherzerianum* var. *Williamsi*, similar to that figured at p. 808, vol. xiii. These specimens are indications of what may be expected in the future.

— *LILIES*.—Dr. Wallace sends us flowers of *Lilium polyphyllum*, but scarcely so fine examples as those shown recently by Mr. McIntosh; also of *L. nitidum*, so-called, which we cannot distinguish from *L. columbianum*; and lastly of *Lilium Parryi*. The New Plant and Bulb Company believe that they are the first to flower this elegant Californian Lily. Dr. Wallace's specimen has scattered linear leaves, a solitary pale yellow flower, with a ribbed tube nearly as long as the narrow pointed spreading segments, which are marked with minute purplish spots. The specimens are ascending, the anthers black.

— *DELPHINIUM CASHMIRIANUM*.—In the herbaceous grounds at the York Nurseries this plant forms one of the most attractive objects at this season. It is to be seen in immense masses about 18 inches high, which are literally smothered with its large showy blossoms—blue, with a tinge of rose. The plant is so fine that we can thoroughly recommend it for herbaceous borders.

— *ONYXIPUS LAMBERTII*.—This is a rare and beautiful North American perennial rock plant, form-

ing graceful silvery tufts, from which arise sub-prostrate stems about 6 inches long, bearing a profusion of lovely rosy-carmine flowers. It is now flowering in the rich collection of these plants in the York Nurseries.

PATRICIAN HORTICULTURE.

PLEASANTLY and happily located on a southern slope of the Coombe Hills, and overlooking a wide area of beautiful country, that is in the far distance bounded to the eye only by the great range of Surrey hills that skirts Epsom and Dorking, with Leith Hill and its monument in the far distance even down to the famous Hog's Back by Guildford, is that large suburban garden converted a few years since by Lord Londesborough from a ploughed field into a horticultural establishment that has not probably its exact equal in the kingdom, and over which that well-known gardener, Mr. Denning, so ably presides. Sad experience for the past few years has shown us that soil and position, climate and aspect, have very much to do with success in gardening, and although perchance when this most admirable site was selected for the formation of a large gardening establishment little thought was given to the peculiar seasons so disastrous in character that might at some time come, yet it has proved that the favoured position of this garden has given it advantages that all gardens cannot enjoy, though so charmingly and admirably situated. Getting the full warmth of the welcome sunshine and well sheltered on east and north from old Boreas' most bitter and coldest blasts, yet the soil is somewhat stiff and heavy, needing more than customary care in its cultivation—a useful friend when well prepared in the production of good crops, but a troublesome one when its tenacity and adhesiveness render it anything but the ideal of a seed-bed, rather the consistency of a bed of clay than the accommodating openness of the proverbial heap of ashes. As evidence of the comparative mildness of this spot Mr. Denning told us that all his Brassica crops suffered but in a small degree last winter, and were comparatively unharmed, whilst up to the last Endive had been lifted largely from the open ground for blanching in the Mushroom-houses, where, under the wide shelves on which this delicious fungus grows all the year round in immense quantities, Seakale, Rhubarb, and other useful vegetables undergo the same desirable process.

Although the several long ranges of glasshouses at Norbiton, and pits and frames innumerable, were erected primarily for the production of plants and flowers for the decoration of noble mansions, yet a large place is given to fruits and forced vegetables, and of these, continuous with the flowers, especially in the London season, there is an incessant and regular production going on—so regular, in fact, that every week has its demands, and one week seems to differ little from another in its supplies or requirements beyond the divergence incidental to seasons and their necessary productions. Here garden ornamentation and decoration as seen in ordinary places find little illustration; what little there is seen is of course entirely subsidiary to the special objects for which the gardens are made, and which include only in an infinitesimal degree the employment of anything grown for garden decoration, but nearly all for household consumption and domestic uses. In fruits Grapes occupy a very important place, but only Hamburgs and Muscats are grown, the earliest crops when we saw them just about to show colour on an abundance of good full bunches, the latest being still apparently as dormant as if in the open air. The Muscats that were past breaking showed tiny bunches so freely that drooping would have to be done liberally. The lack of sunshine that marked last year has done little harm here, and the Grape crops in all the houses promised to be abundant. Peaches seem to be of next importance, four houses being devoted to their production; the earliest of all, Grosse Mignonne, has a big crop of fruit timed to ripen towards the end of May, and as the Salwey is the latest, the Peach crop inside and outside lasts nearly six months. Not only is each house started in succession, but the sorts in each house are successional in ripening—a very important element in the maintenance of a supply.

About 3000 pots of Keens' Seedling Strawberry are forced, the earliest lot was full of fruit as the plants could carry, growing on stages near the glass, not a blind one amongst them. Mr. Denning told me that he rejects all the rank-looking runners of this favourite

old kind for those that are of moderate growth, and thus never gets a blind plant. It is the earliest and coarsest runners that fail to bloom, and thus give this good old sort a bad name. The Strawberry plants are fed with a mixture in equal parts of soot and Clay's Fertiliser, and the results are simply splendid. We have already referred to the frame-grown Potatoes here from which great crops are obtained, and pass on to allude to the noble and costly collection of Orchids, to the growth of which no less than ten houses or divisions are devoted.

In the old Grimston days grand collections of Orchids used to delight the *habitués* of the South Kensington meetings, but these have lost for patricians their former *prestige*, and now the Orchids remain at home. A long paper might be written descriptive of the kinds in bloom at the time of our visit, but it would answer no useful purpose. Just one or two demand marked notice, the chief being a lovely form of *Dendrobium Wardianum*, the flowers of which are much larger than those of any other forms, and the point colours singularly rich and striking. Some of the lovely *Alexandra Odontogloss* were remarkably fine and beautiful, and one of the most pleasing and novel forms was *Dendrobium cucullatum*, which had three long pendent spikes of bloom, the lip of each flower shaped like a scallop shell, in colour white, and finely veined with dark brown, and the petals of a pale mauve.

Gardenias planted out in houses give about 30,000 blooms yearly, being cut literally by the bushel when ready. Of other white flowers for the same purpose, *Eucharis*, *Stephanotis*, and white *Hyacinths*, are grown in large quantities. One of the most beautiful of all forced flowers in bloom in quantity is the *Euphorbia jacquiniæflora*, all grown in 48-sized pots, and carrying in great quantities racemes of bloom from 6 to 7 inches in length, of that lovely orange-carmine hue that is so peculiar to this flower. These strike easily and freely from the hardest of the long growth, the more recent wood being too sappy to strike and make plants. Roses are grown as standards in 8-inch pots in large numbers, rich dark kinds being most favoured. These are all on Brier stocks, and are repotted but once in three years, when they get a rest from forcing, and are allowed to bloom then only in the course of Nature and forced as usual the following year. These plants are simply top-dressed with good fresh soil during the intervening years. As grown here these Roses demonstrate how well they will thrive when the roots are in a small compass. Some 600 Lilacs are yearly forced, and also as many of the beautiful Ghent *Azaleas*. Some of the rosy-pink coloured of these are most charming. Lilies of the Valley are also an important feature, all those forced in pots being strong imported crowns, and great quantities are lifted in big clumps from the open ground and placed in boxes on the hot-water pipes, producing a fine lot of very acceptable bloom.

Of plants grown chiefly in large 60's for house decoration, literally they are legion. Some 20,000 bulbs of *Hyacinths*, *Tulips*, and *Narcissi*, are annually grown in pots; and, in divers colours, some 10,000 to 12,000 Zonal *Pelargoniums*. *Calla æthiopica* in 48's are finely done: two or three handsome leaves and one large flower are the requirements from each pot, and these are found by hundreds. *Mignonette* is an immense favourite in the patrician mansion, as indeed are all simple sweet-scented flowers. Two large borders planted with many favourite perennials have been turned to the growth of *Mignonette*, Stocks, and other sweet flowers, whilst inside many thousands of pots are grown. The plants are not forced as market stuff is, but sown early and grown slowly in plenty of air. Such plants as these will outlast the forced market stuff by several weeks. Then *Heliotropes* are very favoured plants for the making of banks of greenery and sweet-scented bloom. The only kind grown is the old Peruvian, as being the most permanent to bloom.

Of *Fuchsias* the most favoured kinds are white ones, such as Mrs. Marshall and Lady Heytesbury; the plants chiefly employed for the formation of neat and dressed edgings to groups in the rooms are *Isolepis gracilis*, *Selaginella Kraussiana*, Harrison's and the common Musk, and *Panicum variegatum*. In the production of foliage effects the *Coleus* is found most useful, especially the variety *Duchess of Edinburgh*. Of this Mr. Denning keeps strong plants, and as soon as the young shoots show signs of breaking into the beautiful colours that mark that kind, these are

taken off and struck, thus securing an abundance of plants of the true character—one that is also a most telling kind in groups of green leafage, lighting them up with excellent effect. The *Abutilon Darwinii* is also very largely grown for the same purpose. Of other plants, which it is impossible to further particularise, riseare enormous quantities of *Adiantums*, *Cyperus*, *Agrostis*, *Calceolarias*, *Cinerarias*, *Begonias*, *Intermediate Stocks*, and numerous other things. *Liliums* of course are grown in great abundance—*auratum*, *eximium*, and *speciosum*; of the latter there are about 5000 bulbs of the variety *rubrum*, that have grown from forty-eight bulbs, the entire stock a few years since. All these are grown in pots and plunged in the open ground, being brought into the houses as needed.

In the London season, when dinner parties are almost the daily rule, it is one of the patrician requirements to have the table dressed with one kind and colour of flower only, changing from day to day, but always one sort and one colour. This curious fashion—one, probably, that the most elevated taste approves—doubly increases the responsibility in furnishing the needed floral supply. Every week-day a large van-load of plants, oftentimes numbering 1000 plants

MR. WARE'S NURSERY.

AFTER visiting the York nurseries and Mr. Wilson's garden at Weybridge, I was anxious still further to increase my knowledge of hardy plants, to see new species or varieties, and the old ones under different conditions of growth; and for this purpose went to Tottenham. At the time of my visit the rockwork was very gay with plants in flower, and others to flower in a few days, while the beauty of a few had gone for this season. The advantage of a rockwork for hardy alpine and herbaceous plants is that the different positions for each can be chosen, whether it be sunshine or shade, wet or dry. Some require a small space only to develop themselves, others have the best effect when they can ramble at will over a square yard or two of surface. The different species of *Anemones* are not only interesting, but most of them are extremely beautiful. The *A. alpina* introduced so long ago as 1658, stands very high as a border plant here; a small tuft of it had six or eight most beautiful pure white flowers, which measured very nearly 3 inches across. These were well set off by the large deep green leaves, the segments of which are finely divided. *A. sylvestris*, introduced from

The following interesting species of plants are good subjects for flowering in spring on the rockwork:—*Hesperocordum pumilum*, an Alliaceous plant from North America, with pretty flowers, varying from white to pale pink, the flowers almost resting on the ground; *Hellis coerulescens*, a distinct plant, with neat Daisy-like flowers tinged with blue; *Heuchera Menziesii*, with creamy-white *Spiraea*-like flowers: the plant is neat and well adapted for rockwork.

Ranunculus amplexicaulis may be said to be one of the most distinct, as it is also a very beautiful species. It grows in different positions on the rockwork, and thrives well as a border plant; the pure white flowers with yellow stems are very pretty, even at a distance. The only *Androsace* I noticed was *A. villosa*, in small tufts of very pretty white flowers. The *Gentians* were at that time adorning the margin of the rockwork with their brilliant deep blue flowers. *G. verna*, though one of the smallest, is perhaps the most beautiful, although the flowers are not nearly so large as the better known *G. acaulis*, which was also in flower. Perhaps one of the most generally useful of spring-flowering plants, adapted either for the front row of borders or rockwork, or to cover speedily any sterile piece of ground under trees or in the open, is the *Aubrietia deltoidea*. There are several varieties at Mr. Ware's. The best seemed to be *A. Campbelli* (improved)—the plants were masses of large violet-purple flowers; *A. Hendersoni* and *A. purpurea*—all the forms worthy of extensive cultivation. By some *A. Campbelli* is considered a distinct species from *A. deltoidea*, but they all seem to be varieties of that species, indeed in our own garden we have at least a dozen varieties slightly different in habit and colour of the flowers from each other.

Mr. Nelson's varieties of *Phlox setacea* are certainly very pretty; the dense masses of varied white, blush, and pink-tinted flowers are very effective either as border or rock plants, and they are not particular as to soil. The variety *compacta* has pinkish-blush flowers, with a crimson eye; *grandiflora* has darker-coloured flowers; *Model* is pink, with a purplish-crimson eye; *Bride*, white, with red eye, later than the others to flower; and one named *pallida* is still later, as not a single flower had then opened on it. *Aldboroughensis* is also worthy to be placed in a good position. A number of the species of the genus *Tulipa* had flowered, but a few showy ones still continued in beauty, such as *T. retroflexa*, fine yellow; *T. viridiflora præcox*, with singular greenish flowers; *T. fulgens*, very brilliant crimson; *T. cornuta* and *T. cornuta stenopetala* had singular yellow flowers, marked with red; *T. elegans*, very rich crimson. Nearly all the above had pointed petals. The *Trillium grandiflorum* luxuriates in peat soil partially shaded, where also a considerable number of the choicer hardy Orchids find a home, such as *Cypripedium pubescens*, *C. spectabile*, *C. acaule*, and *C. calceolus*. The very beautiful and little known *C. macranthum* was in flower; it is a dwarf species; the flowers are purple, the mouth of the lip being whitish. This species is not planted out, but is grown in pots. J. Douglas.

ORCHIDS AND IRIDS.

THE accompanying illustration (fig. 12) represents a flower, which at first sight so much resembles a flat-petalled Iris that it might well have been mistaken for one. It really represents a regular flower of *Lælia purpurata* in which the three sepals were equal in size and shape, as also were the three petals—the latter being all deeply coloured and lip-like. In the centre of the flower was a three-toothed column with no anthers. Below the flower were indications of a three-celled ovary, the cells being placed opposite to the sepals. To reduce this to the type we have to assume the absence of both the rows of stamens which a theoretically complete Orchid flower should have. Allowing for the absence of stamens the diagram of the flower, E, is exactly that of an Iris; A B represent the column; C a section across the line A B; D a cross section of the ovary. The florist will see in this flower indications of the possibility of converting a *Lælia* into a circular flat flower such as he delights in. For our own parts we think such a change would be a misfortune, but that is a matter of taste.

POTATO DISEASE.—We are sorry to hear of the appearance of this in several localities, but at present it does not seem to be very widely spread.



FIG. 12.—*LÆLIA PURPURATA*.

when the needs are special, goes to the town mansion, and with these cut flowers, fruit, and vegetables.

Although all this is the production of wealth, and is intended for the enjoyment of its possessors, it must not be imagined that there is no system or check upon the supply or its consumption. With every load or consignment from the gardens go two printed lists for the household officials, and a third is retained by the gardener; and this is copied into the garden-book, wherein may be seen a concise and faithful record of all the enormous produce of this great garden for the year and from year to year.

A record of this kind shows in clear language how largely horticulture caters for the wealthy, and indicates to how great an extent the love for flowers, and even for the simplest, as well as the most voluptuous, of garden produce permeates those whose lives are spent in that artificial condition of society known as the Upper Ten. By the wealthiest and loftiest in the land, as well as by the poorest and humblest, the Violet, Wallflower, or the delicious Mignonette, are alike welcome and enjoyed. Not all the perfumes of Araby, or the choicest extract of chemical odours, can vie in freshness and sweetness with the pure and ever fresh odours emitted by our favourite flowers. If there is to be found realised the one touch of nature that makes the whole world kin, surely it is when all alike bow before the shrine of Flora, and worship with universal faith even the humblest of her precious gifts. A. D.

Germany in 1596, should be well known, as it grows most freely; its large rather drooping white flowers have earned for it the name of the Snowdrop Anemone; it is one of the plants that appropriates for itself a square yard of the rockwork, which it thickly adorns with its handsome flowers.

Here also is *A. Pulsatilla*, the Pasque-flower, reminding us, with its large violet-purple flowers, that our own English pastures produce many beautiful flowers, although some may be uncommon in a wild state. This is certainly one, although *A. apennina* may be doubtful, and *A. ranunculoides* very scarce. The different varieties of the Wood Anemone have been already noticed; the double white, here in masses, was very beautiful. The Globe-flowers were in full beauty, proving how useful they are for planting in certain positions as hardy border plants. *Trollius europæus* is the most common species, and one of the most showy. There are probably a dozen distinct forms of it in cultivation. *T. giganteus* had large flowers, and one still more beautiful—*grandiflorus*—could also be distinguished by its leaves as the three grew together. The flowers of all are clear yellow. *T. asiaticus* is another type, represented by at least three forms; the flowers of these are rich deep gold, almost reddish-yellow. *T. japonicus flore-pleno* has also very rich gold flowers, and is distinct.

NOTES FROM NORTHERN QUEENSLAND.

UNDER the title of "Northern Lights" Mr. L. A. Bernays, Secretary to the Queensland Acclimatisation Society, communicates to an Australian paper some interesting notes of an expedition made by him into the north of Queensland, the following abstract of which may be of interest to the readers of the *Gardeners' Chronicle*.

The traveller, after describing his passage through Keppel Bay, in which, however, nothing of interest occurs in a horticultural or botanical point of view, arrived at Flat-top Island at 2 o'clock in the morning, when the temptation offered by the combined attractions of novelty of scene, a bright moon, and deliciously cool air were irresistible to take him on deck. Of the Whitsunday group the writer says:—"The beauty of this wonderful cluster of islands not only has not been exaggerated, but it is, in fact, far beyond any description which I at least have seen . . . the variety is never ending. Form, colour, elevation all change with every hundred yards of progress."

"It is impossible, without landing, to form any correct judgment of the value of the timber or the grasses which clothe these islands innumerable. Many of them are covered from their highest point to the very water's edge with dense scrub; others, on the contrary, show extensive stretches of grass-land to which the genial season had given a beautiful green tint, but whether the grasses were fine or coarse, succulent or wiry, I could not tell, nor could I find out anybody who knew. It seemed, however, a pity to see hundreds, and probably thousands, of acres of herbage which must have some value going to absolute waste. Of Pine trees—probably the glaucous form of the common Moreton Bay Pines (*Araucaria Cunninghamii*)—there are thousands, clustered in many places in large patches, in gullies and sheltered slopes, where their rich dark foliage presents a very effective contrast to the bright green tints of the grass; but, as if to show how happy they can make themselves under any circumstances, what very Mark Tapleys of trees they are, on other islands they seem to have avoided the sheltered spots, and to have sought exposure on the ridges, where they may be seen in long straggling lines like bristles on a hog's back. The lumberer does not seem to have been among them at all—a circumstance accounted for, if my binocular told a true tale, by the fact that, despite their number, there is hardly a good stick among them. Their varied inclines and contorted shapes suggested to my mind a bundle of spilkins as they are thrown hotch-potch upon the table ready for the game. From Dent's Island to the Palm Isles, thence to Hinchinbrook, and on to Mourilyan, we come to the Falkland Islands—one of the most charming of all the groups; to me the more so because of the highly tropical effect produced by the Cocoa-nut Palms growing in many places near the beach."

Having visited the so-called botanical reserves of Bowen, Townsville, and Cooktown, the first idea that suggests itself is that the selections, though large and conveniently situated, are primarily remarkable for bad quality of the soil. Over the large areas comprised in these selections, the soil of course varies, and is better in some places than in others. In the case of Cooktown the reserve consists chiefly of a hungry sand, any attempt to cultivate which, unless money, labour, and material are very plentiful, will only break the hearts of those who make the effort. In this reserve there are to be seen the early stages of a nursery, but the merest rudiments of knowledge of the subject are evidently wanting, and unless better skill is made available, conspicuous failure must be the result. The Bowen reserve is not yet fenced in completely, and operations have not yet been commenced; but it is in the hands of zealous trustees, who are advised by Mr. Eugène Fitzalan, an experienced and skilful botanist and horticulturist, and despite the drawback of the general character of the soil, there is no doubt, from what was seen of the town gardens, that successful results can and will be attained. The Townsville reserve is already showing some pretty flower borders, but the garden is still in embryo. The term botanical garden or botanical reserve seems to be a misnomer. These places, in the cases in which the management is vested in the municipal councils, are intended to be, and will probably become, people's parks. For botanical purposes, or to exemplify and encourage the growth of

economic trees and plants, or further the science of acclimatisation they will prove of no service whatever. The case is different where, as at Bowen, the management is vested in residents with a knowledge of, and warm interest in, the subject which they take in hand. There the economic and the pleasure garden will probably be combined, and those who use it can derive instruction as well as recreation from these visits.

It is not often that a charming garden flower becomes an intrusive weed, but this is the case at Townsville with a plant known as the *Vinca*. The plant is to be seen here in thousands of more than one colour, they were at the time of the visit in full bloom and covered every inch of waste ground in the town, so that the effect to one witnessing it for the first time is remarkably striking.

One of the most striking sights on the coast is the Mount Bellenden Ker range. Towering upwards of 5000 feet above the sea, it presents a striking contrast in its grandeur to the innumerable miniature mounts which, of every conceivable shape, dot the coast, either as promontories, portions of the ranges, or in the form of islands.

In a garden of about 100 acres in the neighbourhood of Cooktown, 50 acres of which are said to be in a state of high cultivation, Bananas were grown and exported to Townsville, Rockhampton, and Sydney, and very fine indeed they are. There are also large plots of Pine-apples, and many hundreds of young Orange-trees, besides which are Cocoa-nuts, Peaches, Lemons, Citrons, Sweet Potatoes, Water Melons, Sugar-cane, Ground Nuts, Tomatoes, Ginger, and Maize. The appearance of everything was healthy, and a very good crop of corn was being harvested. Some hundreds of bushels of ground nuts, the produce of the season's crop, were being ready bagged for the Palmer, where the growers find their chief market for this Chinese luxury.

The following description is given of the contents of the garden of an hotel at Cardwell, which is sufficient evidence of the suitability of the climate for tropical horticulture. The Mango here is a giant shade tree, while around it may be seen in robust growth the Java Almond, the Alligator Pear, the Bread-fruit, Cashew Nut, Jujube, &c. The Cocoa-nut also grows splendidly, and trees of all sizes, from a foot high to specimens in full fruit, are to be seen looking wonderfully at home. Among the notabilities of Cardwell are the fine groups of trees of *Calophyllum* to be seen on the beach. The tree is not purely a Queenslander, being found in some other tropical countries, but its habitat in Australia is very restricted, and it appears to be somewhat fanciful about adapting itself to other localities where the climatic conditions are nearly similar. The fact, however, that fresh water of the finest character is found a few feet from the surface close down to the beach, may have something to do with this. The foliage is very large, and of a glossy rich dark green; and these conditions, in conjunction with a remarkable spread of the branches, make the *Calophyllum* one of the finest shade trees of the world. A solitary specimen was found upon actual measurement to spread its branches 60 feet one way and 66 feet the other, and the foliage being very dense a fine refuge is thus provided from a tropical sun. The frequent change of form and the varying elevation of the ranges and spurs of Hinchinbrook present something fresh for the eye to rest upon at every fathom of progress; it is hardly necessary to add that the tropical character of the foliage, its changeable colour from the lightest and brightest green to an almost black effect, produced partly by foliage and partly by shade, strikingly intensify the interest of the scene. The effects described are confined to a comparatively narrow strip of undulating land near the water, and they are again marvellously enhanced by a sternly rugged background of rocky mountainous country full of crags and precipices inaccessible, even to a goat. The grand effects of the high land, in more than one spot observable from the water, were enlivened by considerable waterfalls tearing down the face of the mountains apparently by magic, as they seemed to find their way to daylight from the very highest summits. Following the waterfalls with the eye until they lost themselves in the dense vegetation of the gorges and lower slopes, the scene was changed, as by the optical delusion of a dissolving view, into the soft rich characteristics of Palm foliage interspersed with variously tinted and all densely clothed trees and shrubs, many of them in full blossom and curiously confused by the festooning habit of climbing plants innumerable.

Regarding the very general cultivation of the Cocoa-nut Mr. Bernays says that at present it is, with but few exceptions, grown rather as an ornamental plant than for any other object; but more than one small nursery was seen where the plants were waiting to be put out during the rains, the owner having an idea, although as yet not taking any definite shape, that by planting the Cocoa-nut they are providing a second string to the industrial bow.

There is at present an ample market in the Australian colonies for all the nuts grown—a market which is not likely for some years to come to be overstocked. The future, however, of the Cocoa-nut as an industrial product will either take the form of "copra" or of oil. There is at present a considerable trade in the former article from Fiji and elsewhere among the older and more civilised of the islands of these seas, and there seems no reason why this staple should not be profitably produced on the coasts of northern Queensland also.

(To be continued.)

Garden Operations.

HARDY FRUIT GARDEN.

At no season of the year is there greater pressure of work in this department than during the present month. The protection and gathering of small fruits for preserving is a heavy item of labour, and impedes important work upon wall fruit trees which demands urgent attention. It is, therefore, advisable to concentrate the entire available force for the time being upon such work as renders immediate execution necessary, in order that arrears which have been accumulating elsewhere may be disposed of before trees sustain injury from temporary neglect. Where there is a late supply of Currants and Gooseberries trained upon north walls they are well worth extra protection, on account of the esteem in which they are held after the general supply is over. Strawberries have been a most satisfactory crop. I have never before seen plants bear so abundantly, and am rather disposed to think that if we planted out equal to those we put for early forcing (and prepared them in the same liberal manner) about the middle of July we should have no difficulty in securing superior samples of fruit for dessert and exhibition purposes. Late varieties of Strawberries planted in two or three different aspects yield a useful and convenient succession of fruit, although crops in north situations are more difficult to manage than those occupying more airy situations. Still no garden of any pretensions should be without its contingent of Strawberries of approved kinds upon a north border. We are now planting out the last batch of forced plants for a chance crop of fruit in the autumn. Underhill's Sir Harry is the variety for this purpose. Vicomtesse Héricart de Thury is a much freer cropper, but it does not attain to the size of the former, and should not be grown for fruiting after the middle of October where appearance is an object. Many fruit trees are starved at the root at this season, when they should have abundance of moisture to assist them to make their full growth and "plump" their fruiting-buds for next year. A few showers of rain, or even a few days' rain, frequently do no more good to trees in certain positions and situations than refresh the leaves and a portion of the roots, while the "main body" of the latter, within a radius of two or more feet of the bole of the trees, are left utterly destitute of the chief element which causes it to extend and grow, and fill its tissues with the vital means of subsistence. Such cases may easily be noticed by the puny, sickly-looking growths, of a pale green, which seem to struggle for existence during hot weather, the cause no doubt being an insufficiency of roots; or, if they are abundant enough, their inaction brought about by extreme drought. These are points which should be seen to without delay. Probably the best way to restore and re-invigorate root-action would be to remove the surface-soil, and to put on a layer of well-rotted manure, which should be again covered over with the soil, and copiously watered until every root is thoroughly supplied with moisture. Trees that have sustained a check at the root in summer are generally those that make a second growth in autumn, thus completely neutralising the gain of a whole season's growth, to say nothing of the derangement which naturally takes place in the bearing condition of the tree. Figs upon walls require stopping and thinning out, so that no more shoots may be left than will be fully exposed to the sun, as under no other circumstances will the wood ripen sufficiently to stand the winter or retain the little embryo fruits which should be formed in the autumn, and which upon properly matured wood swell away vigorously early the following year. Vines also require stopping and thinning, and when they are planted in confined situations they should be fre-

quently drenched with water at the root. Not far from where I write are some capital old Vines barren as the Fig tree of old. Addressing the owner one day as to why he lopped off the shoots indiscriminately, he replied, "Too old to bear now, sir;" when as a matter of fact the poor things were eaten up with "dry mildew," the result of extreme drought at the roots; and so lots of fruit trees are starved in summer and grow in autumn, when they ought to be consolidating the season's growth into big fat fruit-buds for the following year. *W. Hinds, Canford.*

FLOWER GARDEN, ETC.

The work now to be done consists mainly in the maintenance of neatness, such as rolling and weeding walks, mowing regularly, cutting verges, clipping edgings and hedges, and encouraging the growth of bedding plants by surface stirring the soil; picking off seedly flowers and seed-pods; pegging out such plants as require it, so as to fill out the beds quickly, and also pegging, clipping, or pinching into form divisional lines and groundworks. Keep the designs well defined and true, as when first marked out, without this attention geometrical planting will prove a failure. Hence it follows that, unless labour in this direction can be afforded, it is better to confine bedding arrangements to masses of colour, broken at regular intervals by plants of graceful habit. The growth of *Violas*, *Verbenas*, *Tricolors* and other slow-growing *Pelargoniums*, may be much accelerated by an occasional supply of manure-water, or by the sprinkling of guano over the surface prior to watering. *Calceolarias* and *Lobelias* should always be kept mulched with sifted tan or cocoa-fibre—either answers the purpose, and both look equally neat at all times. Beds of subtropical plants that are not covered with undergrowth plants should also be thus mulched, as much for appearance sake, as for the assistance thereby rendered to growth; stake and tie all those that have not yet been done, and give them abundance of water should the weather prove dry. It may not be generally known that *Castor-oil plants*—*Ricinus Gibsoni* in particular—make fine bushy plants by pinching out the leaders about twice in the season. Perhaps to some it may seem an unnatural proceeding to take out the tops of such plants at all, and to some extent it is, yet for an outer line or circle of plants, to keep them dwarfer than the rest, the effect is decidedly an improvement, as it also is if alternate plants are pinched over the entire bed. *Harrison's Musk* is an effective undergrowth plant for *Ricinus Gibsoni*, the yellow of the *Musk* harmonising so well with the rich bronzy foliage of the *Ricinus*. *Cannas*, *Wigandias*, or any similar strong-growing plants that have a greenish-yellow tinge should be given a dressing of soot, guano, or nitrate of soda, which will soon produce both depth of colour and robust growth. Mixed flower borders should now be gay with *Pyrethrons*, *Snapsdragons*, *Sweet Williams*, *Veronicas*, *Delphiniums*, *Canterbury Bells*, *Foxgloves*, and many other biennial and annual flowers. Keep all the surroundings neat; the soil stirred after heavy rains, and dead flowers and sticks removed the moment any have done flowering. Continue to plant out, whenever the weather is suitable, seedlings of *Sweet Williams*, *Brompton Stocks*, *Antirrhinums*, *Wallflowers*, *Pentstemons*, and the like. *Daisies*, *Polyanthus*, *Pansies*, and all other plants that are being prepared for spring bedding, must in hot weather have liberal supplies of water. *W. Wildsmith, Heckfield.*

FRUIT HOUSES.

VINES.—Should we have a continuance of the cold, wet, sunless weather which now prevails, Grapes of all kinds changing colour will require a little fire-heat by night and frequently by day, to admit a free circulation of air, so essential to the production of colour and flavour, and at the same time to prevent the Vines from receiving a check, which would most likely result in imperfect finish. Favoured by a dry winter and spring and a very fine May, early Grapes have been unusually fine and well coloured, but the sudden change to weather which is no great improvement upon last year, at a time when fire-heat is usually dispensed with or reduced to a minimum, may lead those who are looking forward to an acceptable change to put off steady firing until they find it too late to surmount their difficulties. Late Grapes intended for bottling or keeping until after Christmas should have the shoulders well tied up, to allow their full development and a free circulation of air through the bunches when the leaves are falling in the autumn, the most trying period in the whole year. It will be necessary to keep the foliage nicely regulated, and the strongest laterals stopped where extension is likely to derange the even distribution of the sap; but the close system of pinching the points out of every young growth should not be indulged in at any time, as incessant stopping is almost as injurious as over-cropping. *Muscats* having all or a portion of their roots in internal borders will require heavy waterings with diluted liquid or guano-water when the berries

begin to take their last swelling. This should be applied at a temperature of 80° to 85°, and if not already done a good mulching of moderately fresh short horse-manure should be spread over the surface to keep the upper roots in action at a time when heavily cropped. Vines require all the stimulating food that can be given them, while the ammonia given off will keep red-spider in check. The old leaves on *Muscats*, being very liable to scorch or scald under sudden changes, a little night air should always be left on the apex of the house to prevent condensation of moisture, and in the event of a change to real summer weather, an ordinary tanned garden-net thrown loosely over the south or west sides of modern houses glazed with large squares of 21 oz. glass will be beneficial to the Vines without impeding the ingress of light and warmth. The present time is highly favourable to the lifting and replanting of Vines in early houses, or for planting young canes. Vines struck from eyes of the current year are best. The soil should be warm and the roots should be loosened at the points to prevent them from taking a circular direction after planting. If they show signs of suffering early closing with sun-heat, slight shading and an abundance of atmospheric moisture, with a low night temperature, will soon favour their recovery. If the borders are well mulched after planting and kept constantly moistened with tepid water, the young roots will soon find their way into it, instead of striking downwards into the drainage or subsoil. *W. Coleman, Eastnor.*

CUCUMBERS.

Frames from which Melons have been cut can now be planted with Cucumbers, which will make a good succession to those now in full bearing. From frames of this description about being planted we shall, when we commence some weeks hence, keep cutting Cucumbers until Christmas, by attending well to the linings and external protection from inclement weather. Should woodlice be troublesome, which is very likely, pour boiling water over their haunts. Previous to doing this, the sides and ends of the bed should be trodden down, to prevent the hot water passing away too quickly, thereby losing part of the effect for which it was applied, which will speedily reduce their numbers; and as, to use a homely phrase, "prevention is better than cure," repeat the dose a couple of times a week. If mildew or red-spider should put in an appearance, apply the usual remedies—a dusting of the flowers of sulphur to the former, when the leaves are damp, in the afternoon, and the sponging of the leaves with soapy water for the latter. *H. W. Ward, Longford Castle.*

MELONS.

Those planted out some time ago will now require some soil being added to the hillocks, which, while being done, should be pressed firmly. Should any of the plants exhibit signs of canker in the stems—which, it is almost needless to say, is the result of too much moisture settling on or about the stems of the plants—rub a mixture of dry soot and lime, in equal quantities, into the affected stems, which will, other points being duly attended to, arrest any further progress of the disease. Slugs are sometimes very troublesome and destructive in this department. They are not only partial to the leaves of the Melon plant while in a young growing state, but also to the fruits upon their approaching maturity, when they invariably, if not well looked after, attack the sunny side of them, and thereby render them unfit for table. This undesirable state of things, as most of your practical readers are aware, can in most cases be easily avoided by placing a plentiful supply of young Cabbage or Lettuce leaves in their haunts, and of which it will be found, on examining the leaves next morning, that they have partaken freely, whilst under those not so eaten they may be found comfortably digesting their salad feast, when, as a matter of course, they should be destroyed forthwith. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

CONSERVATORIES.—These structures being in a general way immediately contiguous to dwellings and so often resorted to by owners and visitors, it is in most cases a difficult matter, without causing discomfort, to keep the atmosphere in a condition sufficiently moist for the plants. Much may, however, be done for their benefit by frequently damping the borders, and by pouring water through the gratings over the pipes or other places out of sight, from whence it will be absorbed by the air passing over, and be conducted to the foliage so much in need of its help. The effect it has on this after a hot arid day is seen at once in the quick way it revives, and not only is a certain amount of humidity essential for the leaf but the flowers require it too, and if not supplied with a certain amount they soon wither or fade to such a degree as to lose much of their freshness and beauty. To prevent this it will be found of great service, where it can be done without wetting the blooms, to syringe among the pots occasionally, which will drink it in to the com-

fort of the roots, as the principal feeders connected with these are always to be met with around the sides of the balls, and it is of the utmost importance to keep these rootlets from perishing. Where borders are efficiently drained roof climbers cannot well have too much water, but with these as with all plants the thing is, when it is administered, to give a thorough soaking, as otherwise it frequently happens that, although the top soil may have sufficient, the lower portion remains dry the whole summer through. This may result, too, from a general shrinkage, and when this occurs nothing short of a thorough examination and filling in of the crevices will stop the evil, as however much water may be given it is all lost, and the case is often as bad where *Camellias* and such plants are planted out, when without much care and attention it flows away over the surface and leaves the plants starving from want. To obviate this it is a good plan just to break the crust around the stems, and then form a sort of basin a yard or more across, which may be filled a few times during the day, and repeated again when required. By doing this, each plant gets its share, and there is always a certainty about it unattainable in any other way. The rapid growth of *Tacsonias*, *Passifloras*, and other subjects of a kindred nature are now making, renders it necessary to go frequently over them for the purpose of thinning and regulating the shoots, but to tie these in or attempt to train them beyond what is required to support them in certain positions is to do a thing that impairs much of their natural beauty, as in no way do these ever look better or show off to such advantage as they do depending gracefully down from the roof; but there is a wide difference in allowing them to do this and becoming a tangled mass, which wild character they soon assume if left a short time to themselves.

The weather so far has not been favourable for stove plants now in use in embellishing these cooler structures, and should it continue the same great care and judgment will be requisite in their management, as should they have more water than is absolutely needed, or stand where cold air plays on them, they are sure to suffer, although the effects may not be seen till they are returned again to the stove. The safest way is to keep them as dry at the roots as they will possibly bear, and the more tender should be placed at the warmest end of the house, or taken away altogether till we get a more settled time. Such things, however, as *Dracenas*, *Bougainvilleas*, *Allamandas* and *Stephanotis*, will stand a good deal till the season becomes more advanced, after which they feel a fall in the temperature more keenly than now.

GREENHOUSES.

The principal thing connected with the future occupants of these is to give attention to those plants required for autumn and winter blooming, the most important among which are *Chrysanthemums*, that should at once be placed in the pots they are intended to flower in, as the secret of success is to get them well established and the growth thoroughly matured, which cannot be done if they are left to make it later on in the season. Although of a gross-feeding nature, it is not advisable to use a very rich soil, good fibry loam being the best and most suitable, as what stimulates they require can be given later on in a liquid form when making and developing the buds. To keep them healthy, however, with foliage down to the ground, they must not be stinted for water, as their requirements in regard to this are greater than most plants, and it will be found that in dry, hot weather they will often need it twice a day. Plunging the pots in some non-conducting material, such as a mixture of leaves and straw matter, is a great save, as it not only prevents the sun and heat beating against them, but it keeps the roots in a comfortable condition, free from sudden changes, so inimical to their welfare. *J. Sheppard, Woolverstone Park.*

EUCALYPTUS PLANTING.—We are interested in observing that some of the correspondents of the *British Medical Journal* are taking what we consider a reasonable view as to this matter. They assert, and we quite believe their assertion, that there has been a great deal of exaggeration as to the medicinal uses of the tree, and that the so-called anti-malarial properties are to a large extent to be explained by the accompanying drainage and other works connected with planting. It seems a pity to run the risk of ultimately unduly depreciating the merits of the tree by indiscriminate praise. Its chief value—and that is a very great one—is the rapidity with which it grows in suitable situations, and the large amount of evaporation which must take place from its leaves. As to the specific virtues of its balsamic principles, analogous we presume in action to thymol, we do not question them; we merely say that at present they are not proven, any more than is the benefit supposed to be experienced by some old ladies who tie camphor-bags round their necks in cholera time.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	July 12	Coventry and Warwickshire Floral and Horticultural Society's Show, at Stoneleigh Abbey.
		Royal Agricultural Society's Show opens at Carlisle.
TUESDAY,	July 13	Royal Horticultural Society: Meeting of the Fruit and Floral Committees at 11 A.M.; Scientific Committee at 1 P.M.
		Ludlow Rose Show.
WEDNESDAY,	July 14	Maldon Flower Show.
		Child's Hill, Hampstead, and West End Horticultural Society's Show.
THURSDAY,	July 15	Salterhebble and District Rose Show.
SATURDAY,	July 17	National Rose Society's Show, at Manchester.

NOW that we may expect the POTATO DISEASE to show itself in all its unpleasant and well-known features, it may be serviceable, at the risk of repetition, to allude to those measures which may be, and we regret to say are not, taken to diminish its prevalence. The course and the nature of the disease are now sufficiently known in their general features to enable us to state what may be done in the way of cure, and what may be effected in the way of prevention. As to cure there is none. As to prevention much may be done, and it is not to our credit that we have hitherto been so supine. The researches of BERKELEY, SMITH, DE BARY, and others have served to show what we may call the "natural history" of the disease. The more superficial states of the two fungi, *Peronospora* and *Fusicipium*, may be more or less readily destroyed, and even the resting-spores, though more difficult to deal with, may be to a considerable extent exterminated. The resting-spores of both the fungi we have named, as pointed out by Mr. SMITH, may rest on and in the ground everywhere, especially in damp places and amongst decaying vegetable matter. These spores, and the spawn which proceeds from them when they begin to grow, are too certainly often planted with the seed Potato, and in this case the disease begins in the tuber. When the spores germinate on moist ground or refuse, at this season of the year, they speedily produce spawn bearing reproductive bodies of such minuteness as readily to be carried by the wind, by birds, by insects, and other carriers, and which are in consequence deposited on the leaves, where, if the climatal conditions be propitious, they speedily do their destructive work, aided and abetted by the unnatural conditions to which the plant is subjected by faulty cultivation. The reckless manner in which Potatoes are stored, the still more reckless use of diseased Potatoes for feeding pigs or cattle, need not detain us now, what mischief thus results is done for this season—past hope of cure or prevention for the present season. What we have now at the present time to deal with is the disease as it shows itself on the leaves and haulm, and in the tubers when lifted. The general principle to be followed is to destroy as speedily and effectually as possible all diseased haulm and every diseased tuber, and, where disease has shown itself, to lift the crop immediately, or at least as early as possible, notwithstanding the consequent loss. We are all aware what difficulties stand in the way of the practical application of these principles. We are well aware that they cannot be fully carried out, but that is no reason why we should not exert ourselves to the utmost of our power, and so, at any rate, lessen the pest. The greatest difficulty lies in the fact that if one man act up to this principle of destroying by fire or otherwise the diseased haulm and tubers, his prudence is of little avail unless his neighbours all over the country do the same. A householder who, by reckless carelessness, spreads scarlet fever or small-pox, renders himself accountable to the law. Why should not a careless gardener or farmer be subjected to similar penalties? The man who allows diseased haulm to remain on his fields a day longer than can absolutely be avoided is a pest to society, more dangerous than the fungus

itself. Last season a striking illustration presented itself to us. In a small Potato patch under our observation daily, one plant only, and that of a different variety to the rest, a "rogue," in fact, showed symptoms of the disease, while all in the immediate neighbourhood were apparently healthy. That plant was allowed to remain—its condition got worse and worse. For days no other plant was affected, but at length the whole patch was affected, and the proportion of sound Potatoes at lifting time was very small. Now, we do not mean to assert that if that plant had been uprooted and destroyed immediately it showed signs of disease the rest would have been saved, because the risk of infection from other sources would still have remained; but it at least may serve to show the very great probability that the disease in that particular locality might have been very materially lessened had the precautions we advocate been generally followed. In a garden and on a small scale prevention in the way we advocate could, without much difficulty, be adopted. The mere beating down of the haulm and covering it with litter, or on a small scale with lights, has been shown, if we mistake not, to have prevented the attack of the disease on the plants so treated. On the large scale—in field culture—the case is different. But suppose we can save only a proportion of the small quantities the labourer grows for his own use and no more—surely that alone would be worth doing. We do therefore most strenuously urge, wherever it is possible, the immediate and total destruction of diseased haulm and diseased tubers. To allow the haulm to rot and fester on the soil, or on the manure heap, is to propagate the disease wholesale—to give diseased tubers to cattle for food is an equally certain method of disseminating the disease—to store and plant diseased or suspicious tubers is to court the evil we wish to avoid. On faulty methods of cultivation, planting tender or late sorts, and other circumstances, which do not concern us for the moment, we need not now dilate. At the present time we have to deal with the disease in *esse* not in *potente*. What to do and what not to do, to secure healthy seed for next season's planting, is a subject for more timely consideration later on. Meantime we may suggest that the National Potato Society should not confine itself to the mere organisation of a great show, but should take means to make widely known, not only the best methods of cultivation, as we believe it has done, but also the most likely means to combat and prevent the ravages of the disease.

MR. HIBBERD'S lecture on THE PELARGONIUM, of which we gave the substance in our last issue, was pleasant and appropriate. That it left many matters untouched was of course unavoidable—nay, it may have been actually an advantage to do so. There was material for a dozen lectures of the kind, and possibly Mr. HIBBERD may yet find time to supplement his first discourse with some additional matters. In any case, as a member of the Pelargonium Society, we think he did good service by demonstrating that a flower show, even so good a one as was brought together under its auspices, is not, or should not be, the only aim of a Society professing to extend our knowledge, and diffuse a taste for what is beautiful, interesting, or useful. We do not forget that to Dr. DENNY science owes a valuable and instructive article on the influence of sex and parentage on the offspring in this class of plants, and we allude to the subject to show how real advance in knowledge may be made, apart from mere commercial profit, or floral display. The lecturer had this subject in his mind when he referred to the varying degrees of fertility manifested by these plants. His lecture bristled with suggestions which, if

worked out, might lead to similar good results, both as to points of science and points of good taste, of which the "florist," rightly or wrongly, considers himself to have the monopoly. By way of illustration, let us recal what was said about the endeavour of the florist to convert a Pelargonium into a Geranium, or rather to make the former naturally irregular flower assume the symmetrical regular outline of the latter. The lecturer was careful to point out how far, and in what way, the florist has been successful. Mr. HIBBERD did not actually say so, but we infer that he sympathises with the attempt. The point we would raise is—Is it good taste to try? A Geranium has a certain form, which all experience and observation shows us is the best for its particular purpose. A Pelargonium has a certain form different from that of a Geranium, equally well adapted to the particular circumstances most propitious to it, at least in its wild state. Every little irregularity in a Pelargonium we may assume—in many instances we know it is so—has its distinct set purpose. It was made so for a particular object. Every such flower is a conspicuous proof of an intelligent Designer caring for all his works and making all things work together for the common good. The florist by his arbitrary rules upsets, ignores rather, all this, and sets up a standard for himself. Is it likely such a standard can be better than that which the Creator himself has devised? It must be borne in mind that we are not speaking of improved cultivation merely, of perfected constitution and habit. There could be no difference of opinion on such points—it is a question whether it is good taste on the part of the florist, for the sake of gratifying an artificial craving for what we may call unnatural regularity, to obliterate all those evidences of design and adaptation of means to end which the humblest weed left to itself displays. Rather would it not be more consistent to follow Nature, to work along the lines she lays down, than to set ourselves in opposition to her? Instead of altering a form and a plan of arrangement which she has adopted, and substituting some other, would it not be better to endeavour to develop the peculiarities of colouring, form, and arrangement she sets before us, rather than to create a purposeless monster? Of course, this is a matter of taste, and as such each must be allowed free indulgence of his proclivities. We plead for beauty in combination with intelligence and significance, rather than for meaningless symmetry, however merely beautiful.

Then there is the geographical distribution of Pelargoniums. What a field for discussion there! Why all but confined to South Africa and South Australia? What is the meaning of that solitary species in St. Helena? But these are matters too abstruse for the general public, and at present they are not lifted beyond the region of speculation even among the learned. Certain, however, it is that the facts as at present known indicate a degree of change—"an abysmal amount of time," which far transcends that of any historical record.

Another subject almost wholly passed over by the lecturer deserves fuller treatment on a future occasion—we allude to the origin of certain varieties from sports or bud variations. Two or three very remarkable illustrations, as it happens, were shown in the tent at this very exhibition; and the history of several others, with a discussion on them, is enshrined within these columns. We allude more especially to some remarkable instances brought under our own notice some years since by Mr. WILLS and Mr. JOHN LAING. Those who remember how "sportive" Vesuvius is, and how many good varieties have originated in this way, will admit that, both from the point of view of science and of practical utility, this is a promising field of observation and research.

Progress, in certain directions at least, is most marked and most satisfactory. We cannot but believe that research and experiment on the lines we have here barely suggested, will lead to further and more striking progress in the future. But, on the other hand, it must not be forgotten that the public taste sets strongly, as Mr. HIBBERD said, in two directions—that of the large-flowered Show varieties and the large-flowered Zonals. Are these, then, the only ones to survive? We cannot think so. We do not deny their fitness; but when we see the Ivy-leaved section, and specially when we see that most interesting group of what we may term virgin species, as yet—we were

of Teck, G.C.B., and by the Right Hon. Sir F. W. Truscott, Lord Mayor of London, and other City officials. The Festival was well attended, and from a financial point of view proved to be the most successful which has yet been held. Amongst the company present we noticed many faces familiar at horticultural gatherings, including those of Sir Trevor Lawrence, Bart., M.P.; Dr. Hogg, and Messrs. R. Marnock, G. F. Wilson, R. Wrench, H. Webb, H. J. Veitch, A. Veitch, J. Lee, C. Lee, W. Bull, R. A. Osborn, B. S. Williams, J. F. Meston, T. Moore, P. Barr, W. Robinson, J. Fraser, A. Wheeler, W. J. Nutting, R. Tait, E. Tidswell, Master of the Fruiterers' Company,

Guilds," proposed by the Chairman and responded to by the Lord Mayor; and "The Royal Horticultural Society, the Royal Botanic Society, and the various Horticultural Societies in the Provinces," proposed by the Chairman, and replied to by the Duke of Teck and Sir Trevor Lawrence, Bart. The Master of the Fruiterers' Company proposed, "The Stewards and the Office-bearers," which was responded to by Mr. Rudkin, Vice-Chairman of the Board of Stewards; and the proceedings terminated with the toast of "The Secretary, Mr. Cutler," proposed by His Royal Highness; in replying to which Mr. Cutler compared the dinners of the Institution in early days, when about £50 was



FIG. 13.—VIEW IN THE KING WILLIAM'S TOWN BOTANIC GARDEN.

going to write unspoiled by the interference of the hybridist, and which were exhibited from Chiswick at the end of the long tent, we cannot admit that they are unfit to survive. Rather let them, with a due regard for the purpose and meaning to be read in their flowers, be developed with the taste, care, and intelligence which a scientific hybridiser ought to possess, and a progress far beyond that to which we have now attained is within reach.

THE Thirty-seventh Anniversary Festival of the GARDENERS' ROYAL BENEVOLENT INSTITUTION was held on Wednesday evening last at the "Albion," Aldersgate Street, under the Presidency of H.R.H. the Duke of CONNAUGHT, K.G., who was supported by H.S.H. the Duke

and many others. After grace had been sung, and the usual loyal toasts had been duly honoured, the Royal Chairman, in well chosen words, proposed the toast of the evening:—"Continued success and prosperity to the Gardeners' Royal Benevolent Institution." This was responded to by the Treasurer, Mr. Wrench, who created some amusement by referring to the "paraphernalia" of the City magnates who had honoured the Institution by their presence. The Lord Mayor then proposed:—"The Chairman, H.R.H. the Duke of CONNAUGHT, K.G.;" to which His Royal Highness replied, in terms which showed that his sympathies were with horticulture and horticulturists. Then followed:—"The Corporation of the City of London and the City

thought a good subscription list, and at which perhaps thirty persons dined, with the increased returns from those of recent years, culminating with the present, under the auspices of the Queen's son, which came upon them "like a crash" to the amount of nearly or quite £1500—the exact figures not being forthcoming, as some of the lists had not come in. The evening passed off very pleasantly, being enlivened by light cheerful music and songs.

Of the foregoing sum Mr. H. J. Veitch's list comprised £269 2s. 6d., contributed by 259 donors in sums varying from 2s. upwards, some of them being from young gardeners; £126 from twelve life subscribers, and £158 18s. from 149 new annual subscribers; making a total of £554 os. 6d. The list sent in by Mr. R. Tait,

of the firm of Dickson, Brown & Tait, Manchester, amounted to 110 guineas.

The Gardeners' Royal Benevolent Institution must be congratulated on the results of being thus brought under the direct countenance of Royalty, in the person of the Duke of CONNAUGHT, who, by the terms of his allusion to the horticultural exhibition in his own park at Bagshot on the preceding day, indicated that, both in his own case and that of his illustrious consort, there existed such a love of gardening and an appreciation of its humanising tendencies, which may be regarded as happy auguries for the future. The gardening profession must also be congratulated on this fresh instance of Royal appreciation; for, as a rule, the profession of the horticulturist does not receive consideration commensurate with the large capital which is absorbed in working it out, and which, in the case of the commercial horticulturist, may compare favourably with many other industries, which are, perhaps, less important if not less self-asserting.

— THE KING WILLIAM'S TOWN BOTANIC GARDEN.—With reference to the illustration (fig. 13), Mr. J. C. NELSON, the Curator of this South African botanic garden, writes, under date of May 18:—"I send you a photograph of one of the lakes in our garden, taken since the late improvements were carried out, which include the building of the bridge shown (in place of one made of poles with turfs laid on), and the opening up of the vista through the trees, which brings into view the bush-covered slope of the opposite hill. The Willows are of ten years' growth, and 60 feet high. I believe this Willow (*S. babylonica*) has been planted all over the colony, near water, being an especial favourite with the Dutch. On the right are plants of *Richardia æthiopica*, and a large Castor-oil, and *Kafrboom* (*Erythrina Caffra*), a wild straggling specimen. This in the open makes quite a fine timber tree, though the timber is of little value. Various of the Cyperaceæ fringe the banks, and a few fine specimens of the Cape Tree Fern (*Alsophila capensis*), and *Zamias*, *Agapanthus umbellatus*, &c., do well in the shade of the Willows. This is the finest bit of Nature, taken altogether, I have yet seen in the colony, and many old colonists say the same, so that I naturally take great pleasure in improving this part of the garden."

— DR. SCHIMPER'S CRYPTOGRAMIC HERBARIUM.—The entire Cryptogramic herbarium (including original drawings, dissections, and notes) of the late Professor SCHIMPER, of Strasburg, whose important works upon Mosses are well known, has been purchased by the Baroness BURDETT COURTIS, and presented to the Herbarium of the Royal Gardens, Kew.

— PAXTON'S "FLOWER GARDEN."—Messrs. CASSELL, PETTER, GALPIN & Co., announce that they are about to re-issue in monthly parts this well known work, under the editorship of Mr. BAINES. The work is to be revised and brought down to the present time, and many entirely new coloured plates are to be supplied.

— EXHIBITION OF FRUIT AT HEIDEN.—We learn from the *Basler Nachrichten* that there is a project on foot in the canton of Appenzell to hold an exhibition of fruit this autumn. Should the project be realised, the show will be held in connection with the Cantonal Industrial Exhibition at Heiden, and will be restricted to fruit grown on the mountains.

— PRIZES FOR BLACK GRAPES.—Lord HILL, of Hawkstone, President of the Shropshire Floral and Horticultural Society, has contributed the sum of £10 to be awarded as the 1st prize for the best six bunches of black Grapes at the Society's summer show, to be held on August 18 and 19.

— THE OLD NURSERIES, MAIDSTONE.—We learn that the business of nurserymen, seedsmen, and florists, hitherto carried on at Maidstone by Messrs. THOMAS BUNYARD & SONS will in future be continued under the name of GEORGE BUNYARD & Co., separately from the East Kent (Ashford) business. The new firm hold the fruit tree nursery at Alling-

ton; the forest tree land at Chiltern Hundreds, Bexley; the home nurseries and the trial grounds at Maidstone; and the branch shop, 48, Week Street. The Ashford business will be carried on by Mr. THOMAS BUNYARD, Jun.

— AN OLD FAVOURITE THAT SHOULD BE REINSTATED.—The Yellow Sweet Sultan is now so rarely seen in cultivation, that we venture to assert that very few gardeners, at least the younger ones, know the plant. We saw a very handsome yellow-flowered *Centaurea* the other day, in one of the flower stands constituting the "dinner-table decorations" at Richmond Flower Show, which we now believe could be no other than the Yellow Sweet Sultan, *Centaurea suaveolens*. At the time we were unable to enlighten others, who, like ourselves, were attracted by the great beauty of its flowers, in regard to the name of the species. We are not quite sure that our determination, which entirely rests upon memory, is right, but we have very little doubt in the matter after looking through the genus *Centaurea*. There are several varieties of Sweet Sultan, some of which have been regarded as distinct species. BOISSIER (*Flora Orientalis*, iii., p. 626) reduces them all to one species, and retains the genus *Amberboa*, which BENTHAM and HOOKER (*Genera Plantarum*, ii., p. 478) refer back to *Centaurea*, as far as this species is concerned. Thus the collective name for the Sweet Sultan is either *Centaurea moschata* or *Amberboa moschata*, according to which authority we follow. It includes *Centaurea glauca*, *C. suaveolens* and *Amberboa odorata*. The plant we saw at Richmond appears to be the same as the *Centaurea suaveolens* of SWEET'S *British Flower Garden*, t. 51. SWEET says, "This very handsome and delightfully fragrant annual is particularly well adapted for ornamenting the flower-borders in summer." The flowers of this variety are of a soft lemon-yellow, and it is, perhaps, the prettiest variety. There are others with purple and white flowers.

— MARKET CROPS.—There is more skill needed apparently in knowing just when to make the most of the market than in producing the crops to sell. One grower becomes as notorious for his lucky hits as another does for his well known bad luck. The former gets half crops and turns them to the best advantage; the latter has perhaps heavy crops, and he invariably gets the lowest prices. Cabbage is just now forcibly illustrating this, for it won't pay to send to market—it can, indeed, hardly be given away; yet whilst there are growers deploring that they have acres of beautiful Cabbage that at another time would be worth a small fortune—others are chuckling that they pulled theirs and bunched them whilst small and the demand great, and so found not only a market, but cleared the ground for a fresh crop. Peas, again, present a useful illustration. Now that Blues are in Whites are a drug, and those who sowed so largely of Whites find the wind taken out of their sails by other growers who sowed fewer Whites and got in their Blues early, and thus obtained the earliest pickings. Of course with the unfortunate man it is all bad luck, there is no such thing in his opinion as superior judgment. We heard a grower recently deploring that he had been unable to get more than 5s. to 10s. per bushel for his Gooseberries whilst a neighbour started at 26s.; but the latter began gathering when the price was high, whilst the former waited for his fruit to swell, and in the meantime the price came down at a rapid rate. There is so much judgment needed in all these matters that only those who have had a long training in market work and possess average intelligence can succeed. Many persons go into market gardening just as butlers and coachmen go into the public-house business, egotistically certain that they will succeed even where others have failed; but they fail inevitably, because they have chosen an investment and vocation of which they know nothing. If such people can grow crops they do wisely to put the selling them into the hands of capable salesmen, because these can always obtain for good things the best prices. The man who distrusts the professional agent and believes only in his own ability—if he has no special fitness for market selling—generally comes to grief.

— DR. M. C. COOKE has entered upon his duties as Cryptogamist attached to the Herbarium of the Royal Gardens, Kew. He will take charge, for the present, of the collections of non-vascular Crypto-

gams; the vascular groups (Ferns, and Fern allies) will remain, as heretofore, under the charge of Mr. J. G. BAKER, F.R.S.

— SIMETHIS BICOLOR.—We were fortunate enough lately to see wild specimens of this from the original locality near Bournemouth. The leaves are grass-like, the flowers are borne in a paniced cyme, and are like those of an *Anthericum*, violet-tinted on the back, white within, and of the diameter of a shilling. The stamens are covered with tufts of fine hairs. Some doubts have been expressed as to whether this is a genuine native, it being surmised that it may have been introduced with Pine seeds from the South of Europe. But it must be remembered that there are other representatives of a Spanish flora in the South-west of England and of Ireland indicative of a former land connection.

— THE HERBARIUM STAFF AT KEW.—Mr. ROBERT ALLEN ROLFE, lately employed in the Herbaceous Department of the Royal Gardens, Kew, has been appointed by the Civil Service Commissioners, to the vacant post of Second Assistant in the Herbarium of the same establishment. We are specially pleased to find a young gardener has so availed himself of the lectures at Kew, and of other means within his reach, as to stand the test of an open competitive examination, wherein, as we learn, he was pitted against some by no means unworthy rivals.

— TREETREE FARM.—Mr. MECHE's farm will, we understand, be open to inspection until harvest. The Wheat crop is promising—ears are long and large—and the Barley also—both blooming abundantly.

— HELIOTROPES AS MARKET PLANTS.—The very pretty and well-grown plants of the *Heliotrope* now being sent into market by some of the growers are most attractive, and it is not to be wondered at they are soon bought up. The plants are remarkably well-grown and bushy, strong shoots being put forth quite to the base of the plants, and these furnish flowers abundantly, large trusses diffusing an exquisite fragrance. It is fitting there should be something like a revival of the culture for cutting and bedding purposes of this old and useful plant, more especially as of late years there have been introduced some good new varieties of Continental origin. Of these there are a few dark flowered varieties of great merit, such as *Bouquet Parfumé*, dark blue, and very sweetly perfumed; *Etoile de Marseilles* (Mr. Lewington) not quite so dark as the foregoing, but of vigorous growth, and bearing fine trusses of bloom; *Héloise Delesalle*, Jean, Amour, Model, and *Souvenir de Leopold I.*, all dark coloured, the last named very free and dwarf, and therefore well adapted for bedding purposes as well as for culture in pots. Of light varieties there are *Fürst Metternich*, very free and good; *Jaune Dumesne*, of good habit and bearing charming light flowers; and *The Queen*, large flowers, and huge trusses of large pale flowers, a fine variety for pot culture. Madame Cassenave and Monsieur Hamaitre both class as purple varieties, and intermediate in point of colour. Seeing that Mr. BARRON has done such good service at Chiswick by getting together collections of well known plants, such as *Abutilons*, *Fuchsias*, *Pelargoniums*, &c., he would be adding to these services were he to obtain a collection of *Heliotropes*, so that opportunity might be afforded for comparing varieties and ascertaining the characters of the newer introductions. One result would be certain to flow from the trial, it would tend to extend the cultivation of the *Cherry* plant.

— APPLES FROM AUSTRALIA.—The experiment of sending fresh fruits from Australia to Europe has received fresh development in the despatch and safe arrival of a consignment of Apples, packed in boxes, which have been brought in perfect condition by one of the regular Australian lines of steamers *via* the Suez Canal. The possibility of sending the most delicate fruits, such as Grapes, Peaches, Nectarines, &c., in a perfectly fresh state, from the Antipodes to England was first demonstrated two years ago, when South Australia contributed a fine selection of fruits to the Paris Exhibition, and since then small quantities of the more perishable kinds of fruit have been from time to time received in London from different parts

of Australia. The facility with which Apples, in particular, may be transported, since they require none of the special appliances necessary to keep the more delicate varieties of fruits in their pristine freshness, should lead to a large development of the trade. There is always a large demand for Apples in England; and the Southern Hemisphere has this advantage over the rest of the world in supplying the English markets, that its produce would arrive at a period when the stock from last year's harvest is almost exhausted, and before the coming crop is so much as in blossom. The Apple, like many other Old-World fruits, has found a congenial home in the more temperate parts of Australia, just as the warmer portions of the great island continent have proved their ability to produce in perfection all the rarer fruits of the tropics and of Southern Europe. Australia, indeed, is capable of supplying us with a regular succession of luscious fruits at a time of year when the accustomed sources of supply are temporarily stopped. South Africa also might profit by the opening thus afforded of finding a market for some of the surplus yield of its orchards and vineyards. *The Colonies and India.*

— **NATURAL SPREAD OF THE APPLE TREE IN SOUTH AMERICA.**—It is surprising how quickly the vegetation of many countries settled by Europeans has been modified. Some of the European *Cynaræ* have completely overrun thousands of acres in extra-tropical South-eastern America. A writer in PETERMANN'S *Mittheilungen* on the flora of Chili south of the Valdivia River, states that the scenery between the Rio Bueno and its winding affluents reminds one very much of home. In the park-like prairies, associated with *Fagus obliqua*, a deciduous Beech, are numerous scattered Apple trees, originally introduced from Europe. The Apple tree has spread from Valdivia to Osorno, and even crossed the Andes into North-western Patagonia, and thence eastward. Indeed, it has become so widely spread, and so general, that the Indians from the distant regions of the Argentine rivers Rio Negro and Rio Colorado are called *Manzaneros*, or Apple Indians. As a matter of fact, they and their kin in the provinces of Valdivia and Osorno live far more on the fruit of the Apple tree than any European people, for it affords them both food and wine.

— **ON THE USES OF HORNBEEAM WOOD.**—Notwithstanding that the wood of the Hornbeam is remarkable for its close grain, even texture, and consequent strength, it is seldom used for structural purposes. To a certain extent this is attributable to the tree not usually growing to a very large size, and also to the fact that when it does it is liable to become shaky. EVELYN says that it makes good firewood, and that it burns like a candle. In France and Switzerland it is preferred before other woods for charcoal, not only for forges and for cooking, but also for making gunpowder. At the great gunpowder factory at Berne, scarcely any other wood is used. Hornbeam has of late been much more largely used in this country than formerly, it having been found to be peculiarly adapted for making lasts used by bootmakers. Hearing some time since that this wood was being sent to this country in considerable quantities from France enquired led to the discovery that it was being used almost exclusively for the above purpose, and that it was imported in sacks, each containing a number of small blocks, in shape of the rough outline of a last. We were at the time accorded the privilege of inspecting some steam works that had recently been erected at Ealing by Messrs. PEAL for converting this wood into lasts. Very large quantities of the wood were consumed in this factory, a pair of lasts being turned out ready for finishing in a very few minutes. The advantage over other woods, and even over Beech, which has hitherto been considered the best wood for last-making, is that, after the withdrawal of nails, the holes so made close up, which is not the case with most other woods.

— **A NEW USE FOR THE WOOD OF HERMINIERA ELAPHROXYLON.**—The uses to which the soft, pith-like woods, such as that of *Æschynomene aspera*, are put, are, for the most part, limited to carving and ornamental work in the countries where the plants are native. The adaptation of the particular plant just mentioned in the manufacture of Shola or Sola hats is perhaps an exception to the

rule; latterly, however, the *Æschynomene* and other similar soft woods have been applied for the "packing" of machinery bearings, and among the woods upon which experiments have been made that of a Leguminous plant, *Herminiera elaphroxylon*, native of the Nile country, has attracted some notice. Upon trial, however, the wood was found to wear away the machinery bearings packed with it, as well as to blunt tools very quickly in cutting it; consequently the wood was found valueless for machinery purposes. It has quite recently been applied to another and entirely different use by Mr. THOS. CHRISTY, who has introduced it to notice for razor-strops. The wood, which is extremely light, much resembles in general appearance that of the Shola. The tree is called the Pith-tree of the Nile, and is also known as the Ambash, or Ambatscha. It grows to a good size, forming a tolerably thick trunk, and is said to be so rapid in its growth that in three years it almost choked the channel of the Bahr-el-Gazelle. Owing to its extreme lightness the natives use it to assist them in swimming across the river. The properties of the wood which cause it to be unsuited for delicate machinery, in consequence of wearing away the metal and in blunting knives used for cutting it, are, on the contrary, recommendations for its use as razor-strops. From the flower-stems of the American Aloe (*Agave americana*) pieces are often cut and shaped by the people in the countries where it is abundant into the form of strops, and though there is no doubt of its efficacy for this purpose, the wood of *Herminiera* is more compact, even grained, and apparently more durable.

— **CULTURE OF EDIBLE FUNGI IN JAPAN.**—At a recent meeting of the Central Horticultural Society of France, M. DUCHARTRE alluded to the method employed by the Japanese in the cultivation of edible fungi. The wood of certain trees, especially Oaks and Chestnuts, is allowed to decompose, and supply the material for the nourishment of the fungus. Logs are cut in the autumn, and then in clear spaces in the woods the ground is cleared of weeds and fallen leaves, and the logs are deposited on transverse pieces of wood which keep them from contact with the earth. They are left in this way for three years. In the autumn of the third year, with a very sharp knife, a series of notches is made at distances from one another of from 8 to 15 cm., and directed obliquely. After having been thus notched the logs are plunged in water, where they remain submerged for twenty-four hours. They are then taken out, placed in a shady situation so as to rest obliquely against a support. The notches are placed downwards. On the wood thus brought to a suitable state of decomposition, the spores of some indigenous fungi, transported by the wind, germinate promptly. The spawn develops with such rapidity that next spring a crop of edible fungi is yielded. This first crop is rather poor, but it is succeeded by other more abundant ones, and the production lasts for five or six years. The total volume of edible substance thus obtained is estimated by M. DUPONT (from whose work M. DUCHARTRE obtained his information) as from 6 to 9 per cent. of the wood employed. The fungi collected are dried for five days in the sun, and then for one evening before a fire. They are then used as food, and form an article of commerce with China, of such importance that in 1876 the value of the export was estimated at 1,200,000 francs.

— **THE CORK TREE FOR COLONIAL CULTIVATION.**—Among the various economic plants recommended by Baron FERDINAND VON MUELLER for naturalisation in Australia, says the *Colonies and India*, one of the most important is the Cork Oak, a native of Southern Europe and Northern Africa, where two or three varieties, producing cork-bark of different qualities, are met with. Notwithstanding the increasing demand for the produce of this tree, very little attention has hitherto been paid to its cultivation. Spain, Portugal, France, and Italy are the principal sources of the supply of cork; but even in these countries the principal aim has been to strip as much of the bark as possible from the trees, and leave its reproduction and the multiplication of the trees themselves to Nature. All the Cork Oaks are evergreen. The first crop of bark may be taken when they are about twenty years old; though it is most advisable to delay the first stripping of the tree till it is double that age. The operation may be repeated afterwards at intervals of not less than seven

or eight years. The tree, though resisting a considerable degree of cold, thrives best in a temperate climate, and will grow at great altitudes with a southern aspect. The soil best suited for its growth is of a slatey or silicious nature. Some experimental plantations on a small scale in Victoria proved that the young saplings grow at the rate of 4 feet a year. There are many districts in different parts of Australia, India, New Zealand, and South Africa, where this majestic tree would thrive, and where, with proper cultivation, it would prove a great source of wealth. The demand for cork in all branches of the mechanical and industrial arts is largely increasing, and, except for recent precautionary measures taken for the preservation of the plantations in Spain, France, and Algeria, would considerably outrun the supply. If only for their own needs, and without any view to an export trade, our subtropical colonies should turn their attention to the production of cork.

— **FRUIT PROSPECTS IN SCOTLAND.**—The *Scotsman* remarks that the prospects of fruit-growers in Mid-Lothian and other counties in the South of Scotland which have come within the same range of temperature during the past winter and spring, are, on the whole, as satisfactory as could have been anticipated. In view of the extent to which the growth of wood was kept back by the sunless weather of last summer, it was not to be expected that the yield of Apples or Pears should this season be great; and the appearance of the trees is in keeping with these forecasts. Of Pears, which were particularly ill-matured last autumn, and which were consequently exposed to the severe winter frosts in anything but vigorous condition, there will be generally a poor crop. Apples, again, have during the spring suffered considerably from the ravages of the caterpillar, and though likely to yield a good deal better than Pears, will still, it is thought, be far from a good average. Strawberries are also comparatively disappointing, for while in shaded places they promise a pretty fair return, the yield will as a whole be stunted, in consequence of the plants on southern exposures having been killed by frost after their covering of snow had been melted by glimpses of winter sunshine. Currants, however, seem likely to cover the bushes very heavily; and Gooseberries will give an average, and Cherries a fair yield. Apricots and Peaches were mostly so much injured by the winter frosts that their crops will be little better than a failure—Peaches, even under glass, not having set well.

— **THE WEATHER.**—General remarks on the weather during the week ending July 5, issued by the Meteorological Office, London:—The weather was again very unsettled generally, but finer at our southern and south-eastern stations than elsewhere. The rain was very frequent, and heavy thunder-showers in many places on the 3d. The temperature was below the mean in all districts excepting "Scotland, W.," the deficit being greatest in the Midland Counties, "England, S.," and "England, N.W." At our more northern and eastern stations the highest readings were registered on June 29 or 30, but in the west and south the greatest warmth was at the close of the period. The lowest readings occurred generally on the 5th, but in some parts of our midland and eastern counties they were recorded on the 2d or 3d. The rainfall was a little less than the mean in "England, N.E." and "England, S.W.," and about the mean in the Midland Counties and "England, N.W.," but more in all other districts. The excess was considerable in Scotland, where a very heavy fall occurred on June 29. Bright sunshine was a little less prevalent in Scotland and the north-west of England than during last week, but rather more frequent elsewhere. The percentage of possible duration was as low as 19 to 23 in the northern and north-western districts, and only 40 in "England, S.W." The wind was moderate throughout—from west or south-west at the English and Irish stations, and from the east over Scotland until the 4th, when it shifted to north or north-west very generally. South-westerly breezes again set in in the west on the 5th. A decided sea breeze was shown at all the east coast stations on the afternoon of the 5th.

— **GARDENING APPOINTMENTS.**—Mr. WM. HARDY has been appointed Gardener to the Earl of ENNISKILLEN, Florence Court, Ireland; and Mr. RICHARD EDGE has been appointed Gardener to THOMAS SYKES, Esq., Crinkle House, Cheadle. Both are late Foremen at Vale Royal, Cheshire.

CARROTS.

EARLY in December, 1879, I was informed by letter from my friends in Aberdeenshire that the Potato crop in that quarter was doomed to destruction, and that in Old Meldrum, where my neighbour, Mr. Porter, had astonished the world with his success in Potato culture, there had been hardly half a crop. Stubborn facts manifested too clearly that my Potato garden had only shared the fate of others; and that I have good reason for trying to find some sort of substitute for the loss of our chief esculent. When the first failure of the Potato crop occurred I was one of the earliest to sound the alarm and try to find a substitute, and did my best to bring the tubers of the perennial Sunflower to the front; and notwithstanding their peculiarities, they have done good service where better could not be got. The Carrot, however, has no drawback or peculiarity of cooking like the Jerusalem Artichoke, whose broth or liquor is never to be used. The Carrot, moreover, is a fine handsome "root," with a thin smooth skin, and is easily scraped and cleaned; and it has the valuable property of keeping sound for nearly all the year.

The plant being truly British, a strong smelling weed in our pasture fields, is easily dealt with, and buries itself deeply in the soil so as to be out of the way of frost or other injuries. Farmers are sometimes puzzled to get this crop sown, and after that weeded, for the seeds are small and light, and the field or garden not always free from wind. Wet bran or spent brewers' grains mixed with the seeds will help to make them more manageable, but this is not all, for when they come up the seed leaves are so small and delicate looking that a stranger would never suspect that such cotyledons would usher in a heavy crop of so valuable an esculent. In order to see where we are to look for them, I find it best to mix a few seeds of red Mustard or of any of the Brassica tribe along with the Carrot seed, and as these vegetate before the Carrots they will indicate the line where the crop is to be found, and save much time in hoeing and weeding. So troublesome are the weeds in a Carrot drill that one gentleman—I believe C. Lawrence, Esq., of Cirencester—stole a march upon the seedling weeds in his Carrot ground by preparing the soil as if for the main crop in every way, except that he did not sow the seed, but when the fine strong weeds pushed through the soil he harrowed them down, and in this cleared the ground of many of his tormentors before sowing the Carrot-seed.

I cannot too strongly express myself in favour of deep cultivation, for the size and shape of the Carrots mainly depend upon their being able to range deep in the soil, and whilst large roots fetch a high price small Carrots are neglected. The good old Altringham Carrot seems to hold its own among a host of competitors. Many soils are unfavourable to this crop, and some peat soils are on the contrary excellent Carrot ground, and it is well to manure with peat and sand where the clay soil is found unsuitable for this crop. The yellow Belgian Carrot is a heavy cropper, but it is not so rich in the flesh as the red Carrots. The Early Horn and others are table vegetables, and are too small usually to be of service in field work, or for the main crop in gardens. There are perhaps no roots so rich for cows giving milk as Carrots, for they colour the cream and butter a rich yellow—the criterion of market butter.

When Carrots are grown for competition, the land should be deeply trenched and got into good working order, partly by natural manure, such as well-rotted stable manure, and partly by a good lick of salt, say from 5 to 10 cwt. per acre. Then a hole is to be made with a crowbar, say from 12 to 14 inches deep, and this hole is filled to the top with finely sifted rich compost, and about three seeds are placed to each hole. In this way the Carrot fills the hole, and is moreover kept straight, and well fed in its early growth. Now, although this is a troublesome way of growing Carrots, it is a sure way to get the largest roots, and is akin to the tricks tried on Cucumbers when grown in glass tubes, and on Gooseberries when grown under cover, and only three or four on a bush.

For all practical purposes then Carrots are next after the Potato as roots to be relied upon for eating with butcher-meat or being otherwise cooked. They are not only useful for the kitchen, but horses are extremely fond of them and less corn will do where the feed is partly of Carrots. It is no for me to say

ought about the health of Christians fed mostly on Carrots; but surely where Cabbage and Turnips are of necessity eaten with impunity, there can be no question on the score of Carrots. The only danger to be apprehended is that arising from the insects which frequently infest the crop before it comes to maturity, but after that, the burying them in dry sand, dry peat, or even dry clay, is found to keep them sound for a long time. Manure should never be used for this crop when rank or fresh; and where stone brash abounds, such as in freestone localities, it can be pounded at leisure times and riddled to the state of sand. The whole gardening fraternity are well aware of the importance of barren sand in the best composts for plants, but we seldom see the agriculturist "giving a stone." I have grown Carrots more or less for half a century, and can say from this long experience that they have never deceived me, and when well used have generally given a good return. As depth of soil is essential to all long Carrots, one half can always be laid upon the other half where the soil is deficient in depth. The Turnip and the Beet are found on the surface, but the Carrot and the Parsnip keep their treasures out of sight.

Hares will visit a field of Carrots when a couple of miles from their cover, as has been often proved by their footprints in the snow. A Cheshire farmer once told me he had tracked this ground game 3 miles from the cover to the Carrot field. *Alex. Forsyth.*



Home Correspondence.

Alstroemeria aurea.—This somewhat capricious plant took my fancy in Ware's nursery about three years ago. It was flowering in fine masses, and was recommended as one of the most useful of plants for cut flowers. For two years in my garden it produced green rosettes of leaves near the ground, but not a single flower. This third year, however, it has made such advances as to alarm me, threatening to become as great a nuisance in my Lily beds as *Polygonum cuspidatum* has been in my mixed borders. One clump, in pure peat, is already 5 feet high, and has produced from thirty to forty flowering stems, each having four or five tris of bright orange flowers. It has entirely surrounded and outgrown my healthiest bunch of *Lilium auratum*, which does not adapt itself so well to this cold and sunless climate. *Lilium pardalinum*, however, holds its own against it, being already 8 feet high in the same bed. *C. Wolley Dod, Edge Hall, Malpas, Cheshire, July 3.*

Ginkgo Tree in Herefordshire.—The specimen of *Salisburia adiantifolia* referred to by G. Bath, at p. 26, is growing near the conservatory entrance to the kitchen garden at Whitfield, the residence of the Rev. Archer Clive. It is conjectured that the tree was planed by Lady Catherine Stanhope soon after 1775, when she became possessor of Whitfield. In 1868 it was 50 feet 6 inches in height, with a circumference of 7 feet 2 inches at 5 feet from the ground. The diametric spread of branches was then 40 feet. A photograph of this tree illustrates the *Transactions of the Woolhope Club* for 1868, p. 264. The Panshanger *Salisburia* is somewhat larger than the Whitfield tree. The Panshanger tree was described in the *Gardeners' Chronicle* for 1868, p. 1067, by Mr. Wm. Paul, of Waltham Cross. *W. G. S.*

Seed Sowing.—There can, I think, be no question that a well-prepared bed is half the battle in getting up seeds; but as to rolling, in the way advised by a correspondent, a good deal depends on the character of the soil one has to do with and the condition it is in at the time the bed is prepared, as some ground, if subjected to pressure when at all wet, would have the crust so hardened as to render it impossible for seeds to get through. In light lands slight rolling may be beneficial by way of breaking up the small clods, but to consolidate it when desired for certain crops there is nothing does the work so effectually as treading it over regularly, and then levelling and scarifying the top by means of wooden rakes, which are of far greater service for all purposes of this kind than those made of iron. In stubborn soils, difficult to pulverise, it is a good plan, after

sowing seeds, to cover the drills in with some light rich mould, which, if used rather dry, after being sifted, does not crack open and let in the air. Of course this could not be carried out on a large scale; but in gardens, where a regular supply of everything has to be kept up, failures must be avoided, and success often depends on small matters like the simple shading of a seed-bed. Take the last sowing of Cauliflower and Lettuce, for instance, which having to be made during a dry hot time, it will be found next to impossible to get them to germinate unless the fierce sun is kept from baking the earth; but water the ground before putting in the seed, and then cover with fine soil and peg a mat over the surface, and it will be seen that the plants are through in a few days; for when covered down in that way, and the mat damped at night, the bed is teeming with heat and moisture, and, as is well known, seeds cannot lie long in such a medium without bursting their prison walls and setting the germ free. *J. S.*

Cereus grandiflorus.—A plant of the night-flowering *Cereus* growing on the back wall of a small stove here has produced an unusual quantity of flowers this season. It opened its first bloom on May 29, and on June 24 there were twenty-five, the perfume from which can be readily imagined by those who know the flower. The last two opened on July 2, and altogether there have been 106 upon it. I find that by cutting the flowers as soon as they are expanded, and placing them in the open air under a north wall, they will keep open and retain their scent till noon the next day. *James Clarke, Gr. to Col. Long, Bromley Hill, Kent.*

Lindelia spectabilis.—This is one of the names of a Mertensia-like plant with bright purple flowers, which is very ornamental on warm chalk soils. I saw it a fortnight ago in the garden at Ashridge Park, and in that of Mr. Harpur-Crewe, both near Tring, flowering in a way which excited my admiration and envy; for on this cold wet soil it does no good. I have bought it three times in the last three years under three different names, the others being *Omphalodes montana*, and *Cynoglossum grandiflorum*, and tried to cultivate it in three different parts of my garden, but I cannot make it worth the room it takes. *C. Wolley Dod, Edge Hall, Malpas, Cheshire, July 3.*

Sudden Death to Caterpillars.—My Gooseberries and Currant bushes being sadly disfigured by the caterpillar, I have had to try several experiments, but did not meet with much success until I tried the following plan:—Cut open two old sacks, paint one side of each thick with gas-tar; draw the sacks carefully under the bushes, shake the bushes with care; the caterpillars will drop upon the sack, when, having caught a good layer, give them a gentle stroke over with the tar-brush, and they are done for. I have cleared my bushes perfectly by going over them three times. *G. Williams, The Gardens, Peasmarsh Place, Sussex.*

Tropæolum Bothwell Castle Gem.—This fine novelty, sent out by Messrs. Ireland & Thomson, nurserymen, Edinburgh, is certainly one of the very best of plants for conservatory decoration. It is an intense orange-scarlet, producing its flowers in great profusion. Some specimen plants trained on the roof of one of their greenhouses furnish at present a grand picture, being literally covered with flowers. Mr. Thomson informed me that it had flowered in the same manner all the winter through, and he found it one of the most useful plants for cutting from. *A. O.*

Insects on Fruit Trees and Bushes.—Looking round, it is lamentable to see the way fruit trees and bushes are affected by insects, which from some cause or other are very prevalent this season, so much so that Plums are in many places completely crippled, the leaves being curled and crumpled in such a manner that they can never expand and assume their proper form and shape. This is not the worst of it, for the fruit is in almost as bad a condition; the aphid not being satisfied with the havoc they have wrought on the foliage, must needs attack that, which has caused the Plums to become deformed from the contraction of the skins, which, besides being injured, are pasted over by the nasty glutinous excreta the insects exude. Seeing this deposit on the upper surface of the leaves many call it honey-dew, and think it is a secretion that falls from the atmosphere during a hazy time, and with this blissful thought, and in happy ignorance of its real origin, I have seen some take a lick at it, and have heard them remark what a piece of good fortune it was for the bees. This I readily admitted; but after some little explanation, and showing them what caused the semi-liquid matter, they were much inclined to nausea, as well they might be, in having soiled their palates in the manner they had done. This so-called "honey-dew" is a sure index of what the trees are suffering from, and in no instance have I ever wit-

nessed any of it without having found aphids of some kind, either black, green, or blue, to account for it; and the longer they remain unmolested, the more of it and the thicker it is. As to blights and atmospheric deposits, I do not believe in them except where the air is impure from smoke, &c. We know that smoke has a blighting influence, from being impregnated with sooty particles hurtful to vegetation; but what we have most to contend with are the parasites, chief among which are the mildew and flies. These latter are a scourge to fruit cultivators, as they are difficult to get rid of, and especially the blue and black-coated family, such as are usually met with on Plums and Cherries, as owing to their oily skins they seem to be able to repel water at will; and therefore the usual remedial liquids, such as Tobacco-juice, is of little avail unless fortified and made more penetrating by the addition of soda. This carries it in; but, excepting for shoots that can be bent over and dipped, the best remedy, and the most effectual way of cleansing large trees, is the use of the garden engine, by means of which, now that the leaves are hard, aphids may be knocked off without any fear of injuring the tissues. Red-spider, too, may be dealt with in the same way, as nothing is so disagreeable to these pests as a well-directed stream, the force of which breaks up and destroys their webs, along the threads of which, Blondin-like, they travel. One of the chief causes of Peach and Nectarine trees getting red-spider is becoming dry at the roots. To prevent this there is nothing to equal a mulching of half-rotten manure, as when a soaking is given it tells for something, for the reason that the soil remains wetted, as, having thoroughly absorbed the water, it is kept in, and cannot evaporate. In some gardens the Gooseberry caterpillar is very troublesome, but by timely application of Hellebore powder, dusted or puffed on to the bushes by means of a tobacco-distributor, or by syringing them with a decoction made from the leaves of the common Foxglove, they may be easily destroyed; but the worst of these remedial agents is that they are poisonous, and the fruit should therefore not be used till it has been well washed by rain. Paraffin has been highly spoken of for the destruction of these insects, and if as fatal to them as to other similar forms of life, nothing better can be desired. American blight on Apple trees, scale on Pear, &c., melt, as it were, almost as soon as touched by it, so penetrating and potent is it; but these parasites are best left over till the trees are leafless, when they can be assailed and vanquished without doing harm to the buds. In regard to aphids on Currant bushes, where, if left, they spoil the fruit by their exudations, the quickest plan is to snip off the tops of the shoots and carry them away and burn them, as what insects there are are sure to be feasting on the younger leaves, the older ones below being too hard in the tissue for them. *W. S.*

Effects of the Past Winter.—At this place the severity of the late winter is still making its effects felt in various ways; in a great measure also the sunless summer of last year is showing that very little can be done in the way of fruit growing in the open air, when the sun refuses to visit us with its brightness. The Pear trees were not able to mature the bloom-buds in such a wet, dull summer; the consequence is the trees are still throwing out a succession of weak flowers, which can be of no use for fruiting purposes. Hardy shrubs, too, have suffered very much from the want of sun; the Lilacs, Hawthorns, and Laburnums had little or no bloom; the same thing is happening now with the Philadelphus, and various other shrubs. The only exception in hardy shrubs that I know of is the *Weigela rosea*; large bushes of this plant have been a mass of bloom for at least a month, and are handsome yet. Gardens that do not possess this plant should get it, as it suits any climate, and grows in any soil. Thanks to the late Mr. Fortune for this Chinese shrub. Various shrubs were killed to the ground; a great quantity of fine large bushes of *Berberis Darwinii*, evergreen Oaks, *Spiræas*, *Forsythias*, and others, shared the same fate. Among coniferous plants we have suffered very little; a few plants were a little browned, but they are coming about again; among them were *Abies grandis*, *A. Pinsapo*, and *A. magnifica*. A quantity of fine Honeysuckles, which come in useful for cut flowers at this time of the year, are all but killed, and will take a long time before they can be so large again. Wallflowers suffered severely; those that were not killed have flowered very little. Rhododendrons are very poor; half of the flowers were killed in the bud; in some instances the whole bud was killed. Roses, too, are cutting a very poor figure. Altogether cut flowers are not very plentiful. Fortunately I got a little seed of Crament's Scarlet Queen Stock last July, and sowed it under a hand-glass; they remained very dwarf, and were well covered up in the snow, and thus saved themselves. The quantity of cut flowers I have taken from so few plants is amazing. This Stock ought to be grown by every one in want of early cut flowers. It opens out a light pink, but increases

in brightness day by day, and when coming to perfection it is a bright crimson; with plenty of sunshine it dies off a bright scarlet. It is a gem, and ought to be extensively grown. My seed was procured from Mr. Richardson, of Darlington, from whom I have just now got in my supply for next spring. *William Culverwell, Thorpe Perrow, Bedale.*

The Variegated Elm.—It may be interesting to state that there are growing in the grounds here two specimens of variegated Elm, each about 75 feet high, and one of which in particular—a handsome specimen 50 feet across the branches, and circumference of bole 7 feet at 3 feet from the ground—is this season especially an object of much attraction, out-vying, as it does, the variegated Maple (*Acer Negundo variegatum*). As fine specimens of this Elm appear to be comparatively scarce in the kingdom, it would be interesting to ascertain, through the medium of the *Gardeners' Chronicle*, where any may be in existence, including the dimensions, &c., also information as to its origin. I learn that it originated in the year 1824. *W. Gardiner, The Gardens, Ettington Park, Stratford-on-Avon.*

Tebbs' Travelling Flower-Pot (fig. 14).—This, though not exactly new, is so useful a contrivance that we shall be doing a service to those who are not acquainted with its merits by directing attention to it. The pot is made of stout brown paper, waterproofed on the inner side and crenate at the margin, so as to allow of the top being folded down over the ball of

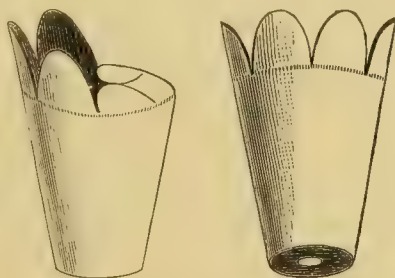


FIG. 14.—THE TRAVELLING FLOWER-POT.

earth. They are made of various sizes, and when required for use all that it is necessary to do is to transfer the plant from the ordinary earthenware pot to the paper one. In this manner cheapness, lightness of carriage, and absence of breakage, are secured. Messrs. Blake & Mackenzie, of Liverpool and Glasgow, are the patentees and manufacturers. They are serviceable not only on a large scale, but the tourist desirous of securing in the course of his travels some choice alpine, would find a few of these paper pots very handy. They might be packed lightly in a small box for convenience of transit.

Claytonia alsinoides and sibirica not Distinct Species? (2).—I have lately been led to doubt whether these two plants are sufficiently distinct from each other to claim the rank of species, and from observations made here it would seem feasible that such might be the case. We grow *sibirica* here along with the rock plants, allowing it to take possession of a spot which is shaded by a large Elm tree, and which tract is so dry and impoverished that even a common Fern finds but a miserable existence, but *Claytonia* does well, notwithstanding its being a lover of moisture; therefore, we may look upon it as a plant which works for its living, carpeting, as it does, such spots as would otherwise present a nude and barren aspect. I was much struck the other day to find *C. alsinoides* associated with this plant, as neither seeds nor plants had been introduced there to my knowledge. I have compared specimens with plants raised but recently from seeds from Kew, and which I find to be identical. The Kew seeds were sown in a pot and kept under cover in a moist nook, so there remains but little reason to suspect that seeds might have been transmitted by birds. I have also been to the Manchester Free Reference Library to refer to the figures in the *Botanical Magazine*. The drawing of *alsinoides* is a very faithful one when applied to the plant as we usually meet with it. As a rule, it is smaller in all its parts than *sibirica*, but I have in my dried collection a specimen of *alsinoides* fully equal in size both in the flower segments and in the leaves to any of our *sibirica*, which is doubtless remarkably fine in another part of the garden, where it is growing under more suitable conditions. Moreover, we have a clump of *sibirica* identical (except in the colouring of the petals, which is not a structural difference) with *alsinoides*, and I venture to say that, if some surgical-florist could substitute white

flowers in place of the pink ones, it would pass as such. It is needless to enter into further structural details, but I must add that the characters ascribed to both plants break down when we come to examine a number of individuals, which have either germinated at different periods, or modified by other varied circumstances. The changing of the colour of the flowers is not to be wondered at when we take into account the mighty mutation in this respect in species of *Calandrinia*, the next akin genus in the same order. The drawing of *sibirica*, which, like *alsinoides*, appeared in a comparatively early volume of the *Botanical Magazine*, has been taken from an immature specimen. *C. alsinoides* is, I believe, quite naturalised near Chatsworth, Derbyshire, and the figure in Baxter's *British Flowering Plants* (which can be seen in the above-named library) was taken from a plant communicated by Mr. (afterwards Sir Joseph) Paxton. *T. Entwistle, Herbaceous Ground, Botanical Gardens, Manchester.*

Unequal Degrees of Growth on Different Portions of the same Plant.—I can confirm your remarks on the note of your correspondent on this subject, that it is not uncommon. On the contrary almost every tree shows it to a greater or lesser extent; the sunny or sheltered side responds to the more genial climatic influences, while the colder sides of trees remain dormant. The same fact is often illustrated in a more intensified way by the introduction of the tops of plants into heat while their stems and roots are out in the cold. I have, for example, had Gloire de Dijon Rose in flower in January while its stem outside was frozen. Figs, Vines, and other plants are often treated in the same way without apparent injury. The localisation of the vital activity in different parts of the same plant and the timing it at will, as it were, is a very curious matter that has not received the amount of attention that its interest deserves. The mere theory of its being simply an expenditure of last year's fluid does not explain the fact that flowers may be bloomed, and Figs and other fruits ripened, while other portions of the same plants are still dormant. *D. T. Fish.* [The cells which build up a plant have each and all a more or less independent existence, although they grow in association. *Eds.*]

A Yellow Nettle.—Of some forty or fifty species of Nettles enumerated in Loudon's *Hortus Britannicus*, only three are natives of Britain. Most of those imported are marked either uninteresting, or mere weeds more or less curious. Political economists have talked of cordage made from the Nettle, and it has dogged the footsteps of settlers everywhere. Its young tops, like those of the Turnip, make an excellent vegetable, and coming early it is hailed as a useful potherb. No one seems to have attempted improvement in the case of our stinging Nettles, indeed it would be no easy task to take in hand, for in the first place the plant is dioecious, having male and female flowers on distinct individuals. Those who take coloured impressions of leaves know well what a fine outline this weedy plant possesses, albeit its bad character and its stinging propensities, for it is certainly a high-class weed, and its only redeeming trait is its service in the affair of Nettle beer. I have mowed its herbage, and had it made into coarse hay that seemed to be relished by the donkeys, of which we boasted a useful team for light work about the garden. Only the other day I was looking along a hedge-bank in Cheshire, and was surprised to see what I took to be a yellow flower, but on nearing it I found it was a highly-improved Nettle, with its finely cut leaves as yellow as Californian gold. The stem on which this golden Nettle grew was green up to two-thirds of its height, and I never saw a finer plant than one of several that adorned the hedge-bank. There were some four or five plants with golden tops, but not any were golden from the ground. Should this Nettle be manageable and come true from seed, as the yellow Feverfew has done, although quite contrary to all we learned of varieties and species in the best of botanical books, it will have to be kept in pots and treated as a greenhouse plant, and pinched for room to prevent its growing coarse. Who knows but that Nettles may yet be staged and judged—ay, hybridised half-and-half exotic with Nettles of renown? I enclose a fragment for your inspection. *Alex. Forsyth.* [The leaf is distinctly of a yellowish-green, most strongly marked along the course of the veins; but whether a permanent variegation, or the indication of bad health, remains to be seen. We have often observed similar leaves. *Eds.*]

Clive's Seed and Fruit Protector.—Clive's Protector [an imitation eagle suspended from a line] is, if not novel, a very effectual remedy, and is worth the expense. We have tried it with success. *Apocryphos* of this an old gardener set a small clam as the blackbirds and thrushes were too partial to his Maydukes on a wall, and soon caught a few; but a jay embraced the opportunity and turned the catch to his own account by taking the birds from the clam. The gardener

then set two traps, and at once caught the jay in the act, and his bright plumage most effectually scared all other birds, and the crop was saved as well as others where Mr. Jay set up his abode. As the season is now over when birds are troublesome it might be advantageous for gardeners to requisition the gamekeeper and hang up the dead jays and magpies where requisite. *G. Bunyard, Maidstone.*

Bougainvillea glabra and Stephanotis floribunda.—*B. glabra*, as Mr. Weaver states, is more hardy than is generally supposed, to which fact I can testify from experience, for years ago I had several large plants that used to be wintered in a Fig-house with Fuchsias and things of that kind, where all the heat they had was only just sufficient to exclude frost; and yet, beyond losing their leaves and sometimes the immature tips of young shoots, they always passed through in safety and broke regularly and well again in the spring. When subjected to cool treatment like this it is necessary to keep it dry at the roots, and, what is of equal importance, to see that the wood is well ripened; in which case I am opinion that plants might be stored away in a close shed without taking the least harm. Kept in a stove it retains its leaves, but when subjected to a greenhouse temperature it becomes deciduous, which no doubt is its natural habit; anyhow it is none the worse for the defoliation, for when heat and moisture are applied it is soon in active life again, and flowers with all the more freedom for the rest it has had. Finding this *Bougainvillea* so hardy I once tried plants in a border outdoors, but although they stood the whole summer they made little growth and were not satisfactory, and yet in a cool house under the full influence of sun it is one of the best things that can be had, as its blooms come of a brighter colour there and last much longer in a state of perfection than they do in a higher degree of heat. *Stephanotis floribunda* will live in a temperature quite as low as the *Bougainvillea glabra*, but, unlike this grand climber, it will not flourish unless it happens to have its roots in a border near a boiler, or so situated that they can feel some amount of warmth, the roots being the tenderest part of the plant; and unless these can be kept healthy and active free growth is altogether out of the question, and therefore in cases where the above-named conditions cannot be complied with it is useless attempting the cultivation of the *Stephanotis* in any other house than a stove. In planting the *Bougainvillea* I would advise limiting root-space, as when allowed full run it grows so strong as to require much thinning and pruning, and not only this, but the moderate sized shoots produce the most flowers. These may be to a large extent induced by using a sharp gritty loam, and making the same firm, in addition to which it is essential that free drainage be given, as during the summer much water is required to keep the blossoms from shedding, which they soon do if the plants get dry when so heavily laden. *J. S.*

Ardgowan.—Those of my gardening friends who may be visiting Scotland should not fail, if opportunity offers, to pay the beautiful gardens of Sir M. Shaw Stewart a visit. The estate is situated on the banks of the Clyde, surrounded by magnificent scenery, and is easily reached from Glasgow by Inverkip Station. The visitor will at once be struck with the neatness and cleanliness that everywhere prevails, a place for everything and everything in its place evidently being the order of the day. A grand effect is produced in the flowering house by a grand lot of well-grown Begonias (tuberous), Fuchsias, Hydrangea Thomas Hogg, a grand plant for decorative purposes; Zonal Pelargoniums, &c. Some grand specimen *Humea elegans*, 8 feet high, 6 feet through, furnished with foliage to the pot, attract one's attention. These, as used by Mr. Lunt, in pairs, are very effective plunged in pots in front of the entrances to the houses, &c. The stove-houses contain a valuable collection of foliage and flowering plants, well grown and beautifully arranged. The Orchids are also in grand health, several promising shortly to make a grand display. The vineries and Peach-houses, which are models of perfection of horticultural engineering for their purposes, are in good condition, showing fine crops—everything that could be desired. The Cucumber and Melon houses are abundantly well cropped; some extraordinary fine Melons are now in perfection. The Strawberry-house was a marvellous sight, one of the finest houses of fruit I have ever seen. President is the sort Mr. Lunt grows, and the fruit he was gathering were extraordinary in size and beautifully coloured, in fact everything that one could wish for. The kitchen garden is well arranged, the crops looking remarkably well considering the great drought they have had to contend with. I have been in this neighbourhood for ten days, and we have only had one or two showers. The demand for everything both for decorative purposes in cut flowers and plants, is very great, and is well supplied. Mr. Lunt, the energetic and clever gardener, who has had charge of these gardens some years, evidently has found out the best method of accommodating

everything in a most satisfactory manner, and should any one be able to find time to visit this place they will be most agreeably surprised, and find in Mr. Lunt a practical and intelligent gardener, pleased at all times to give his opinion on any matters relating to horticulture, and as ready to learn as he is to give advice. *A. O.*

Potato Culture.—Observing that the cultivation and general management of the Potato are receiving attention in your journal at this critical season, allow me to refer you to my communication on the management and the harvesting of the crop, and the results, which you inserted at p. 117 of the *Gardeners' Chronicle* of July, 1877—that result having been, after two careful examinations by my gardener and his assistants of every tuber on two different storings, the discovery of twenty-three faulty Potatoes only out of the crop of 72 bushels, and those mainly rotted from having been partially eaten; and the remarkable growth of the haulm and foliage of the Potato crop at this season being precisely that of July in 1876, you will excuse my referring you to that paper at this particular time. I have reason to believe that many persons have misapprehended that lesson; and on finding the foliage and haulm of their crops affected by the disease, reckoned on saving their Potatoes by merely cutting off or pulling up the haulm in the mode recommended in the mode of harvesting. On reference to that article, it will be seen that it was in August, 1876, that, on observing the strong healthy growth of the foliage continuing without a curl or spot upon it, I was apprehensive of injury to the Potatoes by their sprouting under-ground, which I had experienced on a former occasion. It was on that ground solely that the operation referred to was adopted. It was only on observing later in that season reports of disease on the harvesting the Potato crop throughout the kingdom to a fearful extent, and especially around Cirencester, reported in the *Gardeners' Chronicle*, I could not doubt but my success was attributable to the mere accident of our having drawn the haulm prior to the appearance of any symptom of the disease. The present state of the crop being just as luxuriant in this month as it was in July, 1876, I shall have the growth above-ground carefully drawn before the slightest symptoms of the disease are apparent, and harvest the crop beneath just in the same mode as that we adopted late in the autumn of 1876. *Charles Lawrence, Cirencester.*

The Sparrow Question.—I beg heartily to thank "F. L. S." for his sensible and timely remarks, published some time since. If a tithe of all the maudlin sentiment expended on birds which are only evil and mischievous in the garden were bestowed on the gardeners, who are the helpless victims in many places of their sweeping raids and incessant depredations, it would be more humane and—well, infinitely pleasanter for all parties concerned. Like "F. L. S." I have been a lover of birds from my childhood, am never weary of their winning ways, pretty plumage, not too tired to listen with something akin to rapture to their sweet songs; but the early chatter of sparrows is suggestive to me of a ravenous crew of thieves starting forth in gangs to steal or wreck all that is most crisp and sweet in the garden. Let no one talk or write to me of early birds gathering the worms; the sparrow never eats one, nor a caterpillar, but crisp Lettuces, bursting fruit-buds, sweet Marrow Peas—these they cram themselves with all day long, till they are almost too lazy or fat to flounder rather than fly home to their roosts in the eaves. The mischief they do to thatched cottages is also incalculable. In a word, the sparrow is a nuisance to get rid of, not a feathered friend to be pitied and fostered, as our writers in big towns and easy chairs, who may or may not have ever seen a sparrow in their lives, and are profoundly ignorant of their depredations, assure us. Cultivators *en masse* exclaim, Save or deliver us from such friends. It is, however, no easy matter to get rid of the sparrow. He is too artful to be trapped out, and as to shooting it is treason to use a gun in many gardens lest, forsooth, some precious pheasant should have its morning slumber disturbed by the sound or smell of powder. Since Sir Joseph Paxton died we do not seem to have had a gardener in Parliament, hence probably the quick and hurried manner a Bill was run through the House forbidding the use of poisoned Wheat as a quietus for the sparrow. The result of these measures is that it is now much more difficult to get poison for vermin than for the would-be suicide to purchase it for himself. This, and not a few other laws on our statute-book, seem to show that not a few of our legislators have manifested more zeal in the preservation of vermin than in the care of men, women, and children. Be that as it may, the depredations of the sparrow have been so outrageous this spring that I proclaim war to the death with him from henceforth. Would that the old parochial sparrow clubs were revived. The Press, with its sharp pen, full of wit, humour, pungency, sentiment, and, let it be added, ignorance, proved the death of sparrow clubs. The nett result

is that our gardens are overrun with the overplus sparrows of our farms and woods, and the time has come when a strenuous effort should be made by the pen to abate the loss and annoyance caused by sparrows, and when landlords and tenants should wash their own linen, that is, keep or kill their own sparrows, at home. It is high time that the sparrow nuisance was abated, and the mere myth of their ever helping to clear away any injurious insects exploded. Give me any number of grubs, caterpillars, worms, snails, slugs even, but rid me by any and all means of the sparrows, who are thieves and robbers only on the most gigantic scale in our gardens and on our farms. The quantity of good vegetables and solid grain they destroy is appalling. The latter is a most vital consideration at a time when of every three loaves eaten two are of foreign growth, and every provincial fruit and vegetable market is crowded with foreign produce, brought to us, if not from China to Peru, yet from all parts of the world; and this while the house-sparrow is revelling and ruining the best of our food. Again let me thank "F. L. S." and other writers for helping to sweep him away with the hot blast of their indignation. *D. T. Fish.*

Reports of Societies.

Royal Caledonian Horticultural: July 7.—The summer show of this Society was held in the Waverley Market, one of the finest buildings in Great Britain for a floral display. Unfortunately the weather was very showery; but still, for all this, it was numerously attended. The various exhibits were very meritorious, especially the collections staged by the nurserymen of the district. These collections would have formed a good flower show by themselves. The collection of Messrs. Ireland & Thomson was well arranged, and formed a beautiful display, consisting as it did of a fine collection, well coloured, of all the principal new *Dracenas* and *Crotons*. Amongst the latter, *Croton interruptus aureus* and *Croton Duke of Buccleuch*, new varieties, are worthy of special mention. These were intermixed with Palms, Ferns, and various flowering plants. They also showed some fine boxes of cut Roses, Delphiniums, Iris, Phloxes, and Pansies, which were much admired. Messrs. Dickson & Sons showed a meritorious collection of miscellaneous fine-foliaged and flowering plants. Their *Crotons* were especially well coloured, and being intermixed with Palms, Ferns, and various flowering plants, formed a most effective group. Some fine examples of Cockscombs were very noticeable; these were most beautifully arranged, and made a very fine display. Messrs. Downie & Laird exhibited a fine table of specimen fine-foliaged and flowering plants, intermixed with some good specimen Phloxes, cut flowers of Pyrethrums, Phloxes, Delphiniums, Pansies, Violas, and Osborn's new Primulas. This collection also was well arranged, and added much to the beauty of the show. Messrs. Thomas Methven & Sons occupied a corresponding position with fine-foliaged plants, tuberous Begonias, and some finely grown Pelargoniums, which collectively made a fine display. Messrs. Dickson & Co. had a collection which included some good Tree Ferns and foliage plants, boxes of Mimuli (fine), Potentillas, Pansies, forcing Pinks, and Iris, which were very attractive. A grand specimen of *Eucharis amazonica* was also a conspicuous object in the collection. Alpine plants were well shown by Mr. Munro, whose collection contained many novelties of first-class merit: and which were moreover legibly named. Mr. James Anderson, of Uddingstone, showed a fine collection of Orchids, not for competition. *Cypripedium spectabile*, 3 feet through, was well flowered, as also were good specimens of *C. barbatum* and *C. niveum*, *Odontoglossum Roezlii*, *O. vexillarium*, *O. Alexandræ*, &c. The Lawson Seed and Nursery Co. occupied the west end of the building with a representation of a small garden, the several beds of which were beautifully arranged. Altogether this was quite an interesting feature.

Class I was a table arranged for effect, 20 feet by 5 feet. 1st, James Buchanan, Esq. (Mr. Spence, gr.), with a beautifully arranged collection, which included a magnificent *Cattleya Mossiae* with forty flowers. 2d, G. Bertram, Esq. (Mr. Reed, gr.), with a collection also of great merit, but lacking the beautiful arrangement of those staged by Mr. Buchanan. Stove and greenhouse plants were well represented. The 1st prize collection, shown by Mr. Patterson (gr. to Jas. Syme, Esq.), contained a fine specimen *Dracophyllum gracile*, 3½ feet in height and width, well flowered, and some good examples of *Erica ventricosa* and *Aphelexis*. 2d, A. Paul, Esq., who had a magnificently flowered *Clorodendron Balfourianum*, *Stephanotis*, *Aerides odoratum*, and *Laelia purpurata*. The other classes of stove and greenhouse plants were well represented, but call for no particular mention. Fine-foliage plants were also well shown. The 1st prize for six fell to Mrs. McVicar (gr., Mr. McCormack), who had good plants of *Cocos Weddelliana*, *Vucca aloifolia variegata*, *Phormium tenax*, &c.

The 2d and 3d prize groups also contained some good specimens of cultivation. Fuchsias were well represented, as also were *Besleria* and *Tricolor Pelargoniums*. The Zonals were not up to the mark, but the Show and Fancy varieties were somewhat better. Gloxinias and Lilioms were shown in numbers, some of the former being well-flowered and of fine substance. Ferns and Lycopods were also well shown. The collections staged by amateurs reflected great credit on the growers. The competition for table plants was very strong. The 1st prizes for twelve and six were won by Messrs. Ireland & Thomson, 2d in both cases being Messrs. Dicksons & Sons—both collections very meritorious. The amateurs also came out in full force, showing some first-class plants. For six *Dracenas*, distinct, Messrs. James Dickson & Co. were 1st and Messrs. Downie & Laird 2d, both collections being very fine, the former having the best of it. They were superbly grown and well coloured.

Orchids were not so numerously represented for competition. Mr. Walker, of Lanark (gr., Mr. McGregor), had a fine *Odontoglossum Alexandræ* with forty-six flowers on three spikes, and a good *O. vexillarium*. The 1st prize for a single specimen fell to the same exhibitor for a fine plant of *O. Alexandræ* with six spikes; and Dr. Patterson, Bridge of Allan, was 2d with a good *O. vexillarium*. This same gentleman, with his usual generosity, sent several Orchids, not for competition, which were very attractive.

Fruit was well represented. For a collection of six sorts Mr. Johnston, gr. to the Earl of Strathmore, was an easy 1st, showing good Grapes, Figs, Peaches and Nectarines, and a fine Melon. 2d, the Duke of Buccleuch, Broxmore (gr., Mr. McKelvie). The prizes for Grapes were well contested. Some grand examples of Buckland Sweetwater were shown by Mr. J. Mackonochie, gr. to A. Smollet, Esq., Cameron House; and Mr. Forbes, Callander House (gr., Mr. Boyd), was 1st for blacks. This gentleman also staged some good bunches of Muscat Hamburgs and Frankenthals, well grown and finely coloured, but not for competition. Melons were well shown, and the 1st prize fell to Mr. Brotherson, Tynningham; the 2d to Mr. Johnson, Glamis. Peaches.—1st, Mr. Johnson, Glamis, with some fine fruit. Nectarines and Strawberries were also a good feature, the latter class including some of the finest *fermiers* perhaps ever seen. Some fine collections of vegetables were exhibited, and also some good Cucumbers.

Cut Flowers.—Roses were well shown both in the amateurs' and in the nurserymen's classes. Mr. Hugh Dickson, of Belfast, was far in advance of the other competitors, his flowers being in great perfection. Mr. Paul, Paisley, showed some grand cut blooms of Pinks, amongst them being many seedlings of great merit. The bouquets were very poor, also the centrepiece for a table, grace and beauty in both cases being out of the question, the latter being far too heavy, and the bouquets much too crowded. The Botanic Gardens sent a collection of *Nepenthes*, *Sarracenias*, *Dionæas*, *Darlingtonias*, *Droseras*, &c., all fine and well grown specimens. This table formed a very great object of interest, and was much admired, as were also some good *Stanhoopes* in the same group. Mr. Gray, of Eglinton Castle, showed some new white *Violas*, one of which, named *V. compacta alba*, received a First-class Certificate.

The arrangements of the show were highly satisfactory, and the decisions of the judges passed unchallenged.

The National Rose Society at the Crystal Palace: July 3.—With a comprehensive schedule, comprising thirty-two classes, a respectable show of plate, and a liberal array of money prizes, it is much to be regretted that the date selected for holding the National Society's show should have proved a "misfit," a contingency that cannot, of course, be obviated where the date has to be fixed before a true estimate of the probabilities of the season can be safely made; but none the less it is to be deplored, for such a schedule as the Society issued was deserving of a better response than was made on Saturday last. And yet, all things considered, the display was a very good one as far as it went, the number of good blooms more than balancing the absolutely poor ones, and the competition in some of the classes, especially in the amateurs' section, being deserving of all praise. The final bout for the Cranston Challenge Cup, between Mr. T. Jowitt, of the Old Weir, Hereford, and Mr. R. N. G. Baker, of Heavitree, Exeter, was a tussle to be remembered, so closely matched were the rival "forty-eights" staged by these most successful of amateur growers. The contest was worthy of them both—a splendid trial of strength, to decide between which was a nut for the judges to crack which proved to be the hardest of the hard, for did it not take them an hour and a-half to get to the kernel! Both collections were a match in point of size and freshness, but Mr. Baker's flowers had the advantage in brightness of colour—a point that had to be weighed against the greater substance apparent in the rival blooms, and it was the correct estimate of the greater weight of the latter quality that carried the decision in favour of Mr. Jowitt, who thus became the absolute possessor of the trophy—a trophy which should always remind him, to his rival's credit, of the "shave" that placed it to his account. The nurserymen's classes were not so strong as we should have liked to have seen, but very good in quality. The Western growers were in great form, especially

the Cranston Nursery and Seed Co., and a new exhibitor (at the Metropolitan shows), Mr. James Walters, of Exeter, who were very successful in the various competitions.

NURSERYMEN'S CLASSES.—The Silver Cup given by that keen amateur grower, Mr. John Hollingworth, of the Turkey Mills, Maidstone, for the best seventy-two single trusses, distinct, was won by the Cranston Nursery and Seed Co., the 2d prize going to Messrs. Curtis, Sandford & Co., Torquay; the 3d to Messrs. Paul & Son, Cheshunt, and the 4th to Messrs. Keynes & Co., Salisbury. The finest of the Hereford blooms were Annie Laxton, Madame Furtado, Hippolyte Jamin, Centifolia rosea, Sir Garnet Wolsley, Jenn Chirpin, Général Jacqueminot, Constantin Tretiakoff, Etienne Levet, Countess of Oxford, Mrs. Baker, Beauty of Waltham, Horace Vernet, Madame Charles Wood, J. S. Mill, Sénateur Vaise, Cheshunt Hybrid, and Mons. Noman; and, as a rule, the same varieties also figured conspicuously in the other stands, so that we need not ring the changes on their names. The same exhibitors also occupied the same relative positions in the class for twenty-four "trebles," a class which was in every way as creditable as the first in point of quality. In the Cranston collection the three finest trusses were of that prime old favourite, Général Jacqueminot, which surely would have gained the highest honours had there been a class for the best three trusses shown in any of the stands. They were simply superb in size, substance, and colour, and in the latter respect were the brightest that have come under our notice for many a long day. Other varieties, splendidly shown in the same stands, but not outrivalling the General, were Etienne Levet, Countess of Oxford, Beauty of Waltham, Devoniansis, Sir Garnet Wolsley, Alfred Colomb, Marquise de Mortemart, J. S. Mill, Madame Noman, and Hippolyte Jamin. For thirty-six single trusses the 1st prize went to Mr. James Walters, Mount Radford Nursery, Exeter, who beat Mr. Turner, of Slough; Mr. Frank Cant, of Colchester; and Mr. W. Farren, of Cambridge; the winners, in the order named, of the other prizes. For twenty-four, distinct, three trusses of each, the Cranston Nursery and Seed Company again came to the front, Mr. G. W. Piper, of Uckfield, coming in 2d; Messrs. Keynes & Co. 3d, and Messrs. Paul & Son 4th; and for twenty-four singles Mr. Walters again beat Mr. Turner for the highest award, Mr. W. Farren taking the 3d award, and Mr. Rumsey, Jonying's Nursery, Waltham Cross, the 4th. In each of these classes the varieties were the same, with slight variations, and their order of merit is better indicated by the awards made than we can describe by any other means, though a well deserved word of praise should be accorded to Mr. Walters, whose blooms were very fresh and particularly bright in colour. For twelve Teas or Noisettes, single trusses, Mr. George Prince, of Oxford, was well 1st, with a beautiful stand of flowers; Messrs. James Mitchell & Sons, Piltown Nursery, coming in 2d, and Messrs. Paul & Son 3d. The strongest competition with Teas was for a cup given by J. Hollingworth, Esq., for six "trebles," and this was won by Messrs. James Mitchell & Sons, the Cranston Nursery and Seed Company being 2d, and Messrs. Paul & Son 3d.

AMATEURS' CLASSES.—By far the strongest and best competitions took place in the amateurs' classes, which were headed by the one for forty-eight single trusses, in which the competition was confined to the previous winners of the Cranston 50 gs. Challenge Cup, this being the final trial of strength, and which, as we have already stated, resulted in Mr. J. Jowitt, of the Old Weir, Hereford, being declared the winner. Mr. R. N. G. Baker taking the 2d prize of £9. Both growers were in very strong form, in fact a finer struggle for supremacy between such doughty champions could not possibly have been desired. Mr. Jowitt had the advantage over his opponent in his heavier blooms, but at first sight the Heavitree flowers took the popular fancy by reason of their wonderful brightness of colour. In Mr. Jowitt's stand the blooms of most superior quality were Sultan of Zanzibar, Etienne Levet, Annie Laxton, Dr. Andry, A. K. Williams, Abel Grand, Madame C. Wood, Duc de Vallombrosa, Laurent Descourt, Captain Christy, Alfred Colomb, Charles Lefebvre, Le Havre, Horace Vernet, Edward Pynaert, Princess Beatrice, and Souvenir d'Elise, the last-named being judged the finest single Tea Rose in the show, and as such awarded the special prize given by the Society of Rosarians of Antwerp, who also gave a similar award for the best H.P., which was won by Mr. Baker, with a magnificent flower of A. K. Williams, whose beauty of form and brilliancy of colour was conspicuous in his stand of forty-eight beauties. The class for thirty-six single trusses was a very strong one, bringing out a grand lot of flowers. The prizes went in the order named to Mr. James Brown, gr. to A. J. Waterlow, Esq., Reigate, Mr. Baker, Mr. Jowitt, Mr. J. Davis, The Square, Wilton, and Mr. J. Hollingworth. For twenty-four, Mr. Baker came in 1st; Mr. John Sargent, of Reigate, 2d; Mr. Jowitt, 3d; Mr. W. G. Sharp, Birchington Bridge, Horsham, 4th; Mr. J. H. Pemberton, Havering-atte-Bower, Romford, 5th; and Mr. F. Warde, West Farleigh, Kent, 6th. This was a spirited contest, but did not include so many competitors as the next class, which was for eighteen single trusses, and in which the 1st prize, a Cup, given by Mr. Baker, was won by Mr. Thos. Gravely, Cowfold, Sussex, who staged flowers of great substance, very fresh, and of beautiful colour. Mr. F. Warde was a close 2d, and the Rev. E. S. Fellowes, Wimpole Rectory, Royston, a good 3d. There were thirteen competitors. For twelve "trebles" Mr. Baker had the pleasure of beating his Hereford rival, Mr. Jowitt only being able to score second honours; while Mr. J. Davis came in 3d, and Mr. W. G. Sharp 4th. The always popular class for a

dozen single blooms brought out no less than a dozen and a half of stands, from which the judges had to first eliminate a dozen, and then decide upon the merits of six stands which they finally placed in the following order:—1st, Mr. J. Ridout, gr. to T. B. Haywood, Esq., Reigate; 2d, Mr. G. Baker, Holmfels, Reigate; 3d, Rev. E. L. Fellowes; 4th, Rev. Allan Cheales, Brookham Vicarage; 5th, Mr. John Wakeley, Church House, Rainham, Kent; 6th, Mr. T. E. Burnaby Atkins, Halstead Place, Sevenoaks. Messrs. Paul & Son's Silver Cup for six distinct Cheshunt-raised Roses, two trusses of each, only brought one stand of blooms, and to this, shown by Mr. Jowitt, the cup was awarded. The varieties were Duke of Edinburgh, Princess Mary of Cambridge, Lord Clyde, Annie Laxton, Sultan of Zanzibar, and Cheshunt Hybrid. There were also eighteen stands of nine blooms, a very fine class, in which Mr. Ridout again came in 1st, with the Rev. Allan Cheales 2d; Mr. J. D. Strange, Aldermaston, Reading, 3d; Mr. W. H. Wakeley, Macklands, Rainham, Kent, 4th; and Mr. Edward Mawley, Addiscombe, Croydon, 5th. In a poor class for six, Mr. Ed. Horne, Park House, Reigate, came in 1st, beating six competitors; and for the same number of suburban-grown Roses—another poor class—the piece of plate given by Mr. Mawley, one of the honorary secretaries, was won by Mr. W. Scott, Clinton Villa, South Wimbledon. For twelve Teas, or Noisettes, Mr. G. P. Hawtree, Aldin House, Slough, was 1st with a very pretty stand in which were five blooms of Comtesse de Nadaillac, Madame Hippolyte Jamin, Madame Lombard, Rubens, Boule d'Or, and Catherine Mermet, &c. The other winners were Mr. C. Davies, Rev. E. S. Fellowes, and Mr. J. Hollingworth. Mr. E. Horne had the best six. The Silver-gilt Medal, given by the proprietors of the *Journal des Roses* for the best eight, three trusses of each, in various stages of blooming, was taken by Mr. John Sargent; and the Cup for the best twenty-four sweet-scented Roses, given by W. Simons, Esq., went to Mr. Jowitt.

OPEN CLASSES.—The 1st of the open classes was for twelve new Roses, distinct, and not in commerce previous to 1877, and six competitors entered the lists. Mr. Turner took the 1st prize with Harrison Weir, Madame Lambert, Mrs. Laxton, Madame Alexandre Bernaix, Charles Darwin, Penelope Mayo, Richard Laxton, A. K. Williams, Duchess of Connaught, Hon. Geo. Bancroft, and Mrs. Harry Turner, a beautiful dark crimson. Messrs. Paul & Son, Cheshunt, came in 2d; and the Cranston Nursery and Seed Co. 3d. The Messrs. Paul's flowers were Edward Dufour, Egeria, Duke of Teck, May Quennell, Leon Renault, Cannes de Coquette, Ch. Darwin, Madame Alphonse Lavallée, Paul Jamin, Madame Gabriel Luizet, Harrison Weir, and Earl of Beaconsfield. The best of two stands of twelve blooms of Marechal Niel came from Mr. B. R. Cant, and were all cut from the original plant introduced into this country in 1864, a standard on the Brier planted against a south wall. A class for a similar number of blooms of A. K. Williams, perhaps the finest of all the new Roses, brought no entries; but a corresponding one for Marquise de Castellane brought seven competitors, who staged a fine lot of blooms. Mr. James Walker took the 1st prize, Messrs. Davison and Co. the 2d, and the Cranston Nursery and Seed Co. the 3d. Mr. Jas. Walker, the only exhibitor of a dozen blooms of the rich, dark, Reynolds Hole, also received the 1st prize in that class; and with a grand lot of blooms of Marie Baumann, secured the 1st prize in the class for any Hybrid Perpetual not named above. In this competition the Cranston Nursery and Seed Company came in 2d, with Horace Vernet, in good form; and Messrs. Paul & Son 3d, with Charles Darwin; other sorts well shown being Mdlle. Marie Rady, Madame Charles Wood, Dupuy Jamin and Mons. E. Y. Teas. In the corresponding competition for eight varieties a splendid stand of Madame la Baronne de Rothschild, staged by Mr. R. N. G. Baker, took the highest honours; and the Cranston Nursery and Seed Company, and Mr. Jowitt, were respectively 2d and 3d, with excellent stands of Madame Lacharme, which beat others of Captain Christy, La France, Comtesse de Serenye, and Mdlle. Marie Cointet. Mr. James Brown, gr. to A. J. Waterlow, Esq., Reigate, was awarded the 1st prize for a good stand of Belle Lyonnaise, in a class for any other Tea or Noisette; and Messrs. Paul & Son received a similar award for "three trusses of any new seedling Rose not yet in commerce or announced," their novelty being a very promising H.P., named R. N. G. Baker, rose suffused with purple.

Richmond Horticultural: July 1.—When the grand summer show of this Society, held in the Old Deer Park, Richmond, on Thursday, July 1, was being arranged, those engaged in the work had to realise to the full the force of the proverb, "It never rains but it pours." It was rather an unlooked-for visitation, as the preceding days were singularly delightful and summer-like. However, when things got to the worst they mend, and after a terrific rainfall, accompanied by a strong gust of wind, just after mid-day, that nearly sent one of the big tents flying, the heavy clouds passed off, and the turf drying a large company poured in, thus converting what in the morning looked like an inevitable failure into a great success. The show itself was spread over a huge circle of five tents, one being devoted to cut flowers, table decorations, and fruit; a second to special prizes, and included all sorts of imaginable subjects, some having interest, some none whatever. This special prize element, a sop to the popularity of subscribers, sadly needs reformation or consolidation, so that the money might be useful in encouraging really good and desirable exhibits. Then came the big plant tent, covering a grand display of plants—such a collection as is rarely seen at any other suburban show; and

beyond this tents for gardeners' vegetables and miscellaneous things and cottagers' productions. In connection with this latter class it is very gratifying to observe that it is extending every year, and that there is growing up in the locality amongst the working classes a taste for gardening that cannot be too freely encouraged.

The most important features of the show were found in the big plant tent, and of these none were more interesting than the fine groups of plants sent by the various trade houses—a feature in which Richmond is always strong. The Messrs. Veitch & Sons, of Chelsea, had an interesting group of flowering and foliage plants of the most miscellaneous kind, a prominent feature in which was a fine plant of *Lælia purpurata*, superbly bloomed, also a number of their beautiful speckled Gloxinias, interesting carnivorous plants and veined *Sonerilas* in charming variety. Opposite to this, and on the turf, was placed a splendid group of about 100 pot Roses, backed by Japan Acers, and margined by Maidenhair Ferns. The General Horticultural Company put up in a conspicuous position a very fine group of *Dracænas*, and finely pitched Nepenthes lit up with some splendid Gloxinias. One of the prettiest foliage plants in the group was a small one of *Pavetta borbonica*, a very rare visitor to flower shows, the leaves most elegantly marbled. Messrs. Charles Lee & Sons, of Hammersmith, staged a large and well flowered group of pot Roses, using for background that charming silver-leaved plant, *Acanthopanax variegata*. In the group, also prominent, were some freely-bloomed plants of the double yellow *Genista tinctoria*. Messrs. Jackson & Son, of Kingston, put up a fine and very attractive group of stove and greenhouse plants, *Ericas*, *Begonias*, *Pelargoniums*, and many very showy things. Mr. John Laing, of Forest Hill, had a large group of his superb tuberous *Begonias*, that was effectively relieved by *Coleus*, *Palms*, and other foliage plants. Messrs. Osborn & Sons, of Fulham, staged a good group of their plant specialties, and Mr. F. R. Kinghorn, of Richmond, had a very elegant group that had for a prominent feature a fine *Todea superba*, a quantity of the *Eurya latifolia variegata*, a most effective creamy variegated plant, being used as an edging. Mr. Chambers, of the Westlake Nursery, Isleworth, showed some fine forms of *Begonias*, and his new white *Lobelia*.

In the cut-flower tent, the trade was again well represented, Mr. Cannell, of Swanley, having a most beautiful lot of cut *Verbenas*, that, thanks to the cool temperature, were delightfully fresh at evening, and were—so rarely are good *Verbenas* seen now—immensely admired. Mr. Cannell also had boxes of cut *Zonal Pelargoniums*. Messrs. Veitch & Sons had a grand lot of cut *Roses*, as also had Messrs. Charles Lee & Son; and in the open classes for thirty-six and twenty-four trebles Messrs. Paul & Son, of Cheshunt, found no competitors—showing a superb lot of blooms, amongst which old favourites, such as *Alfred Colomb*, *Marchioness of Exeter*, *La France*, *Mons. E. Y. Teas*, *Comtesse de Lorenzi*, *Madame Gabriel Luizet* (style of *La France* but of deeper tint), *Marie Baumann*, and *Duke of Edinburgh*, were prominent. Two classes for semicircular decorative groups brought good competition, and some charming arrangements. These were staged on the turf, and enabled the grower to exhibit what skill he possessed in producing the most artistic effect. In the competition for the large group covering 100 square feet, Messrs. Hooker & Co., of Twickenham, were 1st with a very bright and pleasing arrangement. A prominent feature was the new *Canna Ehemanni*, bearing some very large and brilliant flowers of a rich vermilion-crimson hue. Mr. Wm. Brown, of St. Mary's Grove Nursery, Richmond, was 2d; and Mr. Hudson, gr. to H. J. Atkinson, Esq., Gunnersbury, was 3d. In the corresponding class for groups covering 50 square feet, Mr. Hudson was placed 1st. A good group, sent not for competition, arranged by Mr. Bowell, gr. to Sir H. Watson Parker, Richmond, was deservedly awarded a Silver Medal. In the open class for stove and greenhouse plants in flower, Messrs. Jackson & Son were the only exhibitors; their specimens were unquestionably good, and included a fine *Bougainvillea glabra*, well flowered *Clerodendron Balfourianum*, *Ericas ventricosa* Bothwelliana, and *tricolor speciosa*, and a grand plant of the *Pimelea mirabilis*. In the similar class for six kinds, Mr. H. Hennell, gr. to S. A. Davy, Esq., of Surbiton, had very good half-size specimens of the *Kalosanthes coccinea*, of a most brilliant colour; *Allamandas* *Chelsoni* and *Hendersoni*, and other good things. The general lack of good flowering plants, and the abundance of monotonous foliage in the plant classes merits the special attention of the committee. In the class for nine Ferns, Mr. Hudson was an easy 1st with a fine *Dicksonia antarctica*, *Thamnopteris australasica*, *Davallia Mooreana* and *bullata*, and other good kinds, all admirably grown. Mr. East, gr. to F. Wynn, Esq., Mortlake, was 2d, with huge specimens but lacking freshness. Some large *Palms* and Ferns and a good variegated *Pandanus* were shown by Mr. Bowell in the class for six foliage plants; and Mr. Bates, gr. to J. E. Meek, Esq., Poulett Lodge, Twickenham, who was 2d, had good *Croton Johannis*, *Yucca aloifolia*, and *Dracæna Baptistæ*. Some very fair *Fuchsias* were shown in the class for nine kinds by Mr. Morrell, gr. to J. C. Rutter, Esq., Richmond, who had good flowered plants of *Albert Memorial*, *Marginata*, *Baroness*, *Rose of Castile*, and *Mrs. Marshall*, whites; and *Prince of Wales*, *Don Juan*, and *Vox Populi*, reds; several other lots of inferior merit were staged.

Too much cannot be said in praise of the grand collections of Show, Fancy, and *Zonal Pelargoniums*, staged by Mr. Wiggins, gr. to Henry Little, Esq., of Hillingdon, as without the rich masses of colour his plants gave portions of the show would have been dull indeed. In the class for six show kinds, Mr. Wiggins was an immense distance ahead of the other exhibitors; these included *Snowflake*, *Jannette*, *Mary Hoyle*,

Victory, *Sultana*, and *Illuminator*. Had a Gold Medal been voted to Mr. Little for his splendid collections it would but have given honour where honour was due. It is not possible to go into ecstasies over foliage *Begonias*, but the *Caladiums* were graceful and some beautifully coloured. The best six, shown by Mr. East, were *Le Play*, *Bicolor*, *Madam Humbella*, *Alfred Edward*, *Chantini* and *Chelsoni*. Some excellent *Coleus* were staged, the bush plants producing the best specimens. Very pleasing colours and foliage were seen in the 3-feet specimens sent by Mr. Ramsay, gr. to Lady John Chichester, of Twickenham, and which included *Sensation*, *Kentish Fire*, *J. Barnshaw*, *Firefly*, *Magic*, and *Glow*. Other good ones were *Royalty*, *Duchess of Edinburgh*, and *Victor Emmanuel*. As there were some forty plant classes and sixty others for cut flowers, fruits, and vegetables, excluding a large number for cottagers, it is evident that our report can give but a cursory mention at the less pretentious exhibits. There was a large competition in the smaller cut *Rose* classes, and some excellent stands were placed. Table decorations were very attractive and generally well done, Mrs. Hudson taking 1st place in the open class for three stands; Mrs. Butcher, of South Norwood, coming 2d; and Mr. Wm. Brown 3d. In another class Miss Croft of Richmond was 1st, with a pretty arrangement, and very noticeable were bright yellow blooms of *Centaurea suaveolens*, that were greatly admired.

In the fruit classes there were plenty of Grapes, but few really good, the black kinds especially lacking colour. The white kinds were fairly good. In the class for four dishes of fruits, open, Mr. Hepper, gr. to J. O. Ledward, Esq., The Elms, Acton, was 1st, with good Peaches, Melon, Pine, and Black Grapes. The finest fruits of any class were *Strawberries*, as these were grand in size and colour. Vegetables were all good and plentiful, and the cottagers' classes were all well contested. Their model gardens were sources of wonder and causes of much criticism. The industry shown was sadly misdirected, and the taste as a rule abominable.

We had almost overlooked a fine group of annuals in pots, sent by Messrs. Carter & Co., of Holborn, that out in the open braved the repeated storms, and then in the sunshine again came up smiling; and the excellent *Coniferae* arranged by the Messrs. Fromow, of Turnham Green, around the entrance to the Royal reception tent.

Southgate Horticultural: July 3.—The annual exhibition of this Society was on this occasion held in the grounds of Southgate House (J. N. Mappin, Esq.), and many of the productions exhibited showed a marked improvement upon those present in former years. *Roses* and *Strawberries* are always a feature here, the soil being particularly suited to their cultivation; this season, although late, both are better than usual. These, with the extensive display of cut flowers, hardy and exotic, exhibited in a variety of ways, including collections, centre-pieces, devices, bouquets, &c., formed an exhibition such as is seen in few places. Plants, especially soft-wooded species, were remarkably well shown. For six stove and greenhouse, Mr. Osborn, gr. to J. N. Mappin, Esq., took 1st, having in a nice group a very good plant of *Hibiscus rosa-sinensis fulgidus*; it is a rare occurrence to see an example of any of the varieties of these fine decorative subjects shown, yet such a specimen as the one here noticed at once proves how well they are adapted for the purpose when well done; at a distance it looked like a fine *Dipladenia*. Mr. Graver, gr. to J. Walker, Esq., was 2d. With six Ferns Mr. Osborn was also 1st, staging a fresh, well-grown half dozen, amongst which was the elegant *Adiantum gracilimum*, near upon a yard in diameter.

Six *Begonias*.—1st, Mr. Tong, gr. to J. S. Law, Esq., with the fine variety *Acme*, *Raphael de Smet*, *Frederic Siesmeyer*, and three seedlings.

Six fine-foliage plants.—With these Mr. Graver took the lead, having in his collection a well-furnished plant of *Dieffenbachia Bausei*.

Gloxinias were beautifully shown, both as to condition and variety. The splendid forms of these plants now to be had from seed far surpass the named kinds existing a few years back. In the class for six Mr. Osborn was 1st, Mr. Graver 2d, with plants little behind the winner.

Fuchsias were better than we generally see them shown. Six.—1st, Mr. Reed, gr. to R. D. M. Littler, Esq., with large well-furnished examples, amongst which was the fine decorative variety *Earl Beaconsfield*. Seldom have we seen the colours of the *Coleus* brought out so vividly as in the group of six with which Mr. Graver took 1st; it contained a seedling with dark crimson and chocolate leaves edged with yellow, one of the most telling varieties we have met with. Mr. Osborn had 1st for six large-flowered *Pelargoniums*, showing large well-bloomed examples.

If *Balsams* and *Cockscombs*, instead of being old-fashioned plants had been new, and shown in such size and condition as those which won the 1st prizes for Mr. Graver in their respective classes, they would have made a sensation amongst plant growers. Mr. Graver and Mr. Osborn each contributed very nice groups of miscellaneous plants, the former taking 1st with a mixed lot of flowering and foliage; Mr. Osborn's collection mostly consisted of fine-leaved subjects. From Mr. B. S. Williams, Holloway, came a very fine group of new and rare plants; from Messrs. Cutbush & Son, Highgate, a group of plants and a large collection of cut *Roses*; from Messrs. Cutbush, Southgate, a mixed lot of flowering and fine-leaved plants, as also a nice display of bouquets, button-hole flowers, and table plants, which latter included *Casuarina ericoides* and *Cupania filicifolia*, two of the most elegant plants that can be used for this purpose. Mr. Ramsey, Joining's Nursery, Waltham Cross, had an extensive collection of cut *Roses*. Mr. Braid, Winchmore Hill, contributed a

group of *Pelargoniums*, principally the deservedly popular decorative kinds, amongst which were the recently certificated new varieties, *Decorator*, *Defiance*, and *Zulu Bride*: the last will, no doubt, become a general favourite. It has a close compact habit of growth, and is a very free bloomer; the flowers are well formed, white, with a distinct deep maroon blotch on all the petals. *Roses*, as we have already intimated, were well and extensively shown. Mr. Duffield, gr. to H. K. Mayor, Esq., Winchmore Hill, took 1st for twenty-four with one of the best stands we have seen exhibited by an amateur for some time—fine fresh flowers with a nice assortment of colours; the best were *Marguerite Brassac*, *Dupuy Jamain*, *Perle des Jardins*, *La France*, *Alfred Colomb*, *Marie Baumann*, *Marie Van Houtte*, *Xavier Olibo*, *La Rosiere*, and *Maréchal Niel*. In the class for twelve, Mr. Pullen, gr. to H. R. Smith, Esq., came in 1st with a fine stand; his *Etienne Levet*, *Madame Lacharme*, *Belle Lyonaise*, and *Baroness Rothschild* were extremely good. For six Mr. Ives, gr. to E. C. Jukes, Esq., was 1st, with an excellent stand. With twelve rosebuds Mr. Duffield was 1st, and Mr. Graver 2d, both staging beautiful lots of buds, not half-blown *Roses*, as many exhibitors in this kind of competition often make the mistake of showing.

Mr. Graver took 1st with forty varieties of cut flowers shown similarly to *Roses*; Mr. Osborn 1st for twenty ditto. Mr. James Graver, gr. to J. Miles, Esq., was 1st with twenty varieties of outdoor flowers. For a large centre-piece of flowers Miss Sugden was 1st; with a small ditto Mrs. E. C. Roberts took the premier prize, both exhibiting tasteful arrangements.

Three bunches black Grapes.—1st, Mr. Pullen, with *Black Hamburg*; Mr. Osborn 2d, having the same kind. Three bunches white Grapes.—1st, Mr. Reed, with good examples of *Buckland Sweetwater*; Mr. Osborn a very close 2d with the same variety. Mr. Graver had 1st for a green-fleshed Melon, a large handsome fruit of an unnamed sort. Scarlet-fleshed Melon.—1st, Mr. Osborn. Collection of hardy fruit.—1st, Mr. Graver, with a very good lot, the best of which consisted of different varieties of *Cherries* and *Strawberries*. *Strawberries* were shown by a number of exhibitors in size and condition that made it a difficult matter to decide their merits. With three dishes Mr. Graver stood 1st—splendid fruit of *President*, *Sir Harry*, and *Sir J. Paxton*; 2d, Mr. James Graver, with examples little inferior to the 1st. Two dishes.—1st, Mr. Reed—*President* and *Sir J. Paxton*; 2d, Mr. Hunt, gr. to L. Phillips, Esq.

Cottagers' vegetables, hardy fruits, cut flowers, and window plants were present in such quantities and condition as to give unmistakable evidence of what can be grown where the allotment system is managed as it is at Southgate. The plots are about an eighth of an acre each, and a glance at the crops grown on these holdings at once makes it apparent how much they must contribute to the means of those who cultivate them.

Highgate Horticultural: July 1.—This, one of the most flourishing of the numerous societies now existing in the neighbourhood of London, held its summer show at Caen Wood Towers, the prettily situated residence of E. Brooke, Esq. The exhibition was of a similar description to those which for some years have preceded it, and reflects favourably on gardening as carried out in the surrounding district, from whence comes the greater portion of the productions exhibited. As on previous years at Highgate one of the principal features of the show was the number of special prizes given by residents who take an interest in the work the Society has in hand, not alone as relating to the leading department for plants, flowers, and fruit, but equally so for the cottagers' productions, which are here annually forthcoming in quantity and condition that makes it evident the Society has laboured successfully in showing to the members of the working community in the district who have garden plots the solid advantages resultant from the careful cultivation of vegetables, hardy fruits and flowers. On this occasion these filled a large tent, and so far as the more useful department is concerned—the vegetables—the produce lost nothing by comparison with that of the exhibitors who have more scope for their operations.

The President's prize offered for twelve plants, six in flower, and six fine-leaved, was won by Mr. Highgate, gr. to E. Brooke, Esq., with a nice group in which was an unusually fine *Dracæna Shepherdii*, and the now little grown *Erythrina crista-galli* well flowered. For the Treasurer's (Mr. J. Cutbush) prizes for six *Palms* in 11-inch pots, Mr. McKinlay, gr. to C. Wright, Esq., took 1st, with evenly grown examples of these favourite plants. Mrs. Wilkinson's prizes for twelve British Ferns went to Mr. Mobbs, gr. to W. J. Linfold, Esq., Finchley, who had a well-matched dozen; and Mr. Shepherd, gr. to Mrs. Harwood, Highgate. With six *Orchids*, Mr. Birse, gr. to J. H. Lemitte, Esq., Finchley, was 1st, having a nicely bloomed lot containing *Cattleya Mendellii*, *Odontoglossum vexillarium*, and *Cypripedium Stonei*. Mr. Eason, gr. to B. Noakes, Esq., Highgate, was 2d. Six stove and greenhouse plants in flower.—With these Mr. Osborn, gr. to J. N. Mappin, Esq., and Mr. Eason were equal 1st. In Mr. Osborn's collection, amongst others, was a highly coloured *Bougainvillea glabra*, *Kalosanthes coccinea*, and a very well bloomed *Candolleana Heath*. Mr. Eason's best plants were *Clerodendron fallax*, with numerous bright panicles of its scarlet flowers, and *Stephanotis floribunda*.

Fine-foliage plants here, as elsewhere at the present day, were present in much greater numbers than flowering examples; this is no doubt in some measure owing to the prizes now offered in the schedules issued by most horticultural societies. It is desirable to always have enough foliage to tone down and prevent too great a preponderance of colours presented by the flowers; but

if force of numbers has anything to do with the name it would be much nearer the mark to call many of the exhibitions foliage rather than flower shows, as flowering plants, with the exception of such things as Pelargoniums, are coming to be the least conspicuous objects present. For six, Mr. Tubbs, gr. to B. W. Smith, Esq., Hampstead, stood 1st, his best being Kentia Fosteriana, Pandanus Veitchii, and Croton Weissmanni; Mr. Sparkes, gr. to Sir S. H. Waterlow, 2d. With six Ferns, Mr. Osborne took the lead—an even group, which contained well managed plants of Davallia Mooreana, Neopteris australis, and Gymnogramma chrysophylla.

Pelargoniums were well shown, both the Show varieties and Zonals. Mr. Osborn was a good 1st with a very meritorious half dozen of show varieties, well flowered and not too stiffly trained. Mr. Catlin, gr. to Mrs. Lermite, Finchley, was 2d, having smaller plants. In Zonals, Mr. Catlin was to the fore, showing, as he usually does, very large, perfectly bloomed examples, amongst which Lucy Bosworth, pink; and Ellen, salmon, were remarkable. Mr. Shepherd, 2d, also showed a very good lot. Mr. Tubbs had 1st for six Caladiums, large, well managed plants.

Gloxinias were well done. In a close competition Mr. Eason came in 1st, having erect-flowered kinds; and Mr. Eason 2d. Lycopodiums were brought out in condition quite equal to anything present, and with six Mr. Mobbs was 1st, staging large, beautifully grown plants.

Mr. B. S. Williams exhibited, not for competition, an interesting group of new and rare plants, containing Orchids, Palms, Ferns, Pitcher-plants, and others of a miscellaneous character. Mr. J. Cutbush, of the Highgate Nursery, had also a group of mixed plants and cut Roses. Amongst the plants was a collection of some forty varieties of Ivy in pots, including all the best and most distinct kinds in cultivation.

The President's prizes for a collection of fruit went to Mr. Birse, who showed along with others very good Black Hamburg Grapes, Royal George Peaches, Nectarines, and a Melon. Mr. Reeve, gr. to Mrs. Heal, was 2d, very good Stirling Castle Peaches being his best dish. The Society's prize for six varieties of fruit was also won by Mr. Birse, his best dishes being Black Hamburg Grapes, Royal George Peaches, and Violette Hative Nectarines; Mr. Reeve 2d. Three bunches black Grapes.—1st, Mr. Reeve with good bunches of well-coloured fruit; Mr. Birse 2d, smaller but equally well-finished examples. Three bunches of white Grapes.—With these Mr. Sparkes was 1st, having very good Buckland Sweetwater; 2d, Mr. May, gr. to T. Lodge, Esq., with Muscat of Alexandria. Dish of Peaches.—1st, Mr. Reeve, showing very handsome Stirling Castle; Mr. Birse 2d. Mr. Long, gr. to W. J. S. Law, Esq., Southgate, took 1st with three dishes of Strawberries.—President, Sir Harry, and Vicomtesse Héricart de Thury, all large, and finer than usual in colour. Twelve varieties of cut flowers shown in bunches.—1st, Mr. H. Kent, with a very good dozen; 2d, Mr. Osborn.

Mrs. Brooke's special prize, offered to ladies for a centre-piece of cut flowers, was well won by Miss Bodkin with a very nice arrangement, principally composed of white rosebuds, Stephanotis, large white Daisies, Pelargoniums, and a few high-coloured Roses, with plenty of Ferns and grasses. Vegetables were abundant, and in excellent condition. The President's prize, offered for six kinds, was taken by Mr. Osborn with a meritorious lot; Mr. Mobbs 2d. The Society's prize for eight varieties went to Mr. Tong.

There were some sixty classes in which cottagers competed for prizes ranging in sums from £2 to 25, amounting collectively to over £60. This is something more than a mere nominal incentive to those who have either gardens attached to their cottages or allotment holdings, and the promoters have every reason to be satisfied with the competition their liberality brings out. There can be little doubt that, looking at the matter from more points of view than one, the money thus spent does a great amount of good.

Brentwood: July 1.—The Brentwood Horticultural Society held their summer show in the picturesque grounds of W. A. Ogg, Esq., Hampton House. The display was considered on all hands an exceptionally good one, more especially as regards the stove and greenhouse fine-foliage plants, Roses, and fruits. The President, Mr. T. C. Baring, M.P., offered a splendid Silver Cup in competition, in addition to which the Society offered no less than 300 other distinct prizes. The competition for the Cup, and the subsidiary prizes attached, which was offered for the best collection of twelve stove and greenhouse plants, was somewhat spirited. In the result, Mr. Harris, nurseryman, Chelmsford, was the winner, having an effective lot, comprising an equal number of flowering and foliage plants, the best of which consisted of Erica tricolor Holfordiana, Stactis profusa, Aphelexis macrantha purpurea, a well bloomed Stephanotis, with Crotons, Palms, &c., intermixed. Mr. Miller was an admirable 2d, having much larger grown plants, but a too limited number of blooming ones. He staged, however, an excellent plant of Trachelospermum, Erica Candolleana, and a most telling one of the graceful foliaged Casuarina sumatrana. Mr. Ford, gr. to Mr. O. E. Coope, won the 3d prize. Forsythia stove or greenhouse plants Mr. D. McIntosh, gr. to W. Bones, and Mr. Ford, won the awards, the latter having a very fine plant of Kalosanthes Frederick des Bois, which was equal to any shown on this occasion. Mr. McIntosh was a good 2d. Six plants for beauty of foliage comprised many entries, and in the result Mr. O. E. Coope, M.P., was 1st, showing a very fine plant of Anthurium crystallinum amongst others; Mr. T. Harris being 2d. The best Show and Fancy Pelargoniums were those of Mr. McIntosh. Ferns, &c., though abundant enough, call for no especial note. In the cut flower classes for forty-

eight cut Roses Mr. F. Cant and Mr. B. R. Cant, Colchester, were placed respectively 1st and 2d, both having many good blooms of the popular kinds. For twenty-four Roses (amateurs) Mr. E. Mitchell, Corbets Tey, easily won the premier award, and for twelve Roses (amateurs) Mr. J. C. Quennell was placed 1st. For twelve herbaceous plants Messrs. Saltmarsh, Chelmsford, were 1st, and so also were they for twelve bunches of Zonal Pelargoniums, which being all double-flowered, were besides exceptionally good. Table decorations were very tastefully arranged by Mr. Burley, Mr. Soder, and Mr. North, wild flowers entering extensively into the competition. Brighter or neater arranged baskets of flowering plants could not well be, that of Messrs. Saltmarsh being exceptionally rich in Lilies and show Pelargoniums, with Fuchsias, &c., intermixed—Mr. S. Ford and Mr. Wise showing ably also.

Fruit was admirable, especially as regards Strawberries, Melons, and Grapes, indeed we have rarely found a richer flavour in Melons during any season than existed here. The prizes for collections were awarded to Mr. McIntosh, Captain Tuffnell Tyrell, and to Mr. Duck, in the order here given. Mr. Duck also showed splendid black Grapes. Mr. Meadmore was 1st with six dishes and with a single dish of Strawberries.

Vegetables afforded a large and well contested display, showing how well the current rains have aided in the production of these crops; the cottagers also showing equally meritorious groups in their division of the show. The thunderstorms, which are now become so prominent and prolific an element of 1880, reached and greatly marred both the effect, pleasure, and profit of the exhibition. W. E.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JULY 7, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						Hygrometrical Deductions from Glaisher's Tables 6th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure from Average of 60 years.	Dew Point.	Degree of Humidity. Sat = 100.	Average Direction.	
July	In.	In.	°	°	°	°	°	°		In.	
1	29.53	-0.29	77.0	55.0	15.0	59.4	1.8	57.4	93	WSW	0.41
2	29.64	-0.18	68.1	48.3	19.8	56.7	4.4	51.5	81	S.W.	0.19
3	29.71	-0.29	67.5	51.9	15.7	57.5	3.8	53.7	87	S.W.	0.32
4	29.81	-0.05	65.3	53.0	12.3	57.0	4.5	51.6	80	N.W. W.N.W. W. W.S.W.	0.02 0.02 0.00 0.02
5	29.78	+0.17	71.3	46.5	24.8	57.6	3.9	48.3	71	W.S.W.	0.00
6	29.83	+0.02	66.7	50.3	16.4	57.4	4.2	52.8	85	W.S.W.	0.02
7	29.50	-0.31	64.0	52.0	12.0	56.7	5.1	51.9	84	W.N.W. W.S.W.	0.09
Mean	29.71	-0.13	67.5	51.0	16.6	57.5	4.0	52.5	83	S.W. W. W.S.W.	sum 1.05

- July 1.—Dull and showery at times. Occasional thunder till 3 P.M. Fine after 6 P.M. Clear at night.
 2.—Generally dull. Fine at times. Occasional heavy showers till 2 P.M. Cooler.
 3.—Frequently fine, though generally dull. Heavy showers, especially at 4 P.M.
 4.—A dull cold day. Very cloudy. Strong wind. Fine at night.
 5.—A very fine day, partially cloudy. A breeze.
 6.—Fine, though dull and cloudy. Cool. A little rain after 9 P.M. Overcast at night.
 7.—A dull day, frequent rain. Cool. A fine evening. Cloudy at midnight.

LONDON: Barometer.—During the week ending Saturday, July 3, in the vicinity of the metropolis the reading of the barometer at the level of the sea increased from 30.04 inches at the beginning of the week to 30.23 inches by the evening of June 27, decreased to 29.68 inches by noon on July 1, increased to 29.83 inches by the morning of the 2d, and decreased to 29.70 inches by the end of the week. The mean reading for the week at sea level was 29.92 inches, being 0.15 inch above that of the preceding week, and 0.08 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 80° on June 29, and 79° on the 30th, to 67° on July 3; the mean value for the week was 73°. The lowest temperatures of the air observed by night varied from 48° on July 2 to 55° both on June 23 and July 1; the mean value for the week was 52°. The mean daily range of temperature in the week was 21°, the greatest range in the day being 27°, on June 30, and the least 15°, on July 1.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—June 27, 60° 6', -0.7; 28th, 64° 5', +3.2; 29th, 64° 5', +3.2; 30th, 62° 3', +1.1; July 1, 59° 4', -1.8; 2d, 56° 7', -4.4; 3d, 57° 5', -3.8. The mean temperature of the air for the week was 60° 8', being 0.5 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 158° on June 28, and 150° on the 29th and 30th, on the other days of the week the highest readings were between 135° and 145°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 40° on June 27, and 44° on July 2; the mean of the seven lowest readings was 47°.

Wind.—The direction of the wind was S.W., and its strength moderately strong.

The weather during the first four days of the week was fine, bright, and warm, but dull, with heavy showers of rain afterwards. A slight thunderstorm occurred on July 1, and thunder was heard on the 3d.

Rain fell on the last three days of the week; the amount measured was 0.93 inch.

ENGLAND: Temperature.—During the week ending Saturday, July 3, the highest temperatures of the air observed by day were above 78° at London, Nottingham, Leeds, and Sunderland, and below 68° at Plymouth, Bristol, and Liverpool; the general mean from all places was 74°. The lowest temperatures of the air observed by night were below 48° at Truro, Leicester, Wolverhampton, Nottingham, and Hull, and above 53° at Plymouth and Liverpool; the general mean from all stations was 49°. The extreme range of temperature in the week was above 32° at London and Nottingham, and below 15° at Plymouth and Liverpool; the mean range of temperature from all stations was 24°.

The mean of the seven high day temperatures was above 74° at Cambridge, Nottingham, and Leeds, and below 65° at Bristol and Liverpool; the mean value from all places was 70°. The mean of the seven low night temperatures was below 53° at London, Leicester, Wolverhampton, and Nottingham, and above 53° at Plymouth, Norwich, Liverpool, and Sunderland; the mean value from all stations was 54°. The mean daily range of temperature in the week was above 21° at London, Nottingham, and Leeds; and below 11° at Plymouth, Bristol, and Liverpool; the mean daily range of temperature from all places was 16°.

The mean temperature of the air for the week from all stations was 60°, being 4° higher than the value for the corresponding week in 1879. The mean temperature was above 62° at Cambridge, Norwich, Nottingham, Leeds and Sunderland, and below 58° at Bristol, Wolverhampton and Liverpool.

Rain.—The amounts of rain measured varied from 0.93 inch at London and 0.87 inch at Cambridge to one-tenth of an inch at Truro, Brighton, and Sunderland; the average fall over the country was 0.38 inch.

The weather during the first part of the week was fine, bright, and warm, but dull and showery during the latter part.

Thunderstorms were pretty general on July 3.

SCOTLAND: Temperature.—During the week ending Saturday, July 3, the highest temperatures of the air observed by day varied from 74° at Dundee to 67° at both Glasgow and Greenock; the mean value for the week from all places was 70°. The lowest temperatures of the air observed by night varied from 44° at Paisley to 48° at Aberdeen; the mean value from all stations was 47°. The mean range of temperature in the week from all places was 23°.

The mean temperature of the air for the week from all stations was 59°, being 4° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 61° at Leith, and below 57° at Aberdeen.

Rain.—The heaviest fall of rain was at Dundee, 2.15 inches, and the least at Edinburgh, 0.52 inch; the average fall over the country was 1¼ inch.

DUBLIN.—The highest temperature of the air was 67½°, the lowest 49°, the extreme range 18½°, the mean 59½°, and the fall of rain 0.39 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

APPLE: A. B. We could not identify it.

BOOKS: A. J. McIntosh. *The Rose Garden*, by Wm. Paul (Kent & Co.), and *A Book About Roses*, by Canon Hole (Blackwood).—*Constant Reader.* Mr. Paul's book, above mentioned. We do not know of any book on the other subject; you might, however, make inquiries of such publishers as Trübner & Co.

ERRATA.—In the paragraph concerning Bishop Goodenough's herbarium (*ante*, p. 18), "British Ferns" should have been "British Fuci"; and "Dickson's Facsimile of Dried Plants" should have been "Dickson's Fasciculi of Dried Plants."—In the report of the Leeds show, at p. 25, the credit of showing the Victory of Bristol Scarlet-fleshed Melon was inadvertently given to Mr. Cypher, of Cheltenham, instead of to Mr. Carmichael, Newton Court, Bury St. Edmunds.

INSECTS: P. M. T.—The minute insects found on Turnip-leaves are new to us. They arrived shrivelled up, and appear to be the larvæ of some two-winged fly. You do not state in what way they injure the

leaves. *I. O. W.*—*C. P. B.* Your Cineraria leaves are mined by the larvæ of some two-winged fly, which we will endeavour to rear, and mention the result in a future number of the *Gardeners' Chronicle*. Pinch the leaves sharply where they are affected, to crush the larvæ. *I. O. W.*

NAMES OF PLANTS: *A. S.* Utricularia vulgaris.—*H. Chapman.* Philadelphus grandiflorus.—*M. M.* 1, Lysimachia vulgaris, if wild; 2, Colutea arborescens (the Bladder Senna).—*G. Taylor.* 1, Odontoglossum hastilabium; 2, Dendrobium (transparens); 3, appears to be the young state of Polypodium Dianæ; 4, Lastrea glabella; 5, Asplenium adiantum-nigrum; 6, imperfect—possibly young state of some Asplonia.—*Otto.* 1, Selaginella Martensii, male form; 2, S. caulescens; 3, S. Kraussiana; 4, S. uncinata (cæsia); 5, Pteris serrulata cristata; 6, Adiantum trapeziforme; 7, Alocaasia Veitchii; 8, Ficus Parcelsii.—*W. F. R.* 1, Sempervivum arenarium; 2, Antennaria plantaginifolia; 3, Sempervivum arvense; 4, Saxifraga aizoon; 5, S. aizoon var. minor; 6, Phlox subulata.—*C. W. D.* Aquilegia flavescens.—*IV. N.* Bradway. 1, Pereskia Bleo, native of America; 2, Mesembryanthemum edule; 3, M. ficiforme; 4, Haworthia mirabilis; 5, Crassula rosularis, probably—we cannot be certain without flowers; 6, Haworthia cymbiformis.—*L'Allegro.* 1, Ascyranthus Lobbianus; 2, Myrtus Ugni, narrow-leaved form.—*A. Vasey.* 7, Glyceria aquatica; 8, Holcus lanatus; 9, Festuca ovina; 10, Poa nemoralis; 11, Trisetum flavescens; 12, Glyceria fluitans; 13, Phleum pratense; 14, Triticum caninum. Our limit is six; please be more moderate another time.—*D. Storrie.* Celsia Arcturus.

RUBBER PLANTS: *J. Vander Swaelmen.* Ceara Rubber, Manihot Glaziovii; Para Rubber, Hevea brasiliensis; Central American Rubber, Castilleja elastica. *Tropical Agriculture*, by P. L. Simmonds (E. & F. N. Spott), will perhaps give you the information you want.

TABERNÆMONTANA CORONARIA FLORE-PLENO —ERRATUM.—We are informed that Mr. Wm. Basket, gr. to W. T. Palmer, Esq., of Reading, was the grower and exhibitor of the fine specimen of this plant commented upon at p. 808 of our last volume, and not Mr. Lees, as there erroneously stated.

TESTUDINARIA: *J. McL.* Yes, certainly. The plant is probably about to make a new growth.

VINES: *J. C.* From the appearance of the leaves sent, which are very thin and wanting in texture, we believe the Vines are growing very luxuriantly, and in too close and moist an atmosphere; hence the spotting, which is another phase of what is termed "shanking."—*A. B.* In such seasons as the present, cases of injury like yours are most common, and, we believe, are the result of the sun striking with sudden force on houses that have not been properly ventilated early enough in the day. We should think if you continue the same treatment, but give air earlier in the morning, the Vines will not come to much harm.—*G. S.*, and *H. Pritchard.* The cause is to be found in sun-scorching, as detailed above. Give air early in the morning, to dry up the moisture on the leaves before the sun shines with any force.

COMMUNICATIONS RECEIVED.—Groenewegen & Co.—*J. C. & Co.*—*A. C.*—*W. S.*—*G. S.*—*W. M. R.*—*E. G.*—*J. R.*—*C. W.*—*Hurst & Son.*—*A. Looker-on.*—*W. C.*—*L. Lubbers.*—*C. W. T. T.*—*D. G. G. B.*—*A. W.*—*F. T. M.*—*R. McL.*—*W. R.*—*J. H.*—*J. L.*

Markets.

COVENT GARDEN, July 8.

Trade about the same; prices receiving a check. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Arum Lilies, p. doz. 6 0-12 0	Hydrangea, per doz. 12 0-24 0
Bedding Plants, various, per doz. 1 6-2 6	Lilium eximium, doz. 30 0-60 0
Begonias, per doz. 6 0-18 0	Lobelia, per dozen 4 0-8 0
Bouvardias, per doz. 12 0-24 0	Mignonette, per doz. 5 0-9 0
Calceolarias, per doz. 6 0-12 0	Musk, per dozen 2 6-6 0
Herbaceous, doz. 6 0-9 0	Myrtles, per doz. 6 0-12 0
Cyperus, per dozen 4 0-9 0	Nasturtiums, doz. 4 0-6 0
Dracena terminalis 30 0-60 0	Palms in variety, each 2 6-21 0
—viridis, per doz. 12 0-24 0	Pelargoniums, dozen 9 0-24 0
Erica various, per dozen 12 0-30 0	—Ivy-leaved, doz. 4 0-8 0
Euonymus, various, per dozen 6 0-18 0	—Tricolor, doz. 4 0-12 0
Ferns, in var., doz. 4 0-18 0	—scarlet, per doz. 4 0-12 0
Ficus elasticus, each 1 6-7 6	Roses, Hybrid Perpetual, per doz. 18 0-36 0
Foliage Plants, various each 2 0-10 6	—Fairy, per dozen 6 0-10 0
Fuchsias, per dozen 9 0-15 0	Spiraea, per dozen 6 0-18 0
	—palmata, doz. 18 0-30 0
	Stocks, per dozen 4 0-8 0

CUT FLOWERS.—WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Abutilon, 12 blooms 0 4-0 6	Mignonette, 12 bun. 6 0-9 0
Anemone, 12 bun. 3 0-6 0	Pansies, 12 bunches 2 0-6 0
Arum Lilies, per dozen 3 0-6 0	Pelargoniums, 12 sprays 0 6-1 0
Azalea, 12 sprays 0 6-1 0	—zonal, 12 sprays 0 3-0 9
Bouvardias, per bun. 1 0-4 0	Pinks, white, 12 bun. 3 0-9 0
Calceolaria, p. bunch 0 9-1 0	Primula, double, per bunch 1 0-1 6
Carnations, per dozen 1 0-3 0	Ranunculus, p. doz. 4 0-8 0
Cornflower, per doz. 6 0-9 0	Roses (indoor), doz. 1 0-9 0
Eucharis, per doz. 4 0-6 0	—Roses, Fr., doz. 2 0-6 0
Forget-me-not, 12 bunches 3 0-9 0	Spiraea, 12 sprays 0 6-1 0
Gardenias, 12 blms. 2 0-8 0	Stephanotis, 12 spr. 3 0-6 0
Heliotropes, 12 sp. 0 6-1 0	Tropeolum, 12 bun. 1 0-3 0
Lily of the Valley, per bunch 1 6-2 6	Tuberose, 12 doz. 2 0-4 0
	Wallflowers 4 0-9 0

FRUIT.—WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Apricots, per box 1 0-1 6	Lemons, per 100 6 0-10 0
Cherries, per ½-sieve 6 0-12 0	Melons, each 3 6-7 0
Cob Nuts, per lb. 1 0-1 6	Oranges, per 100 6 0-12 0
Currants, black, ½-sieve 7 0-8 0	Peaches, per doz. 6 0-12 0
Gooseberries, green, per ½-sieve 2 3-3 6	Pine-apples, per lb. 2 0-5 0
Grapes, per lb. 1 6-5 0	Raspberries, per lb. 3 0-5 0
	Strawberries, per lb. 0 6-1 0

VEGETABLES.—RETAIL PRICES.

s. d. s. d.	s. d. s. d.
Asparagus, Sprue, per bundle 1 0-1 0	Horse Radish, p. bun. 4 0-1 0
—English, p. 100 5 0-6 0	Lettuces, Cabbage, per doz. 0 6-1 6
Aubergines, per doz. 3 0-4 0	Mint, green, bunch 0 4-1 0
Beans, French, p. lb. 0 9-1 0	Mushrooms, p. basket 1 6-2 0
Beet, per doz. 2 0-4 0	Onions, per bushel 5 0-7 0
Cabbages, per doz. 1 0-2 0	—Spring, per bun. 0 6-1 0
Carrots, new, bunch 0 9-1 0	Parsley, per lb. 0 9-1 0
Cauliflowers, doz. 3 0-6 0	Peas, English, per qt. 2 0-1 0
—English, each 1 0-1 0	Potatoes (new), per lb. 0 2-0 6
Celery, per bundle 1 6-2 0	Radishes, per bun. 0 2-1 0
Chilis, per 100 3 0-1 0	Small salad, pun. 0 4-1 0
Cucumbers, per doz. 8 0-12 0	Spinach, per bushel 2 6-1 0
Endive, per 2 doz. 1 6-3 0	Tomatoes, per dozen 2 0-3 0
Garlic, per lb. 1 0-1 0	Turnips, new, bunch 0 8-1 0
Herbs, per bunch 0 2-0 4	Veget. Marrows, doz. 6 0-1 0

New Potatoes.—Jersey Kidney, 10s. to 12s. per cwt.; Round, 8s. to 10s.; French Round, 9s. to 10s.

SEEDS.

LONDON: July 7.—The business now passing in farm seeds is on a very limited scale. In Clover seeds nothing is being done; holders of American red continue very firm, being influenced by the reports of winter killing in America, while buyers are still indisposed to give the prices asked. There is a steady retail demand for Mustard and Rape seed, but transactions are small. Nothing much is being done in Trifolium as yet, purchasers, as a rule, preferring to wait the arrival of the new crop at market. A little more disposition is evinced to buy both Canary and Hemp seed. Blue Peas continue to find considerable favour. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday there was a very limited supply of home-grown Wheat on sale, and sales progressed slowly at about the prices of Monday's night. There was a fair show of foreign Wheat, and a moderate retail business was transacted at the prices of the Monday previous. Barley was in short supply, and the business done was at previous rates. Indian corn was in moderate request, and no change took place in prices compared with those of the preceding Monday. For Oats there was a fair demand, and a slight advance in prices took place. Beans met with a slow sale at barely late rates, but Peas were steady in price. The flour trade was dull, and former prices were with difficulty supported.—Wednesday's grain trade was somewhat steadier than above noted. For Wheat prices were slightly more in favour of sellers. Barley changed hands quietly on former terms. Malt was dull, but unchanged. Oats were in moderate request, and sound corn was firm. Maize was fully as dear. Beans, Peas, and flour were quiet, but steady.—Average prices of corn for the week ending July 3.—Wheat, 44s. 7d.; Barley, 31s. 11d.; Oats, 26s. 2d. For the corresponding period last year:—Wheat, 42s. 4d.; Barley, 24s. 6d.; Oats, 24s. 2d.

HAY.

Tuesday's Whitechapel Market report states that good fodder was taken off freely at the undernoted rates. Supplies were larger. Prime Clover, 100s. to 125s.; inferior, 70s. to 90s.; prime meadow hay, 90s. to 105s.; inferior, 30s. to 85s.; and straw, 25s. to 38s. per load.—On Thursday a moderate supply was on offer. Trade was good for best qualities, and prices were as follows:—Prime Clover, 100s. to 125s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 105s.; inferior, 30s. to 70s.; and straw, 30s. to 39s. per load.—Cumberland Market quotations:—Superior old meadow hay, 100s. to 110s.; inferior, 40s. to 78s.; new hay, 50s. to 72s.; superior old Clover, 120s. to 128s.; inferior, 90s. to 110s.; and straw, 36s. to 40s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that there was a large supply of Potatoes on sale, and the trade dull at the following quotations:—Champions, 80s., and Victorias, 100s. per ton; New Lisbon, 7s. per bushel; Malta new, 7s. per bushel; Jersey kidneys, 11s. to 12s. per cwt.; Cherbourg round, 7s. 6d. per cwt.; ditto, kidneys, 11s. per cwt.—Last week's imports included 1999 boxes from Barleux, 2378 Cherbourg, 1767 packages from Jersey, 31 barrels Boulogne, 202 baskets Rotterdam, and 94 packages Lisbon.

COALS.

The following are the prices current at market during the week:—East Wylam, 14s. 6d.; Walls End—Hetton, 14s. 6d. to 14s. 9d.; Hetton Lyons, 13s. to 13s. 3d.; Lambton, 14s.; Wear, 13s.; Tunstall, 13s.; Vanes, 13s. to 13s. 3d.; Chilton Tees, 14s.; Hawthorns, 13s. 3d.; South Hetton, 14s. 6d.; Radford Navigation, 15s. 9d.

Government Stock.—The closing price of Consols on Monday was 98½ to 98¾, for both delivery and the account. Tuesday's figures were, for delivery, 98½ to 98¾, and 98½ to 98¾ for the account. On Wednesday business in Consols for delivery closed at 98½ to 98¾, and 98½ to 98¾ for the account. The final quotations of Thursday were, for delivery, 98½ to 98¾, and 98½ to 98¾ for the account.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,
4 bushels, 1s.; 120 for 20s.;
Truck, 25s.
BEST BROWN FIBROUS PEAT,
5s. per Sack, 5 for 22s. 6d.
BLACK FIBROUS PEAT 4s. 6d. per Sack, 5 for 20s. Sacks
COARSE SILVER SAND, 1s. 6d. per Bushel. 14d. each.
YELLOW FIBROUS LOAM, splendid LEAF-MOULD and
PEAT-MOULD, 1s. per bushel. **TOBACCO CLOTH**
and **PAPER,** highly effective—Cloth, 8d. per lb.; Paper,
7d.; Roll Paper, best quality, 1s. Write for Price List.
W. HERBERT AND CO., Broad Street Mews, Broad Street,
City, E.C. (turning opposite Metropolitan Railway Station).

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best
quality for Orchids, Stove Plants, &c., 6s. 6d. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas,
Heaths, American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough,
S. W. R., by the truckload. Sample bag, 4s.; 5 bags, 20s.;
10 bags, 36s. Bags, 4d. each.
Fresh SPAGNUM, 10s. 6d. per bag.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE at
Reduced Prices, as supplied to Messrs. J. Carter &
Co., High Holborn, W.C.; at the International Agricultural
Exhibition, Kilmarnock; and all the Principal Nurseries and
Seedsmen in England. In 4 bushel bags at 1s., bags included;
30 bags, bags included, 20s.; or truckload of about 250 bushels,
25s. (truckload free on rail)—**J. STEVENSON AND CO.,**
Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE,
as supplied to all the Royal Gardens of Europe, useful at
all seasons, invaluable for Potting, Forcing, Ferneries, Straw-
berries, Bedding-out Plants, &c., Destroys all Slugs and insects.
Bags (about 4-bushel), per bag 1s., 15 bags 12s., 30 bags 20s. (all
bags included); Van-load at Works, 4s.; ditto delivered within
5 miles, 10s.; Truck-load (about 250 bushels), free on rail, 25s.
Terms cash with order.

CHUBB, ROUND AND CO.,
Fibre Works, Westlerry Road, Milwall, London, E.

COCOA-NUT FIBRE REFUSE, as
supplied to the Royal Horticultural Society.—Four-bushel
bag (bag included), 1s.; 30 bags (bags included), 20s.; truck
free to rail, 25s.

T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works,
24 and 25, Redman's Row, Mile End Road, London, E.

FIBRE REFUSE, for Gardens, Potting, &c.
4 bushels for 1s., bag included. Orders by post punctually
attended to.—**G. HARDING,** 23, Stepney Green, E.

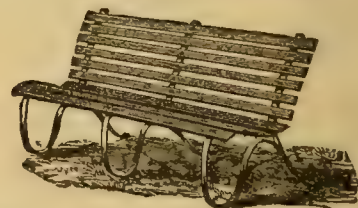
Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both destroys
Daisies, Plantains, Rib-grass, &c., and invigorates the
grass. Testimonials and instructions on application. 35s. per
cwt.; 56 lb. kegs, 10s.; 28 lb. tins, 10s.
Proprietor, **W. D. BARBOUR,** 3, Park Row, Leeds.

GISHURST COMPOUND.—
Used by many of the leading Gardeners since 1859,
against Red Spider, Mildew, Thrips, Greenfly, and other Blight,
in solutions of from 1 to 2 ounces to the gallon of soft water, and
of from 4 to 16 ounces as a winter dressing for Vines and Fruit
Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen in Boxes, 1s. 3d., and 10s. 6d.
Wholesale by **PRICE'S PATENT CANDLE COMPANY**
(Limited).

THOMAS' GARDEN FURNITURE for 1880.

GARDEN SEATS. No. 366.



4 ft. 22s. 6d. 5 ft. 24s. 6d. 6 ft. 27s. 6d. 7 ft. 30s. 8 ft. long. 32s. each.
Under 6 ft., with 2 iron supports; 6 ft. and above, with 3 ditto.

FOLDING IRON TABLES.

No. 346.



Japanned Oak.
22-inch, 10s. 6d. each.
25-inch, 12s. 6d. "

CHAIR. No. 350.



Dark Green .. price 7s. 6d.
Ironwork Green, Laths
Stained and Var-
nished 8s. 0d.

Orders can be executed on receipt.

LAWN MOWERS of any make supplied at 15 per
Cent. discount for Cash with order.

J. J. THOMAS & CO.,

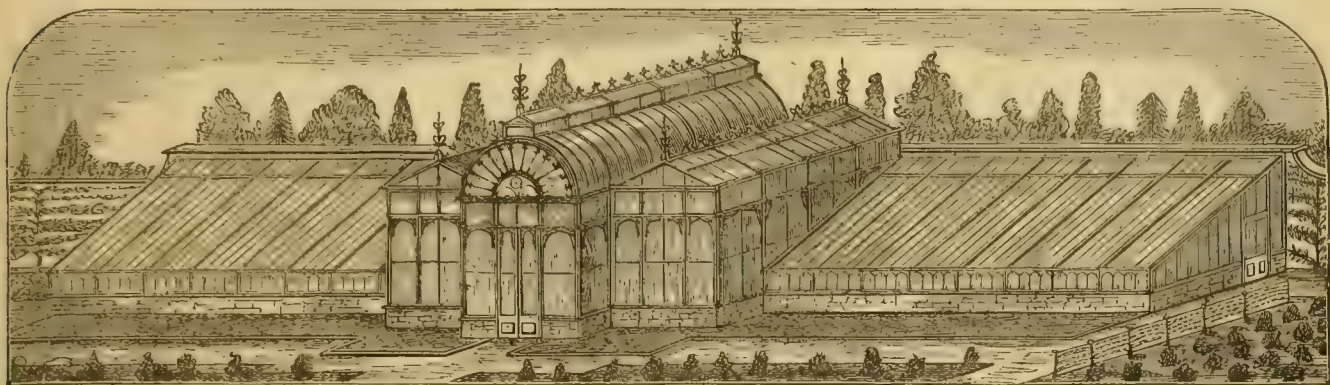
87, QUEEN VICTORIA STREET, E.C.

Works: 285 & 362, Edgware Road, London, W.

5 per Cent. discount allowed for Cash with order off Garden
Seats and Tables.

HENRY ORMSON,

 HORTICULTURAL BUILDER AND HOT-WATER APPARATUS ENGINEER,
 STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.



THE BEST BUILT HOTHOUSES AND CONSERVATORIES.

Surveys made and Gentlemen waited on in any part of the Country. Catalogues, Plans, and Estimates supplied gratis on application.
 UNSURPASSED BOILERS AND HEATING APPARATUS.



PRICES:

8-inch ..	£2 2 0
10-inch ..	3 3 0
13-inch ..	4 4 0
15-inch ..	5 5 0
18-inch ..	6 6 0

Awarded the First Prize at the Sydney Exhibition.

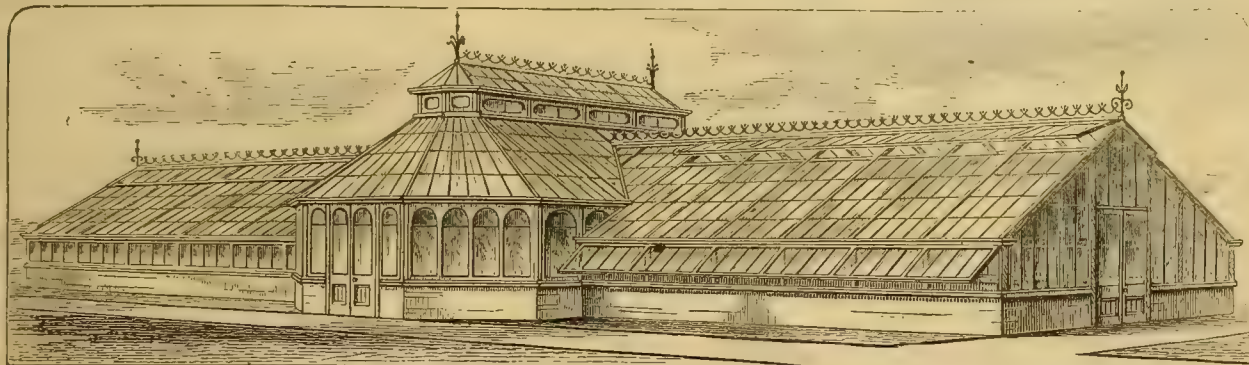
"THE COVENTRY" LAWN MOWER

(REGISTERED). MANUFACTURED BY

NETTLEFOLD & SONS,
 54, HIGH HOLBORN, LONDON, W.C.

The attention of the Public is invited to "THE COVENTRY" LAWN MOWER, which can be confidently recommended as the best and cheapest in the market; for lightness and ease in working it cannot be surpassed. It has all the improvements which have of late been introduced into this class of Machine, either in England or America. It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind. It is cheaper than any other Machine of its class before the public. It is made, as its name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron. These Machines can also be SUPPLIED WITH ROLLERS at same price, and with Grass Boxes at a small extra cost.

TWO GOLD MEDALS
 Awarded to us by
 Royal Horticultural Society.



The Grand Show at Preston,
 July, 1878.
 Out of Fourteen Competitors.

Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very best class of buildings at an extremely low price. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions. Our buildings are constructed so as to combine great strength, simplicity, and durability, with extreme lightness, and being made of the very best materials, will, with ordinary care, last

a lifetime. The ventilators at top and bottom open the whole length with one handle to each series. The glass used is 21-oz. British sheet, and the paint the best genuine white lead and oil. HEATING APPARATUS, with thoroughly reliable Boilers supplied and fixed in the most practical and efficient manner, and guaranteed to work economically and answer its purpose in all seasons. We devote special personal attention to this branch of our business, and have never had a failure.

Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.

R. HALLIDAY & CO., Royal Horticultural Works, MIDDLETON, MANCHESTER.



ART WITH ECONOMY APPLIED TO CONSERVATORIES

"ART WITH ECONOMY,"

Applied to Conservatories and Greenhouses.
 With Illustrations, Prices, &c.

Part I., now ready. Post-free, twelve stamps.

CHEAP ART-SUMMERHOUSES.
 Illustrations and Prices Gratis.

T. H. P. DENNIS & CO.,
 MANSION HOUSE BUILDINGS, LONDON, E.C.
 WORKS: CHELMSFORD.



CHEAP HORTICULTURAL BUILDINGS.

VINERIES, ORCHARD-HOUSES, GREENHOUSES, CONSERVATORIES, PORTABLE BOXES, and every description of HORTICULTURAL STRUCTURES, erected in any part of the country, at prices bearing comparison with any House in the Trade, combined with simplicity, durability, and first-class quality of materials.

J. MILLS.

Horticultural and Steam Joinery Works,
Broadwall, Stamford Street, Blackfriars, London, S.E.

By Royal Letters Patent.

RITCHIE'S GAS LIGHTING
AND HEATING APPARATUS.

No Flue required. Specially adapted for Drying Newly-built Houses. Silver Medal awarded in 1878 at Wolverhampton Exhibition. The deleterious and unpleasant vapours arising from the burning of ordinary coal gas are prevented from escaping, and are made to circulate within the Apparatus or Stove in such a way that they become thoroughly condensed, and are carried off in the form of a liquid, in which will be found the sulphur and other poisons which are drawn from and would in the ordinary way be left in and mixed with the surrounding atmosphere; consequently health is not prejudicially affected. Works of Art, Plants, Pictures, Books, Furniture, &c., are not injured, and the atmosphere is rendered uncontaminated and perfectly healthy.

Prices from 50s. to £10 10s.

Full particulars and testimonials forwarded on application to RITCHIE AND CO., 23, St. Swithin's Lane, London, E.C.

JONES & ATTWOOD.

ENGINEERS AND IRONFOUNDERS,
STOURBRIDGE.

JONES'S
IMPROVED
EXPANSION
JOINT.



THE
BEST
HOT-WATER
JOINT.

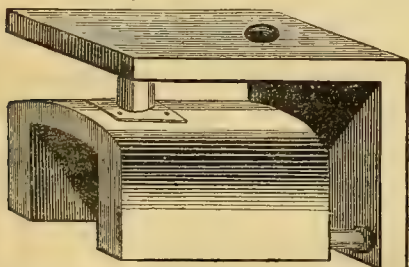
Medal Awarded Horticultural Show, Aston, 1875.

SIMPLE,
DURABLE,
NEAT,
CHEAP.



Specially adapted
for
CHURCHES,
SCHOOLS,
MANSIONS,
PUBLIC
BUILDINGS, &c.

Illustrated CIRCULAR and Price LIST; also Estimates for Heating with the most improved BOILERS, EXPANSION JOINT PIPES, or COILS, on application.

JONES'S PATENT "DOUBLE L"
SADDLE BOILER.

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	7 0 0
20 "	18 "	24 "	400	8 0 0
20 "	18 "	30 "	500	9 0 0
24 "	24 "	24 "	700	12 0 0
24 "	24 "	30 "	850	14 0 0
24 "	24 "	36 "	1000	16 0 0
24 "	24 "	48 "	1400	20 0 0
28 "	28 "	60 "	1800	25 0 0

Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Balham Hill, S.W.,
May 29, 1875.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS OF HOT-WATER PIPES AND CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for
HOT-WATER PIPES AND CONNECTIONS.

4-inch Pipes, 1s. 8d. per yard. Other sizes equally low.
SILVESTER & SAINSBURY, Castle Hill Foundry,
Engineering and Boiler Works, Newcastle, Staffordshire.

Established 150 years.
WINDOW GLASS, SHEET LEAD, PAINTS, &c.
THOMAS MILLINGTON AND CO.,
IMPORTERS and MANUFACTURERS, have a large quantity
of GLASS in various sizes and thicknesses:—

Inches.	Inches.	Inches.
15-oz., 6 x 4 to 7 1/2 x 5 1/2, 9s., 10s., 11s., 12s.		
8 x 6 to 10 x 8, 9s. 6d., 10s. 6d., 11s. 6d., 12s. 6d.		
10 1/2 x 8 to 14 x 10, 10s., 11s., 12s., 13s., 14s.		
15 x 10 to 18 x 12, 11s., 12s., 13s., 14s., 15s.		
20 x 12 to 24 x 16, 11s. 6d., 12s. 6d., 13s. 6d., 14s. 6d., 15s. 6d.		
20 x 17 to 24 x 18, 12s., 13s., 14s., 15s., 16s.		

21-oz., Orchard House, 20 x 12, 20 x 15, 16s., 17s. 3d.,
20 x 13, 20 x 16, 18s. 3d., 20s.
20 x 14, 20 x 17, 18s. 3d., 20s.

15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case.
21-oz., for Cutting up, 34s., 41s., 50s., 66s. per 200 feet case.
LINSEED OIL, PUTTY, WHITE LEAD, OILS, and
TURPENTINE, are very low in price at present.

Lists on application.

REMOVED to 43, Commercial Street, London, E.

HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,
Carriage Paid to any Railway Station in England.

Price Lists on application.

ALFRED SYER, Glass, Lead, Zinc, Oil and Colour
Merchant, 6 and 8, Pentonville Road, London, N.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and quantities of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large Stock in London of 20-in. by 12-in.,
20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. and 21-oz.

KOPF'S EXTRACT OF MEAT
COMPANY, LIMITED, 5, AGAR STREET, CHARING
CROSS, LONDON, W.C.

First Prize Gold Medal obtained at the Sydney International
Exhibition, 1879, for "Extracts of Meat and nutritious pre-
parations generally."

KOPF'S EXTRACT OF BEEF.—
The purest form of beef tea; 8 to 10 per cent. more
nutritious than any other.KOPF'S ESSENCE OF BEEF.—
Especially adapted for invalids who can take no
other form of nourishment.KOPF'S BEEF LOZENGES.—
Invaluable to those who have to fast long.KOPF'S CONSOLIDATED SOUPS,
comprising Erbswurst or Pea Soup, Mulligatawny,
Green Pea, Scotch Broth, Hotch Potch, &c.KOPF'S PREPARED MARROW,
from Best Beef Marrow Bones.KOPF'S COMPRESSED VEGETABLES.
Preserving the properties of Fresh Vegetables.KOPF'S CONSOLIDATED TEA and
COFFEE. With and without Milk and Sugar.

The above Preparations are patronised by the Nobility, the
Army, Navy, Sportsmen, Yachtsmen, Tourists, &c.

KOPF'S EXTRACT OF MEAT
COMPANY, LIMITED, 5, AGAR STREET, CHARING
CROSS, LONDON, W.C.PAINT.—Large quantity for sale, specially
prepared for Horticultural Buildings, Greenhouses, &c.,
2 1/2d per lb.—all colours. Improved Zinc White Paint, 4 1/2d per
lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

"EUREKA" FUMIGATORS
are the best and cheapest for all
purposes. May be had from all Seedsmen,
&c., 2s., 2s. 6d., 4s. 3d., 6s. 6d. each,
package extra. TOBACCO CLOTH, rod
per pound. SEED DRILLS, CAP
GLASSES, SYRINGES, &c. LISTS free.
SYERS, Bowdon, Cheshire.

Under the Patronage of the Queen.

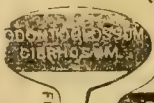
J. SMITH'S IMPERISHABLE
STRATFORD LABELS.

The above Labels are made of a White Metal, with RAISED
BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the
palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

THE "ACME" LABELS
(REGISTERED).

Highly commended
by all the Gardening
Papers.
IMPERISHABLE.
Specimens and Price List on application.
SOLE MANUFACTURERS,
STEVENS & PINCHES,
48, LEICESTER SQUARE, W.C., and 47, OXENDON
STREET, S.W.

GARDEN STAKES, LABELS, VIRGIN
CORK, MATS, RAFFIA, &c. None cheaper. Prices of
WATSON AND SCULL, 90, Lower Thames St., London, E.C.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS

of best quality are re-

quested to send their orders

to

J. MATTHEWS, Royal

Pottery, Weston-super-Mare.

Price List on application. LONG TOM.

"THE GARDEN" POTTERY.—

"Your pots are the best."—Mr. PAYNE, Gr. to the

Rt. Hon. and Rt. Rev. the Lord Bishop of Bath and Wells.

Works:—Chilcompton and Evercreech Junction Stations.

Address:—T. J. HICKES, Shepton Mallet.

Geometrical Mosaic and Encaustic

TILE PAVEMENTS, for Conservatories,
Verandahs, Entrance Halls, &c. Enamelled and De-
corated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also
Patent Indestructible Terra-cotta Plant Markers. Patterns and
Prices sent post-free on application.

MAW AND CO., Benthall Works, Brosely, Shropshire.

Roshers Garden Edging Tiles.

THE ABOVE and many other PATTERNS

are made in materials of great durability. The

plainer sorts are specially

suited for KITCHEN

GARDENS, as they har-

bour no Slugs or Insects,

take up little room, and

once put down, incur no

further labour or expense,

as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone,

very durable and of superior finish, and in great variety of design.

F. ROSHER AND CO., Manufacturers, Upper Ground

Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.;

Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES,"

PLANT COVERS, and PROPAGATING BOXES; also

for FOXLEY'S PATENT BEADED GARDEN WALL

BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES,

for Conservatories, Halls, Corridors, Balconies, &c.,

from 3s. per square yard upwards. Pattern Sheet of Plain or

more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies,

Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable

Paving of great durability, Wall Copings, Drain Pipes and Tiles

of all kinds. Roofing Tiles in great variety. Slates, Cement, &c.

F. ROSHER AND CO., Brick and Tile Merchants.

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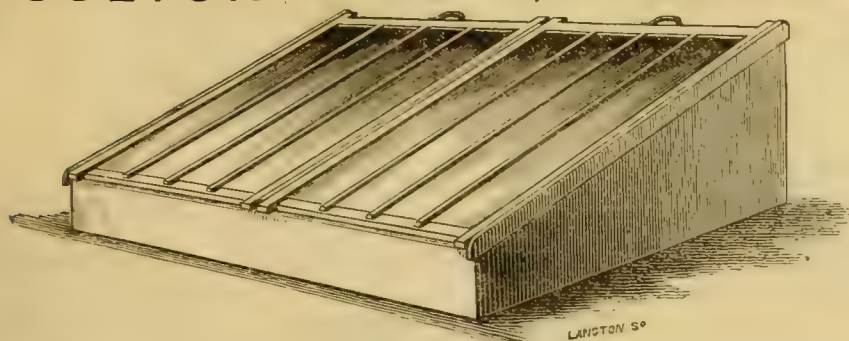
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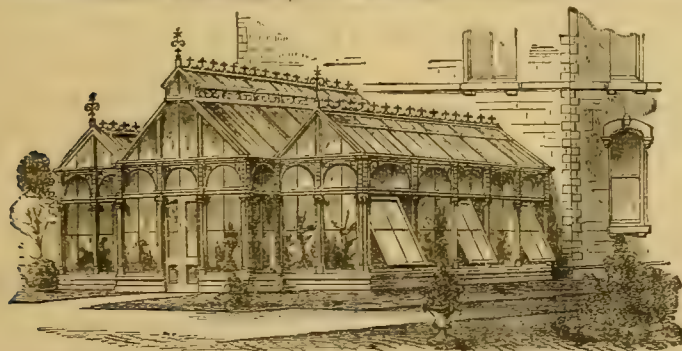
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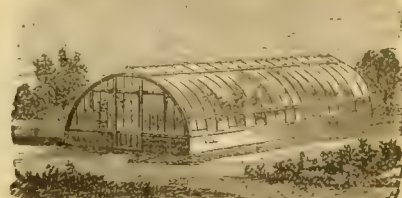
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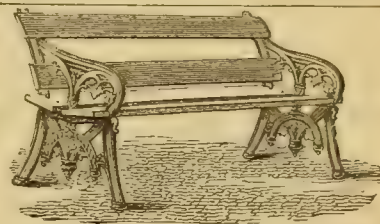
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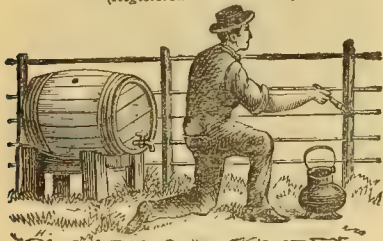
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GARDENER (SECOND), where three or more are kept.—Age 22.—Please state particulars to **G. RUFFLE**, Crown Close, Alton, Hants.

GARDENER (SECOND), where four or more are kept.—Age 22; eighteen months' good character.—**W. R.**, 2, Alfred Terrace, Lower Sydenham, S.E.

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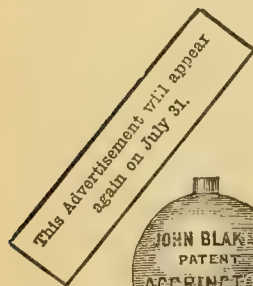
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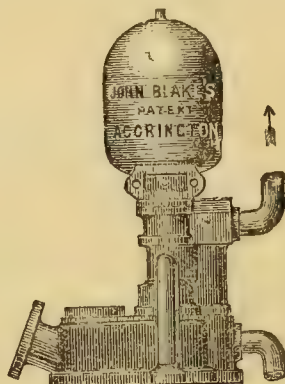
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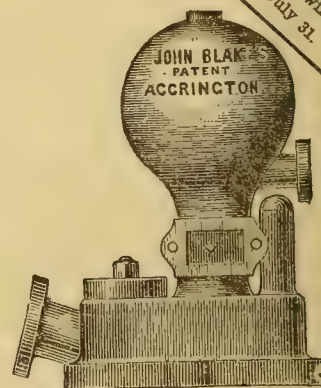
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Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.

TESTIMONIALS.

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March 1, 1880.*—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of a tower 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

From Col. TREMAYNE, *Perran-ar-Worthel, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

From W. SCARTH, Esq., *Agent to His Grace the Duke of Cleveland.*—"Raby Castle, Darlington, July 16, 1878.—The Hydraulic Ram you supplied to his Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised."

From JOHN TAYLOR, Esq., *The Rocks, Bath, August 22, 1878.*—"The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 294 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height."

From Major STARKIE, *Lovely Hall, Blackburn, May 13, 1878.*—"Sir, I have great pleasure in testifying to the good qualities possessed by the Ram you erected here (last year). It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December 21, 1868.*—"Sir.—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."



This view represents one Ram worked by water from a spring, and forcing it up to a Farm, Cattle Troughs, Kitchen Garden, and Mansion, all at different elevations, the highest being 444 feet, and to a distance of 2008 yards.

From the Right Hon. T. SOTHERON-ESTCOURT, *Estcourt Park, Gloucestershire, September 6, 1875.*—"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful." (The delivery pipe in the above case is 4200 feet long, with 120 feet rise.)

Deane Water, Wilmslow, November 27, 1873.—"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September 30, 1871.*—"Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet."

TESTIMONIALS.

From Capt. GANDY, *Castle Bank, Appleby, February 11, 1880.*—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

From JOHN WALKER, Esq., *Mount St. John, Thirsk, February 13, 1880.*—"In reply to your enquiry I am glad to inform you that the Hydraulic Ram you fixed here in May last has fully answered my expectations, and your promises as to the quantity of water it would force to a height of 185 feet. I consider it a very good machine, and superior to one I had in use previously."

From Captain TOWNSHEND, *Wincham, February 10, 1877.*—"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 900 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 342.—VOL. XIV. { NEW SERIES. }

SATURDAY, JULY 17, 1880.

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{ Post-office as a Newspaper. } POST FREE, 5d.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—
1879.—October 11. 1879.—Dec. 13. 1880.—April 3.
.. .. 25. 1880.—Jan. 10. 24. May 8, 29.
Nov. 8. Feb. 7, 21. June 19.
.. 15, 20. Mar. 20, 27. July 10.
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South Kensington, S.W.

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THE WIRRAL ROSE SOCIETY
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J. SMITH, Woodhey, Rock Ferry, Cheshire.

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WANTED—CAMELLIA STOCKS, fit for immediate working; also LAPAGERIA ROSEA and ALBA—strong plants of each, for planting out.
E. COOLING, Mile Ash Nurseries, Derby.

To Farmers, Market Gardeners, and Others.

WANTED, FRUIT of all kinds. Prompt returns and moderate Commission.—WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

SUTTON'S HOME-GROWN SEEDS, &c.
PARIS, 1878.

In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (a superior distinction accorded to no other English Exhibitor of Seeds) was conferred on our Managing Partner, Mr. M. H. SUTTON, by the French Government.

SUTTON AND SONS, Reading, London and Paris.

FRUITING PLANTS
of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery,
Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

To the Trade.

ENGLISH SOWING RAPE SEED and WHITE MUSTARD.

H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application.

Seed Growing Establishment, Wisbech.

MYATT'S EARLY OFFENHAM CABBAGE.—The earliest and best Cabbage in cultivation in one ounce packets, post paid, 1s. Apply to F. AND C. MYATT, Offenham, Evesham.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vines.

CATALOGUES free. The Trade supplied.

Primulas—Primulas—Primulas.

Eleventh Year of Distribution.

WILLIAMS' superb strain, 1s. 6d. per dozen
10s. per 100; package and carriage free.
CINERARIAS, choicest assortment, same size and price. The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

To the Trade.

DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to KELWAY AND SON, Langport, Somerset.

Gardenias.

MESSRS. JOHN STANDISH AND CO.
have a magnificent stock of the above plants to offer. They may be had in all sizes from 2s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.

Royal Nurseries, Ascot, Berks.

NEW PALMS, CAMELLIAS, and AZALEAS.
JACQUES COENE, St. Pierre-Alost Nursery, Ghent.

THE BEST of the NEW GERANIUMS of 1879, in cuttings, very cheap. Denny's, Catlin's, Postans', and Pearson's Singles, and Lemoine's Doubles, thirty of the very best for 10s.; the same in plants for £1; fifty older varieties, but all new recently, for 10s.; same in cuttings for 4s.; all post-free. CATALOGUES on application.

RICHARD PANNETT, Nurseryman, Chailey, Sussex.

JULES DE COCK, Nurseries, Ghent,
Belgium.—Specialities of AZALEAS INDICA and MOLLIS, CAMELLIAS, DEUTZIA GRACILIS, and SPIRÆA JAPONICA, for forcing.

SEEDLING CINERARIAS.—Saved from the choicest varieties, in a collection of over 6000 plants. Strong healthy plants, 1s. 6d. per dozen, 7s. 6d. per 100, carriage paid.

G. BRAID, Nurseryman, Winchmore Hill, London.

PRIMULAS and CINERARIAS.—Dobson's strain, extra strong, in 60-pots, clean and healthy, fit for immediate repotting, 2s. per dozen; out of pots, 1s. 6d. per dozen. Package free. Cash with order.

EDWARD HALL, Florist, Methley Park, near Leeds.

PALMS.—Good Plants of the following, suitable for table plants, are offered as under:—SEAPORTIA ELEGANS, 3 to 5 leaves, 12s. to 18s. per doz. CORYPHIA AUSTRALIS, 4 to 6 leaves, 15s. to 20s. per doz. CHAMÆROPS EXCELSA, 4 to 6 leaves, 12s. to 20s. per doz. HUMMILIS, 4 to 6 leaves, 12s. to 18s. per doz.

RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

Cabbage Plants.—Cabbage Plants.

W. VIRGO can now supply at reduced prices extra strong well-rooted plants of the following:—Robinson's Champion Drumhead, Early Ox-Heart, Early Enfield Market, Wheeler's Imperial and Drumhead Savoy, all at 3s. per 1000; also BROCCOLI, CAULIFLOWER, BRUSSELS SPROUTS, WINTER KALES, GREEN CURLED SAVOY and EARLY CABBAGE—the above in any quantity at 4s. per 1000, made up of different kinds. Cash or reference from unknown correspondents. Delivered free on rail, package included. N.B. Samples if required.

Womersley Nurseries, near Guildford, Surrey.

SALES BY AUCTION.

Oncidium crispum, O. Rogersi, &c., received direct.
MR. J. C. STEVENS will SELL by
AUCTION, at his Great Rooms, 38, King Street,
Covent Garden, W.C., on THURSDAY, July 22, at half-past
12 o'clock precisely, eight cases (received direct) of ON-
CIDIUM CRISPUM, in splendid masses; O. ROGERSI,
fine plants; CATTLEYAS, &c.; also a case from India of
ARIDIS QUINQUEVULNERUM, VANDA LAMEL-
LATA, DENDROBES, &c.
 May be viewed the morning of Sale, and Catalogues had.

Phalænopsis amabilis.
MR. J. C. STEVENS will SELL by
AUCTION, at his Great Rooms, 38, King Street,
Covent Garden, W.C., on THURSDAY, July 22, at half-
past 12 o'clock precisely, the entire importation of PHALÆ-
NOPSIS AMABILIS in a semi-established condition, grand
plants with leaves measuring from 11 to 15 inches. Some of the
plants have had as many as fifteen flower-spikes, and this is con-
sidered to be the finest importation ever offered; also about
400 lots of good Established ORCHIDS.
 May be viewed the morning of Sale, and Catalogues had.

Cattleya Dowiana.
MR. J. C. STEVENS has been instructed
by Mr. F. Sander to SELL by AUCTION, at his
Great Rooms, 38, King Street, Covent Garden, W.C., on
THURSDAY, July 22, at half-past 12 o'clock precisely, a
splendid importation of CATTLEYA DOWIANA, just
arrived per ss. "Nile." This is undoubtedly the most beau-
tiful Cattleya extant. Also large quantities of the splendid
MILTANIA RUSSELLIANA, LÆLIA PURPURATA,
WARSCWICZELLA DISCOLOR, ONCIDIUM LANCE-
ANUM, TRICHOPIA SUAVIS, ODONTOGLOSSUM
PULCHELLUM MAJUS, and various other importations.
 May be viewed the morning of Sale, and Catalogues had.

Established and Imported Orchids.
MR. J. C. STEVENS will SELL by
AUCTION, at his Great Rooms, 38, King Street,
Covent Garden, W.C., on THURSDAY, July 22, at half-
past 12 o'clock precisely, ESTABLISHED ORCHIDS, consisting of
fine plants of Odontoglossum vexillarium, triumphans, crispum,
luteo-purpureum, &c.; also a Consignment of Six Cases of
ORCHIDS received direct from Singapore, and to be sold
without reserve.
 May be viewed the morning of Sale, and Catalogues had.

Importation from Brazil.
MR. J. C. STEVENS has received instruc-
tions from the New Plant and Bulb Company to offer for
SALE by AUCTION, at his Great Rooms, 38, King Street,
Covens Garden, W.C., on THURSDAY, July 22, at half-past 12
o'clock precisely, a splendid importation of SOPHRONITES
GRANDIFLORA, ONCIDIUM FORBESII, LÆLIA CIN-
NABARINA, ONCIDIUM DASYTILE, PROMENEA
CITRINA, BURLINGTONIA FRAGRANS, SOPHRO-
NITES VIOLACEA, S. CERNUA, STANHOPEA
GRANDIFLORA, DENDROBIUM DALHOUSIANUM,
D. FIRMOSUM, D. FIMBRIATUM, OCULATUM,
HUNTLEYA VELATA, ODONTOGLOSSUM CORONA-
RIUM, &c.
 May be viewed the morning of Sale, and Catalogues had.

To Nurserymen, Florists, and Others.
HIGHLY IMPORTANT SALE OF THE LEASE AND GOOD-
WILL OF THE OLD-ESTABLISHED BUSINESS
carried on at 46, Harborne Road, Edgbaston, near Birmingham,
and called the "Birmingham Nursery;" together with the
splendid collection of STOVE and GREENHOUSE
PLANTS. By order of Messrs. Felton & Sons, who are
giving up the business.

MR. JOHN WARD has received instructions
to offer for SALE by AUCTION as a going concern
(unless previously disposed of by private contract), at the Grand
Hotel, Colmore Row, Birmingham, on THURSDAY, July 22,
at 6 o'clock in the evening, in one lot, and subject to conditions
then to be read, the valuable LEASE, GOODWILL, and
STOCK-IN-TRADE of the above first-class Business. The
Premises consist of a substantially-built Residence, containing
Dining, Drawing, and Breakfast-rooms, Two Kitchens, Five
Good Bedrooms, and Two Dressing-rooms, and the usual Out-
offices, and a Small Three-roomed Cottage adjoining same.
The Glass, which covers an area of about 25,000 superficial feet,
consists of Sixteen Houses, varying from 90 to 60 feet in length,
together with Two Large Potting-sheds, Office and Seed-
rooms fitted with Mahogany Counters, Nests of Drawers, and
Iron Safe, &c.; Six Pits, each 70 feet long; and Fourteen Two-
light Frames. The whole of the Houses and some of the Pits
are heated with Hot Water by Four Boilers constructed
on most approved principles for the Propagating and
Growing of Stove and Greenhouse Plants and Flowers.
The Stock, which is a most extensive one, comprises all the
newest Stove and Greenhouse Plants in every variety. The
Property, which occupies an area of over an acre, is leasehold
for a term of forty years unexpired, at the absurdly low ground
rent of £27 per annum. Immediate possession can be had on
completion of the purchase.

N.B.—The Auctioneer begs to call the special attention of
Exotic Nurserymen and Florists to the Sale of the above
Business, which is situated in the very heart of Edgbaston, and
has a first-class connection, which is capable of great extension.
The Premises and Stock may be viewed at any time prior to
Sale. For further particulars apply to B. T. CARTWRIGHT,
Esq., Solicitor, 59, Colmore Row; to T. E. SPENCER, Esq.,
Solicitor, 14, Bennett's Hill; or to the Auctioneer, 84, Colmore
Row, all of Birmingham.

Wood Green, Tottenham.
Re James Norris, deceased.—By order of the Mortgagee.
FREEHOLD PROPERTY, consisting of Seedsmen's Shop,
Premises, and Stores, situate at the corner of Station Road
and Alexandra Terrace, and let to an old tenant at £85 per
annum.

MESSRS. GREEN AND SON will SELL
by AUCTION, at the Mart, on FRIDAY, July 30, at
1 for 2 o'clock, a substantial block of FREEHOLD PRO-
PERTY, with Concrete Flooring, consisting of a Seedsmen's
Shop, Premises, and Stores, having a total frontage of about
112 feet, and within five minutes' walk of Green Lanes Railway
Station. The Property is let to Mr. Bolton, at the low rent of
£85 per annum.
Particulars and conditions of Sale of JOSEPH COLES,
Esq., Solicitor, 20, Eudge Row, Cannon Street, E.C.; of J. J.
KENT, Esq., Accountant, 55, Bow-inghall Street, E.C.; and of
GREEN AND SON, Auctioneers and Surveyors, 10, St.
Swithin's Lane, E.C.

Soham, Cambridgeshire.

TO NURSERYMEN, GARDENERS, CAPITALISTS, and
OTHERS.—A very choice and desirable property near the
centre of the town of Soham, and known as THE MOAT:
comprising a comfortable 9-roomed Residence, with a good
Gardeners' Cottage, Brick-built and Slated, Chaise House,
Stabling, Figgeries and Offices; extensive Walled-in Garden,
Graperies, Forcing and other Houses, Pit Frames, and well
arranged Heating Apparatus, almost new; well planted
Orchards of thriving Fruit Trees, fifty-one Asparagus Beds
in prime bearing order, a Moat of Fresh Water supplied
from the river adjoining the property, and good fishing,
the whole covering an area of about 9 Acres. The Business
of a Market Gardener and Florist has been carried on
for the past seven years upon the premises, by Mr. C. F.
Bobby, and a ready Market for the produce is found in the
neighbouring town of Newmarket, seventeen minutes
by Rail.

The above most desirable property will be offered for Sale
at the Court House in Soham, by
MESSRS. MAINPRICE AND WESTLEY
(who are jointly concerned on this occasion), on
FRIDAY, July 30, at 4 o'clock in the afternoon. The whole
of the Trees, Bushes, Vinerias and Forcing-houses will be
included in the purchase. The property will readily let, and
presents a fine speculative investment.
Particulars of Mr. W. BYE, Solicitor, or the Auctioneers, all
of Soham.

Wood Green, Middlesex, N.

By order of the Mortgagee of James Norris, deceased, acting
under power of Sale, with permission of the Vice-Chan-
cellor, Sir James Bacon.
A valuable FREEHOLD VINERY, with upwards of three-
quarters of an Acre of capital LAND, situate within five
minutes' walk of Wood Green and Palace Gates Railway
Stations. Possession on completion of the purchase.

MESSRS. GREEN AND SON will SELL
by AUCTION, at the Mart, Tokenhouse Yard, E.C.,
on FRIDAY, July 30, at 1 for 2 o'clock, in one lot, the valuable
FREEHOLD PROPERTY known as The Vinerias, Wood
Green, possessing a frontage of 120 feet to Nightingale Road,
and a frontage of 90 feet to Cuckoo Road; having erected there-
on eight Span-roof Greenhouses, containing about 500 estab-
lished Vines and Peaches, Propagating House, Plant and Fern
Houses, Pits, Boiler Houses, &c.; Detached Cottage Residence,
Office, Stabling, &c.; of the whole forming a compact set of Horti-
cultural Premises of the estimated rental value of £150 per
annum. The Property is situated in the midst of a steadily
developing neighbourhood, and possessing such good frontages
is admirably adapted for the Erection of several Houses without
interfering with the horticultural position of the property.
May be viewed. Particulars of Messrs. HENSMAN and
NICHOLSON, Solicitors, 25, College Hill, E.C.; and of
Messrs. GREEN AND SON, Auctioneers and Surveyors, 10,
St. Swithin's Lane, E.C.

High Field House, near Nottingham.

TO COLLECTORS OF FERNS.
In consequence of having gone to reside in Monmouthshire,
E. J. Lowe, Esq., has instructed
MR. J. M. POTT to SELL by AUCTION,
on the above Premises, on AUGUST 10, his valuable
and well-known COLLECTION OF BRITISH FERNS and
other PLANTS.
Full particulars in a future Advertisement.

Island of Guernsey.

TO BE SOLD, a GARDEN, VINERIES,
and GROUNDS, containing about 2½ acres, in the
parish of St. Peter Port, and within a short distance of the
town. The Vinerias are in all 270 feet long, stocked with the
choicest Vines, on which there are now about 3000 lb. of fruit.
The garden was laid out about four years ago. There are
upwards of 200 young Fruit Trees, including nearly 100 of the
famous Chaumontelle Pears. There is a Nursery of about
7000 young Vines, and about 10,000 strong Asparagus plants.
The Land is held in fee, not subject to any Rent, and the taxes
are nominal. One-third of the Purchase Money may be left
outstanding.

Apply to T. GODFREY CAREY, Esq., Advocate, Court
Place, Guernsey.

FOR SALE, THE LEASE of an old-
established NURSERY, in the North of London; about
9000 feet of Glass, with first-class Home Trade and Jobbing
Connection. Cottage, long Lease, and every convenience, with
immediate possession. Apply,
1, Hanley Road West, Upper Holloway, London, N.

TO BE LET or SOLD, a PROPERTY,
consisting of Dwelling-house, Cottage, Outbuildings,
11 Hothouses, containing about 10,000 super. feet of Glass,
Garden and Orchard—in all about 3½ acres, within 5 minutes
of a station, 15 miles from London. Address, enclosing stamped
directed envelope,
W. STEVENSON, Sunbury-on-Thames, S.W.

SEEDSMAN and FLORIST BUSINESS,
in full work. Stock and Fixtures of Shop and Garden.
No glass. Rent £16 30 miles from London. A good beginning
for a Gardener commencing business. Price £35.
GARDENER, 10, Little Chester Street, Belgrave Square, S.W.

To Nurserymen and Florists.

TO BE LET, about 300 feet of HOT-
HOUSES and GROUNDS. Excellent trade and pos-
sition. Low rent. Immediate possession.
Apply, 16, Linden Grove, Peckham Rye, London, S.E.

TO BE LET, at Edmonton, a Three-roomed
COTTAGE, with Four Greenhouses, 50 feet long,
suitable for a Jobbing Gardener.
J. HILL, Brook Cottage, Edmonton.

FOR SALE, a Bargain, a handsome Black
fast PONY, with good action; age 5 years, warranted
thoroughly sound. Also a CHAISE, built by Brocklebank,
together with a new set of Brass-mounted Light HARNESS.
The whole suitable for a Lady. The owner has no further
use for it. Apply, after 6 o'clock, to
H. JOHNSON, 86, Midway Road, Stoke Newington
Green, N.

NEW ROSES in Pots.—Tea and Noisette
ROSES in Pots.—CLEMATIS in Pots.
INFALLIBLE MILDEW COMPOSITION.
Special LISTS, with full particulars, now ready, gratis and
post-free.
EWING AND CO., EATON, NORWICH.

JULES DE COCK, NURSERYMAN,

Ghent, Belgium, offers:—
PALMS, seedlings, in store pots, per 100:—
A. Areca alba, 60s; A. madagascariensis, 60s; A. rubra, 30s; Chamerops exelsa
and humilis, 8s; Corypha australis, 12s; Latania borbonica, 10s;
Pandanus utilis, 20s; Phoenix reclinata, 10s; P. tenuis, 10s;
Pythosoma Alexandrae, 60s; Scaevola elegans, 20s.
FERNS, in small pots, per 100:—
Adiantum cuneatum, 3s; A. gracillima, 40s; Cibotium regale, 70s; Dicksonia
antarctica, 30s; Lomaria gibba, 25s; L. zamboides, 40s;
Nephrodium racemosum, 30s; Pteris argyrea, 25s; P. serrulata
cristata, 30s; Racena indivisa, 15 to 20 inches high, 12 each.

THOMAS RIVERS and SON have now a
large and fine Stock of Fruiting ORANGE TREES to
offer, of various sizes. Sorts:—

St. Michael's	Sustain
Tangerine	Long Orange
Maltese Blood	Botelha
White Orange	

Prices on application.
 The Nurseries, Sawbridgeworth, Herts.

GREENHOUSE and STOVE PLANTS.

TUBEROUS BEGONIAS, HERBACEOUS PLANTS,
SEEDLING PRIMULAS, CINERARIAS, and CAL-
CEOLARIAS for potting.
COLLECTIONS of GREENHOUSE or STOVE PLANTS,
in good named varieties, for exhibition or house decoration,
at 6s, 9s, 12s, and 18s: per dozen, according to size and
quality of collection; varieties omitted which purchasers
possess.

CROTONS, in good leading kinds, 6s. and 9s. per dozen.
TUBEROUS BEGONIAS, several thousands of named sorts
now on sale, all from last year's bulbs, at 4s, 6s, 9s, 12s,
and 18s: per dozen.

PRIMULAS and CINERARIAS, from as fine a strain as any
in cultivation, 12s, post-free, 11s. 6d., 25 for 3s., 50 for 5s. 6d.,
CALCEOLARIAS, 2s. per dozen, 15s. per 100.

All these are now in cold frames, and strong plants, ready
for potting into 60s.
HERBACEOUS PLANTS.—If these are planted now almost a
season is gained in growth, and the plants are much stronger
and better prepared for the winter than is the case when
planted in autumn.

Our collection comprises almost all worth growing for
Garden decoration, and selections can be made for any
situations at 3s, 4s, or 6s: per dozen, of twelve varieties,
2s. 6d., 30s, or 50s: per 100.

FUCHSIAS, HELIOTROPES, LANTANAS, SALVIAS,
COLEUS, TROPÆOLUMS, twelve fine varieties of any of
these, all named, and including many novelties, 2s and 2s. 6d.,
per dozen, 12s. and 15s. per 100.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

For Present Planting.

Please note Prices. Good strong healthy Plants, from
selected seed stocks, viz:—

CABBAGE.—Enfield, Nonpareil, York,
Wheeler's and Sutton's Imperial, Thousand-Head, and
Drumhead Savoy, Little Pixie Savoy, &c.
KALE.—Thousand-Head and Cottage's.

BRUSSELS SPROUTS.—Scrymgeur's Giant and Matchless.
All the above plants, at 2s. per 1000, 17s. per 100, 75s.

per 50,000.
BROCCOLI.—Early Superb White, Late White, Improved
Purple Sprouting, at 2s. 6d. per 1000, 20s. per 10,000,

9s. per 50,000.
Packages included. On rail. Samples on application.

N.B. 1000 of above Plants assorted to purchaser's choice, 2s. 6d.
CAULIFLOWER PLANTS, 4s. per 1000.

EDWARD LEIGH, Norcott Farm, near Guildford.

SPECIAL OFFER.

CORYDALIS NOBILIS (Pers.).—Splendid golden-yellow,
sweet-scented spring flower, 7s. 6d., per dozen roots.

DIELYTRA FORMOSA (n.).—Venus' Fly-trap.—Healthy,
cultivated plants, with four to six traps, 10s. 6d. p. doz.

GALANTHUS IMPERIAL.—Splendid; largest-flowering
variety of Snowdrop. 10s. 6d. per 100 bulbs.

"PLICATUS, the Crimean Snowdrop.—Home-grown
strong bulbs, 7s. 6d. per 100.

GRIFFINIA BLUMENAVIA.—Strong bulbs, 18s. per dozen.
IRIS RETICULATA.—4s. 6d. per dozen bulbs.

PAVONIA TENUIFOLIA, fl.-pl.—7s. 6d. per dozen.
TULIPA GREIGI.—Splendid species. 10s. 6d. per dozen.

CHIONODOXA LUCILIE.—Splendid hardy bulbous plant,
introduced by Mr. George Maw, pictured and described in
Bot. Mag., tab. 6433. Flowers large, blue, like
Puschkinia. 25s. per 100 seeds.

GNAPHALUM LEONTOPodium, Edelweiss.—New
seed. 5s. per 1000 seeds.

All the above delivered free to London. Payment by Post-
office Order.

FRIEDRICH ADOLPH HAAGE, Junr., Seedsman and
Florist, Erfurt.—(Founded 1822.)

SEEDLING PLANTS

CHOICE FLORISTS' FLOWERS.

Free and Safe by Post.  **Free and Safe by Post.**

All carefully transplanted and in fine healthy condition, from
our own superb strains.

	s. d.	s. d.
AURICULAS	per 100	6 per doz. 1 6
CALCEOLARIAS	" 10 6	" 1 6
CINERARIAS	" 10 6	" 1 6
CARNATIONS, very fine	" 10 6	" 1 6
PANSIES, Show and Fancy	" 7 6	" 1 0
" superb Blotched	" 10 6	" 1 6
PICTURES, very choice	" 10 6	" 1 6
PRIMULAS, choicest red fringed	" 10 6	" 1 6
" white	" 10 6	" 1 6
" mixed	" 10 6	" 1 6
SWEET WILLIAMS, very choice	" 5 0	" 1 0

Not less than fifty will be supplied at the rate per 100.

DANIELS BROS.,

THE ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

Come and See.

MY PELARGONIUMS, BEGONIAS, COLEUS, GLOXINIAS, VERBENAS, PEUNIAS, VIOLAS, COCKSCOMBS, PHLOXES, DALISAMS, DAHLIAS (Bedding), and many other Plants new in full flower. Probably the above form the most complete display to be seen in England.



Paris Daisies (Marguerites).

CHRYSANTHEMUM FRUTESCENS (White), best bedder.
CHRYSANTHEMUM CORONARIUM ALBUM (White), best for cut flowers.
CHRYSANTHEMUM CORONARIUM LUTEUM (Yellow), best for cut flowers.
CHRYSANTHEMUM ETOILE D'OR (largest Yellow).
 Post-free 1s. each; price per dozen or 100 on application.
 The Four for 2s. 6d.

Primulas and Cinerarias.

H. CANNELL has now large quantities of the above, in splendid condition, for potting and shifting on. By post, Primulas, 1s. 6d. per dozen; in thumbs, 2s. 6d. Cinerarias, 1s. 6d. per dozen; in small pots, 2s. 6d. All from seed of own saving and fertilising, and therefore sure to be superior to those usually grown.
 Special prices for large quantities.

THE HOME FOR FLOWERS,
 SWANLEY, KENT.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE, 3d. per bushel; 100 for 22s.; truck (loose, 250 bushels), 22s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 22s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 6d. per bushel; 25s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
 Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

10, Castle Street, Endell Street, Long Acre, London, W.C.

COCOA-NUT FIBRE REFUSE, as supplied to all the Royal Gardens of Europe, useful at all seasons, Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c., Destroys all Slugs and Insects. Bags (about 4 bushels), per bag 1s., 15 bags 12s., 30 bags 20s. (all bags included); Van-load at Works, 4s. 7d. ditto delivered within 5 miles, 10s.; Truck-load (about 250 bushels), free on rail, 25s. Terms cash with order.

CHUBB, ROUND AND CO.,
 Fibre Works, Westlerry Road, Milwall, London, E.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1s.; 30 bags (bags included), 20s.; truck free to rail, 25s.
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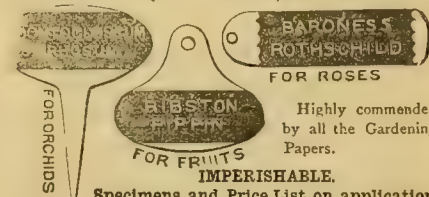
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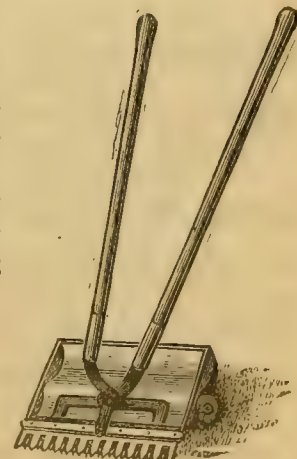
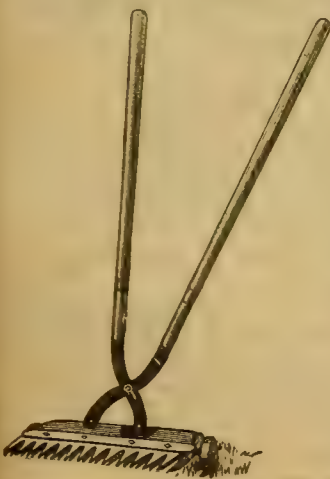
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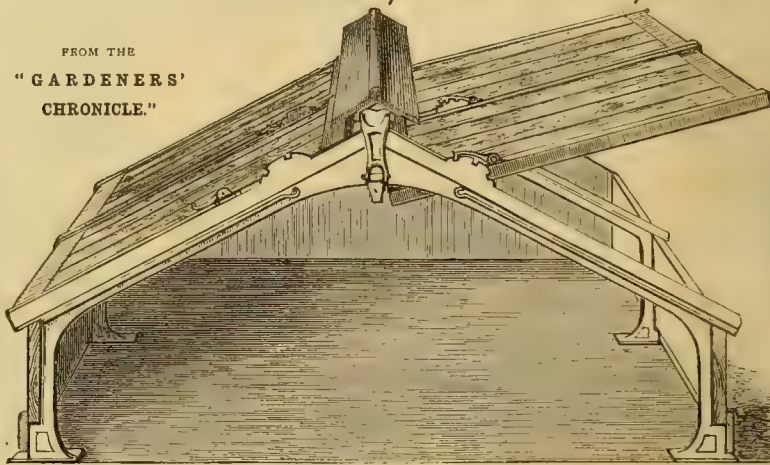
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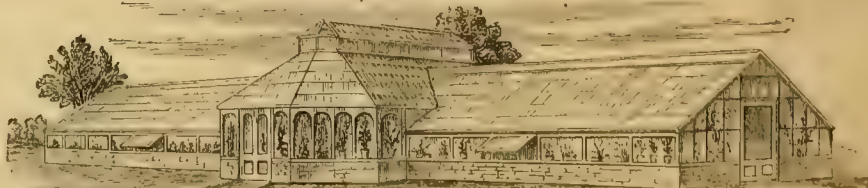
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THE Gardeners' Chronicle.

SATURDAY, JULY 17, 1880.

RIBSTON HALL.

AS a rule, people think less of the great Marlborough when they visit Blenheim than of the fair Rosamond; and on the same principle of the almost universal preference for the lighter kinds of history, I thought of the Ribston Pippin in approaching Ribston Hall, when I ought—but for this gossiping propensity—to have thought of more important topics. Mr. Dent, the owner of the property, is known throughout the country for his services to agriculture. I might therefore say with Prince Hal, "Doth it not show vilely in me?" but perhaps it would be better to say, without further circumlocution, that a former owner of Ribston Hall sent home some pips of Apples from Normandy, where he was travelling; that these were sown here in the garden; and that one of them produced a Crab, and another the far-famed Ribston Pippin.* A sucker and successor of the original seedling now occupies its site, and bears in favourable years a bushel of fruit.

Mr. Jones, the gardener at Ribston Hall, has placed a piece of the trunk of the old tree in the porch of his house, an appropriate symbol of his skill as a capital fruit grower, indoors and out. The Ribston ripens better in the South of England than in Yorkshire, where the seasons are late even in such a sheltered site as Ribston Hall, where, for example, the first dish of Strawberries was gathered this year on July 6.

Ribston Hall was built just in time for some of the leaders of the Protestant party—a former owner and then Duke of Devonshire among them—to meet here and arrange (we will not say plot, since the conspiracy succeeded) the substitution of William III. for James II. It bears the date of 1674. A capacious and capital house of the time of the Stuarts is certain to be good and comfortable within, and picturesque without. It is almost certain, too, to be of brick, pleasantly toned down in colour and partly covered up by creepers. With regard to the creepers, in the present case, the family have to regret the loss of Clematis montana, and some much-missed Roses, though the former is springing again from the root. Another ornament of the house is its park of 500 acres of excellent land, rich in grass and timber. The Wych Elm, that handsome and only native representative of a large family, is the prevailing tree; the Oak, Ash, and Sycamore abound. There are Limes and Chestnuts, and I observed among commoner specimens a Hickory, the flowering Ash, and a Hornbeam. Among lesser sorts are Thorns and numerous Crabs, which make a profuse display of blossom in spring.

* The history of this famous tree given in our volume for 1857, p. 484, does not correspond with our correspondent's statement as to its origin. It is there stated:—"A seedling raised about 1707, in the bad climate of Yorkshire. Its parent was some southern variety, unknown. The seedling was turned out into the park, and there it remained neglected till 1835, when it died at the age of 128 years." To what kind of neglect it had been exposed was sufficiently shown by its ruin, of which an authentic figure was given in the *Gardeners' Chronicle* for 1844, p. 812, and which we reproduce—see fig. 15, p. 70.

play of blossom in spring. Another ornament is the River Nidd, which winds beautifully through the Park, seen at a short distance from the windows, and making its appearance unexpectedly at many points, which it reaches, not as railways run, but in its own fashion, by means of picturesque *détours*. From a spot called New Hall, a grass covered mound, where I suppose a house once stood—not far distant from the new church, built by Mr. Dent's father, and seen from afar, as churches should be, if picturesque effect alone be considered—the Nidd winds its best and prettiest.

Another ornament in this catalogue, and a very marked and unusual one, is the chapel of the Knights Templars, beautifully restored, and used constantly for public worship. It is entered from one end of the house. The little graveyard, with its ancient Mulberry tree, was consecrated centuries ago by the Bishop of Philippi, and has become to the present generation a still more sacred spot as the resting-place of Mr. Dent's parents. To return to horticultural topics, there are good old English shrubberies here, a choice pinetum, and several trees of note and interest.

Among the latter a specimen of *Pyrus domestica* in the park has attracted much interest among those who are curious in rare trees. I have no other authority at hand better than a guide-book, which states that the only other [wild] specimen of the *Pyrus domestica*, or English Pear, is in the Wyre Forest in Worcestershire. I thought I had seen it many years ago in the Botanic Gardens at Oxford. I can speak with more certainty of the Oriental Plane standing within the grounds near what looks like a stew-pond of the Knights Templars. It measures 16 feet round the trunk at 3 feet from the ground, and the spread of its branches covers a space 90 feet in diameter. London will have seen some changes before the smoke-defying Planes of the great metropolis have attained the same magnificent growth, and that immense but crumbling pile, the Houses of Parliament, will have wholly crumbled into dust.

The great Plane tree at Ribston Hall has been punished by the severity of the season, and Mr. Dent's well sheltered pinetum has also suffered cruelly. It lies high above the damp of the river side, and it is protected by the high walls of the kitchen garden and by a good bank of Yews, yet the losses have been greater even than in 1860. Two noble specimens of *P. Pin-sapo* and *Taxodium sempervirens* are cut beyond recovery, I fear. There they are, not quite dead; and there they might remain perhaps for years, hanging to life, with a few green leaves, contrasting miserably with the prevailing brown. The axe is a severe remedy, and killing is a poor cure for injured trees, but it is the best. Other notable specimens in this choice pinetum are much cut, including *Cryptomeria japonica*, and—unkindest cut of all—a handsome specimen of *Cryptomeria elegans*, 18 feet high.

That aged giant, the Cowthorpe Oak, stands still not far from Ribston Hall, in the parish from which it takes its name. In driving along the Rudgate Road—a Roman Road running from Tadcaster to Aldborough—the spot where it stands was pointed out. H. E.

New Garden Plants.

ONCIDIUM DIODON, n. sp.*

A mysterious plant, mimicking with good success *Oncidium macranthum*, according to Mr. W. Bull, until it finally develops a wide panicle with dense zig-

* *Oncidium diodon*, n. sp.—"Pseudobulbis, habitu *Oncidii macranthi*;" foliis cuneato-ligulatis acutis ultra pediculis, panicula magna brachyclada, ramis flexuosis confertissimis, bracteis minutis; ovarii pedicellatis sepalis superantibus, sepalis tepalisque cuneato ellipticis obtusiusculis, sepalis paribus dorso carinatis labello subquadrato, antice emarginato bilobato retusiusculo, basi utrinque angulato; columnae trigonae buccis obtusangulis extrorsis, dente rostellari denti intramarginali foveae opposito. H. G. Rehb. f.

zag branchlets of flowers comparable to those of *Oncidium cocciferum* or *Odontoglossum longifolium*. They are brown, of the tint of the skin of the common Potatoes, with a light yellow callus on the nearly square emarginate lip. It is a worthy companion of *Oncidium murinum*, which deceived the late beloved Louis Van Houtte himself, yet it is superior to this species in beauty of flowers, which is not a great compliment. It appears to have been introduced by M. Linden a dozen years ago, since I find a sketch of a single flower, signed "Oncidium of Linden." Most probably I did not get more materials, and the plant was hence kept unpublished. Mr. W. Bull was so good as to send quite satisfactory means for a careful investigation. *H. G. Rehb. f.*

BULBOPHYLLUM ALOPECURUM, n. sp.*

This is a new *Bulbophyllum*, with a stiff thin peduncle, rather a span like. The dense raceme is nodding, and bears nice dark purple flowers, which have conchoid equal sepals. The pseudobulb is almost spherical, has had two leaves, to judge from the scars. It is very like *B. triste*, but appears to be well distinguishable by its much greater dimensions, by the shorter flowers, quite short nerveless petals, and the conchoid connate equal sepals. I obtained the nice little gem from Mr. Stuart Low, who received it from Burnah from his collector, Mr. Richard Curnow. *H. G. Rehb. f.*

ABIES CONCOLOR.

At p. 648 of the last volume is an excellent article under the above heading, by "M. T. M.," in which the history of the Fir extensively cultivated in Britain under the names *Abies* or *Picea concolor*, *Lowiana*, *Parsonsiana*, and *lasiocarpa* is correctly given, and botanists and cultivators alike ought to be thankful to "M. T. M." and Dr. Engelmann for having given to the species its proper name.

It is now nearly a year since I finally concluded that Dr. Engelmann was right, and this fact is very well known to him, if not to "M. T. M." Cultivators of the forms of *A. concolor*—I mean those seedling plants from the Rocky Mountains proper on the one hand, and those from Northern California and Southern Oregon on the other—will perhaps best appreciate my position when I say that I had many misgivings before I finally decided that the two sets of seedlings referred to were of the same species. That implied that I found considerable difference in them: that difference may yet be seen by those who will examine the plants carefully; it is probably not specific, but it surely is varietal, of a character so well pronounced as to distinguish them as very good garden plants of different character.

As neither Dr. Engelmann nor "M. T. M." has ever publicly fully detailed wherein those two geographical sets of seedlings differ, I may perhaps be allowed to do so, particularly by advancing the plea that geographical botany demands it of me.

Typical *A. concolor* is more particularly represented in Britain by living plants from Pike's Peak and elsewhere in Colorado. The garden plants known as *Abies* or *Picea Lowiana*, *Parsonsiana*, and *lasiocarpa*—now merged into *A. concolor* by Dr. Engelmann—came either from Northern California or Southern Oregon. Dr. Engelmann in his description of *A. concolor*, as quoted in the article above referred to, says:—"A. *Lowiana*, known also in nurseries as *A. Parsonsiana*, *lasiocarpa*, and *amabilis* [the latter not of many nurserymen: G. S.], distinguished by its longer, flatter, straighter leaves, with fewer stomata on the upper side, is a young and vigorous state of this species, which has not yet fruited in cultivation." And I may add that as so distinguished, and with the additional distinction (which I am about to point out), it must be considered a geographical variety—the Western form of *A. concolor*. I, however, take exception to Dr. Engelmann's idea, that the leaves of cultivated plants of this

Western form are longer than typical *concolor*, only because the plants they grow on are young or immature. The leaves of the Western form are in general longer at all stages of growth. "M. T. M." describes the leaves of *A. concolor* as follows, but be it remembered that it is based on the Western or Oregon-Californian plant:—"Leaves distinctly channelled on the upper surface"—the cut of the leaf in fig. 110 represents a subtetragonal section—"similar in colour on both surfaces (whence the name), and bearing stomata on both sides." . . . "The leaves on the lateral shoots are nearly if not quite distichous, and those on the upper are not materially shorter than those on the lower surface of the branch." Cultivators of *A. Lowiana*, *Parsonsiana*, and *lasiocarpa* will in the foregoing recognise their plant. Moreover a very good representation of a slender twig is given at p. 649, which shows how very well the writer knew his subject.

First, then, the leaves of cultivated plants of the Western form are well known to be distinctly channelled. It has also been observed that the leaves of cultivated plants of the Rocky Mountain form are not channelled, but quite flat even in one-year or two-year-old seedlings. As these plants increase in age their leaves will become convex on the upper face. They are also much more pointed than those of the Western form, and they are as, at least, two to one on a given space

of the vast desert gulf that lies between the Californian Sierras and the "backbone of the Continent," and I not unnaturally doubted whether there ever existed links to connect the respective forests of trees. Of course, if I had viewed it in the way that Dr. Engelmann seems to have done, I never need have had any doubts. Just read this:—"A common Fir throughout the Californian Sierras, from 3000 or 4000 to 8000 feet elevation, extending into Southern Oregon, and through the mountains of Arizona to Utah and South Colorado." How easily he traces it. Much easier than I and others did.

Lastly, I had to stand and well consider the fact, known to me at least, that two botanists who have worthily reached the pinnacle of fame had together visited the regions inhabited by both forms of *concolor*, and so different did they appear to be to them, that they never for one moment entertained the idea that they were, as Dr. Engelmann has since suggested and contended for, one and the same species. Besides, I was aware that Dr. Engelmann never had the pleasure of seeing those plants in their native habitats; at any rate, he never saw the Californian one. *George Syme, Jamaica, June 24.* [We have a communication on this subject from Mr. Barron, of Borrowash, who takes slightly different views from those herein expressed. Mr. Barron's letter was accompanied by specimens which we deemed it advisable to send to



FIG. 15.—THE ORIGINAL RIBSTON PIPPIN APPLE TREE, WHICH DIED IN 1835. ÆTAT 128 YEARS.

of bark. Finally, they have a very different arrangement, which is very well represented in the characteristic twig from a six-year-old plant, which I enclose. The leaves, instead of being almost uniformly long, as described by "M. T. M.," vary much in length, those on the upper being little more than half the length of those on the under side of the shoot. Those who have observed the disposition of the leaves on the branches of *Menzies' Spruce* will be able to form a pretty correct idea of the arrangement of the leaves of this Fir in its earlier stages.

By the way, the fact of its geographical relative and neighbour, *A. religiosa* of Mexico, having a similar arrangement of leaves, is rather instructive and suggestive perhaps of a community of needs forced on them by somewhat similar conditions of life.

I found the cotyledons fewer than in the Western seedlings. I had also compared many cones from the mountains of California with others from different parts of the Rocky Mountains, and found them to differ even more than did the vegetative organs.

A pretty correct idea of the extent of the variation in the cones may be obtained by reference to two distinct sets of illustrations that have at different times appeared in the pages of the *Gardeners' Chronicle*. The last was of the scale and its attendant bract in fig. 110, p. 649. It may be taken as a pretty correct figure of the Californian form of *A. concolor*. The other above referred to is of the scale and its attendant bract of the Rocky Mountain *A. concolor*, as fig. 95, p. 464, April 10, 1875.

To extend the evidence. I had stood on the brink

Dr. Engelmann. That acute botanist is now on his way to study these trees in their native locality, hence we cannot get his reply for some time to come, but the experience he will get will be doubly valuable now. EDS.]

MALLEE-SCRUB AND MULGA-SCRUB.—These two names are so often met with in Australian publications and narratives of travel in Australia, that it is interesting to know something of their application. Baron Mueller communicates a note on this subject to the June number of *Petermann's Geographische Mittheilungen*. Mallee-scrub might as well be called *Eucalyptus*-scrub, as it consists of various species of *Eucalyptus*, whilst Mulga-scrub is no other than *Acacia*-scrub. In each case several species of the respective genera combine to form the scrub. Different species predominate in different districts. Thus in the interior of South Australia *Acacia aneura* is the chief ingredient of the original Mulga-scrub. Mulga, we believe, is the name of a place or district where the scrub abounds, but the name has since its first application been applied to the same kind of scrub in different places. The original Mallee-scrub consisted mainly of *Eucalyptus dumosa*, which Mueller now regards as a variety or condition of *E. incrassata*. This is often largely intermixed with *E. gracilis*, *E. oleosa*, *E. uncinata*, and other species. There is a place called Mulga Creek, in Stuart's Range, in the interior of South Australia, and Mallee seems to have been the name of a place in the desert interior of Victoria.

* *Bulbophyllum alopecurum*, n. sp.—Aff. *B. triste*. Pseudobulbo sphaerico demum multoties impresso favoso, e cicatricibus diphylo; pedunculo subsiphthameo gracili rigido; vaginis arcuatis distantibus quinis; racemo nutante densifloro; bracteis triangularibus minutis; sepalis impari triangulo obtuso; sepalis lateralibus cymbiformibus apice bidentatis; tepalibus triangularibus subnerviis, a sepalis non tectis (!); labello unguiculato, sagittato triangulo per discum bicarinato; columna tridentata.—Flos atropurpureus exceptis labello fusco et columna cetrulacea. Pedunculus pallide viridis. Vaginae atrofuscae. *H. G. Rehb. f.*

THE SEVERE WINTERS OF 1682-3 AND 1708-9, AND EARLY ENGLISH THERMOMETERS.

THE winter of 1682-3 was one of the severest in this country on record, and the first one concerning which we find any particulars in the *Philosophical Transactions* of the Royal Society. Both John Evelyn, the author of *Silva*, &c., and Jacob Bobart, son and successor of the first Curator of the Oxford Botanic Garden, contribute some observations on the damage done to vegetation by the frost during the winter in question. One remarkable fact connected with these observations is, that at that not very remote date no instrument existed by means of which the temperature could be measured with intelligible results. True, thermometers of various kinds existed, but as no fixed points of departure had been discovered, or, if discovered, not adopted, no two of them agreed in their scales of gradation. But before sketching the early history of the thermometer, it may be interesting to give a few particulars respecting the injurious effects of the frost during the winters of 1682-3 and 1708-9. It may be mentioned that the notes for this article were collected when searching after records of severe winters, and their respective degrees of severity in relation to temperature and the effects on vegetation. The frost of 1682-3 is recorded as the longest which had happened within the memory of man, though not so intense at any time as that of 1708-9. Trees suffered very much, especially Oak trees, the trunks having been reft to such an extent that it was possible to see through them in many instances. Elms and Ash of considerable bulk, as well as Walnut trees, suffered in this way, and the splitting was accompanied by a noise like the report of a gun. After the thaw the clefts closed up, though, of course, the timber was permanently injured. It is noteworthy that such exotics as Paliurus, Pomegranate, Laurustinus, Phillyrea, &c., escaped injury, or, at all events, serious injury, whilst Yew and Holly were quite killed in some places. Evelyn feared he would lose his Cork Oaks, but seems to have been most concerned about his Rosemary. "Among our shrubs," he wrote, "Rosemary is entirely lost, and to my great sorrow, because I had not only beautiful hedges of it, but sufficient to afford me flowers for making a considerable quantity of Hungary-water. So universal, I fear, is the destruction of this plant, not only over England but the neighbouring countries more southward, that we must raise our next hopes from the seed." A hedge of *Atriplex Halimus* was likewise destroyed. Bobart states that Furze was quite killed in many localities, and, in fact, so many things were killed, or more or less severely injured, that he observes that it is hard to say what is winter-proof even among our natives, except Box and Ivy, which stand in defiance of all. It is interesting to know that the Box was regarded as a native in those days, even though the testimony may not be worth much. Culinary and perfumery herbs suffered great destruction. Coming to the winter of 1708-9, the Rev. W. Derham's account of the great frost of that winter is very interesting, because he institutes some comparisons of the temperature. Unfortunately, the figures are not comparable or reducible to our present standard. Derham states that his thermometer was much lower on December 30 (1708) than it had ever been since 1697, when he first began his thermometrical observations, and the thermometer in the repository in Gresham College was lower than it ever was before. The particulars, he adds, of its greatest descents are these:—January 26, 1696, 41°; January 5, 1683, 40°; and January 3, 1709, 43°; and lastly, in Mr. J. Patrick's thermometer, in London, the spirits were four or five degrees lower than in 1683. Mr. Patrick's thermometer and that at Gresham College were indoors, in rooms where no fires were lighted. At first one might imagine the zero of these thermometers to have coincided with the freezing point; but, as we shall presently see, it was probably much above that point, with degrees of correspondingly greater value than those of Fahrenheit's thermometer. From various reports the winter seems to have been much more rigorous in the South of England than in the North, or in Scotland or Ireland. It also appears to have been excessively cold in the South of Europe, for in Italy it is recorded greater cold had not been known for twenty years. Dr. Newton, Her Majesty's Envoy at Florence, wrote to Derham to the effect that the sea was frozen both on

the coast of Genoa and Leghorn. On the Italian coast, too, some of our poor mariners on board our men-of-war died of the cold, and several lost parts of their fingers and toes. Almost all the Lemon and Orange, and a great many of the Olive trees, were destroyed. Eighty French soldiers were all killed by the cold on the road near Namur. In short, there was an enormous destruction of animal and vegetable life; and, according to Derham, the severity of the frost was general in the Northern World, except Scotland, Ireland, and probably some other islands and places near the sea.

Now, with regard to the construction and graduation of some of the early English thermometers. It is a singular fact that, although Fahrenheit improved the thermometer, about 1720, by substituting mercury in the tube for spirits of wine, and by forming the scale now in use, and these improvements were actually published in the *Transactions* of the Royal Society in 1723, this, or any other intelligible scale, was very little in use even in the middle of the last century. In 1749 the Rev. Henry Miles read a paper on thermometers and meteorology before the Royal Society, in which he said:—"There is another particular of great importance which probably we may rather wish than hope to see made a general practice, recommended by the same gentleman [Dr. George Martine], viz., the constructing of all thermometers with one scale. But if this may not be expected, certainly no thermometer should be made without adjusting two determinate and sufficiently distant points of heat and cold; such, for instance, as those of boiling water, and of water just beginning to freeze, and the intervening space divided into a convenient number of equal degrees. By this means we should be able to know what is meant by any specified degrees of heat or cold, and a comparison might be easily made of the state of the air in distant places, provided the instruments were accurately made." This, then, was the state of thermometers in this country at the middle of the last century, in spite of what had been done by Fahrenheit, Celsius, and Réaumur, whose scales were all devised before then, as their deaths are recorded as having occurred in 1740, 1756, and 1757 respectively; and in spite of what Halley published in 1692 "On the expansion and contraction of fluids by heat and cold in order to ascertain the divisions of the thermometer, and to make that instrument in all places, without adjusting by a standard." *Philosophical Transactions*, 1692-3, p. 650.

The spirit thermometers commonly made in London in 1747, according to Cromwell Mortimer (*loc. cit.* 1747, p. 491), were so graduated that when the spirit was rarefied to the degree that the most sultry sunshine commonly known in our climate can raise it, there was placed the mark 0, or no degree of cold. Some few were marked 10° or 20° above this when intended to be used in hotter climates; but all were graduated downward, so that 45° was the point of temperature, and 65° the point of freezing, and 100° was placed just above the bulb. This was accommodating the instrument to its work with a vengeance! It must not be supposed, however, that thermometers were wholly useless before Fahrenheit's improvement; and the kind just described was much more imperfect than those employed by some of the leading scientific men. Thus, Sir Isaac Newton worked with a linseed-oil thermometer, whose zero was the freezing point graduated upward and divided into 34°, between the zero and the boiling point of water. Hales used a spirit thermometer with a scale of 100° between the freezing point of water and the boiling point of spirit. Martine's thermometer, for some time the standard of the Royal Society, was a mercurial instrument in which "medium heat" was made the zero; +34.5 equalling 64° Fahr., and zero=89° Fahr. The freezing point was 73°.25 below zero, and the boiling point 141°.5 above. In the *Philosophical Transactions* for 1741 George Lynn, Esq., published the mean temperature of some place in Northamptonshire for fourteen years, calculated from observations with Hauksbee's thermometer. The scale of this thermometer we have not been able to determine, but it was graduated downward, as evidenced by the figures given below. This observer made the mean annual temperature 52°, the mean of the coldest time of the day (about sunrise) 56°, and the mean of the hottest time of day (between 2 and 4 P.M.) 48°. He also found that the means for June and August agreed very closely, as also those for May and September. The mean of the

last two months he deduced at 44°.5, and of July at 35°.5. It may be mentioned that the means, as now calculated, of May and June respectively, are considerably lower than those of August and September. Fahrenheit's thermometer was only beginning to come into use at the middle of the last century, and we read in the *Philosophical Transactions* (1749), as a novelty, of two observers, after comparing their instruments, agreeing to make their observations at the same hours of the day and compare the results—the one lived in London and the other at Tooting. Although, unfortunately, we still adhere to Fahrenheit's scale, there has been a vast improvement in the construction of thermometers, particularly within the last half century; and the times and method of observation are so far fixed and divined that the results obtained in different localities are comparable more or less. *W. B. H.*

PIASSABA FIBRE.

New articles of industry always have difficulties to contend with in the way of their general adaptation. The history of almost every product shows a prevailing prejudice against the introduction of any novelty, and many of the most important commercial products of the present day have met with great opposition at the period of their introduction. We need only refer to the Hop and the Tobacco as illustrations of our meaning. We are reminded of this general dislike among commercial men to embark in new products by a paper in the current number of *The Journal of Applied Science* on the introduction of Bass, or Piassaba fibre, and the importance the traffic in this article has assumed in the course of a few years. Not more than forty years ago, we are reminded by the article in question, Piassaba made its first appearance at Liverpool, being brought over merely as packing with cargos of sugar, in vessels trading between South America and Liverpool. This dunnage, or packing, was considered a waste product, and was thrown away, until a Liverpool brush-maker tried the experiment of applying some of the waste matter for brush-making, and brushes and brooms were accordingly made from it, and especially recommended for street-sweeping purposes. Though this idea at first met with a good deal of ridicule, it was soon followed by a further development of the uses of the fibre, large firms in Birmingham and other places taking it up for brush-making on an extensive scale, till at the present time it is stated that over two thousand hands are employed in England alone in making street and stable brooms all the year round, besides employment afforded to large numbers in works where the fibre is merely prepared for the trade. In Germany, Holland, and Belgium the Piassaba trade is steadily progressing, while Australia, New Zealand, and the Cape of Good Hope are amongst England's best customers.

It is stated that the value of the exports of this article from South America last year amounted to about £100,000. Regarding the collection of the fibre, which is furnished by two species of Palms—that of Bahia from *Attalea funifera*, and that of Para from *Leopoldinia Piassaba*—the following interesting particulars are given:—

The Palm trunk being covered with this black fibre, a good cover is afforded for snakes and other venomous reptiles, which often lurk in the thickness of this substance, so that if it were not for the gain which it brings to the natives it would be difficult to induce them to venture up amongst it for the purpose of collecting it. The collection of the fibre takes place in the wet or rainy season, and after being gathered the collector proceeds in a very primitive manner to comb or hackle it, through stakes or sticks driven into the ground; by this hacking process the longer and stronger fibres are drawn through, and the finer, or more flossy substance is left behind. This tow is prized for making into ropes, and the stronger fibres, which run from 9 feet to 10 feet long, is doubled in at each end to about 4 feet, and made up into rude bundles, each weighing about 14 lb. When sufficient has been prepared, it is placed on a kind of raft and floated down the rivers often a distance of 150 or 200 miles to the nearest sea-coast towns, where it is sold, or bartered away for food, chiefly "mandioca," obtained from *Manihot utilisima*, the traders in which are known as mandioca merchants. These traders give the poor natives a very low rate of exchange for their far-brought produce.

When the fibre falls into the hands of these mer-

chants the bundles are often undone, and for the purpose of increasing their profits they often introduce inside the bales, which weigh from 1 cwt. to 2 cwt. each, large pieces of stone, old metal, mortar, sand, and large logs of wood—in short, everything that will increase the weight of the bale; and so adroitly do they manage this, that it is only when the bundle or bale is opened that the deception is discovered. These pressed bales are brought to market in native craft, or on small steamers plying along the coast down to the port of Bahia; the bales are there accepted by the merchants in good faith and shipped to Liverpool and London. To such an extent is this deception practised that at a meeting of merchants and manufacturers, held in London, it was resolved to appeal to the Government and merchants of Bahia, requesting them to have all the pressed bales re-opened and examined before shipment to England. If this is not done it is stated that the prices must come down so low that it will not be worth a merchant's while to export nor a dealer's in England to buy it. It is to be hoped that some steps may be taken by which the importance of this trade may still be kept up.

WEST INDIAN FRUITS.

SAPOTA ACHRAS, Mill (*ACHRAS SAPOTA*, L.)—The *Spodilla* of South America, and the *Naseberry*, or *Neesberry*, of Jamaica, is a tree most generally cultivated for its extremely rich and delicious fruit. The tree is very variable in size and form, and the fruit of each variety also partakes in some measure of this variable quality. It produces its largest quantity of fruit during the months of April, May, June, and July, but, like the Orange and many others, blossoms, half formed, and ripe fruit may be found on the same tree at almost all seasons. It is a tree very much frequented by the large and small fruit bats, who carry away the fruit as fast as they ripen. By observation, however, the period when the fruit is "full" can be easily known, and they should then be gathered and stored, and in a few days they will be fit for table. The tree is an evergreen, and reaches in some varieties to the height of 40 feet, in others only 15 to 20 feet, and is rather slow growing. There is a superstition connected with the planting of it among the natives, which does much to prevent a more general cultivation. It is this—that no man planting a *Neesberry* tree will live to see it fruit, and consequently aged and infirm people are generally chosen to perform this operation, as younger ones are fearful of doing so, though the tree is seldom found fruiting under ten or twelve years. The fruit is one of the best, and, from its containing large quantities of sugar, one of the most harmless of all tropical fruits. It contains an acrid, gummy, white juice before ripening, and the seeds are used commonly as a diuretic.

BLIGHIA SAPIDA, Koenig, or *Akee*, as it is usually termed in Jamaica, is a tree which thrives in the low districts to 2500 feet in height, and produces its fruit at very irregular periods, which character, together with its distribution through varying altitudes, renders the fruit generally obtainable at any time of the year, the period when it is most plentiful being the cool season. It is very much in request, and is brought to market in considerable quantities, being relished by both natives and Europeans, by the latter mostly after very short acquaintance. The tree is a handsome one, from the beautiful appearance of its bright green shining leaves, and when in fruit the contrast between the fine red colour of the dehiscent carpels showing the contained seed, glazy-black, with the adhering arillus of a whitish-yellow, renders it particularly striking, especially to a stranger. The arillus to each seed measures from 1 to 1½ inch in length, and is when raw of a harsh nutty flavour, and is then considered poisonous and indigestible. The operation of cooking, however, removes this, and it then becomes perfectly wholesome. It is used mostly as a vegetable, and is prepared in a variety of ways, its flavour when fried or boiled in milk, being soft, rich, and agreeable, so that it well deserves the name it sometimes obtains of *Vegetable Marrow* or *Vegetable Butter*; from its extreme richness it cannot be partaken of in too large a quantity without the consumption being attended with disagreeable effects. The placenta, which is of a light red colour, is always carefully removed, as it is said to contain a strong poison, the careless being often affected by it. *John Hart, King's House, Kingston, June, 1880.*

LONDON MARKET PLANTS.

(Concluded from p. 42).

IN continuation of my remarks on the establishment of Mr. Ladds of Bexley, I may mention that three houses, each 300 feet long and 25 feet wide, and three others, each 200 feet by 12 feet, are devoted to pot Roses, five-sixths of which are the white *Niphetos*, nearly all the remainder *Isabella Sprunt*, yellow. The plants in one of the largest houses, which gave the first crop in the autumn, had made shoots some six or 8 inches long, and were just showing flower again. The second house was undergoing the slight rest that is allowed them for two or three weeks after the crop is over, by somewhat reducing the heat given them. The third of these immense

a day. *Niphetos*, as known to Rose forcers, requires more heat, when forced, to have the flowers fully developed than other kinds. Mr. Ladds keeps it at from 50° to 55° during the night. The three smaller houses contain similar plants—one of them the yellow *Isabella Sprunt*, which is one of the freest bloomers of the Tea varieties. Most people would think it strange that Mr. Ladds grows few besides these two out of the many fine kinds of pot Roses, but he finds them the best to represent the two colours most in demand. At one time he grew *Maréchal Niel* in quantities almost sufficient to glut the market, but it was given up on account of its comparatively short season of flowering. These Roses remain in the houses all the year round; the hose-pipe is used freely to keep them free from insects. The water is



FIG. 16.—*LILIAM WASHINGTONIANUM* VAR. *PURPUREUM*. (SEE P. 50.)

glass erections was just in full bloom, all *Niphetos*, like the contents of the previous-named houses, and were a sight that, it may safely be said, could not be seen anywhere else in the dead of winter, although from seventy to 100 dozen were cut every day. The plants are all grafted on *Manetti* as low down as can be done, so that at the first potting after they have made growth the junction can be got below the soil, in which way they are on their own roots before the end of the first season. Most of the plants have now got very strong, with stems 1 inch or 1½ inch in diameter, in pots proportionately large; strong shoots from the base or elsewhere are encouraged, and the weak wood cut away, by which means the proportion of small flowers is reduced to a minimum. Each plant produces from one to two dozen flowers at a crop. In the height of the season from 600 dozen to 700 dozen are cut in

discharged upon them like fine spray, with as much force as the leaves will bear. In this way the object is effected without even in winter wetting the soil in the pots too much to admit of its receiving plenty of manure-water.

A house 200 feet by 35 feet is devoted to *Stephanotis floribunda*. The plants are all planted out in mounds of peat, in four rows, one each side, and two down the body of the house. They are trained to the roof so as just to support them, the shoots being allowed to hang down loosely. From fifty to a hundred dozen bunches are cut daily through the long season the plants keep on flowering.

Another house, similar in size, is filled with *Gardenias* planted out. The plants run from 5 to 7 feet high, and as much through, with just enough room to allow walking space between them, and have much the appearance of a *Rhododendron*-bed in their dense

healthy foliage. These, like the *Stephanotis*, are planted on raised mounds. The object of thus elevating the roots of both these subjects wholly above the floor of the house on these little hills, is to prevent their suffering from the large quantities of water used in washing them with the hose-pipe to free them from the mealy-bug, the work of which, if done in the way usual where there are only a few plants, it would not be possible to get through. The tough nature of the shoots and leaves of both these plants is such as to enable them to bear the water applied with the force it has when used direct from the mains.

Mr. Ladds has been for three years getting up a stock of *Cyclamens* for seed, so as to go into them in

grown in rich soil, composed of cowdung, leaf-mould, and loam.

Tuberoses are brought on so as to flower in continuous succession for the greater portion of the year—all American grown roots, of which last season 15,000 were purchased. The last batch of 10,000 Roman Hyacinths was just in bloom, to be followed by an equal number of *Spiræa* (*Astilbe*) *japonica*; these occupied a couple of large houses.

Four houses, each 150 feet by 25 feet, are devoted to *Bouvardias*; only two sorts are grown, *jasminiflora* (white), and *Hogarth* (red), three-fifths of the former variety to one of the latter. The plants are much larger and stronger than we usually see them. Cutting is brought to a close about Christmas, when the heat

spring. Only a few varieties, such as possess a profuse early habit of flowering, and are free growers, are used. Several large houses are occupied by other stock, as every likely variety obtainable of each of the different species of plants cultivated is tried; but, as will be seen by what I have said, very few of the various things find a permanent place. Mere novelty counts for nothing in the market, but there is no partiality; as soon as ever a new plant is found better than the old ones of its kind, it at once takes their place.

Mr. Ladds is going in for late Grapes, which, like everything he has yet undertaken and found to answer, are about being done on an unusually large scale. A house 300 feet long by 25 wide was built, and the

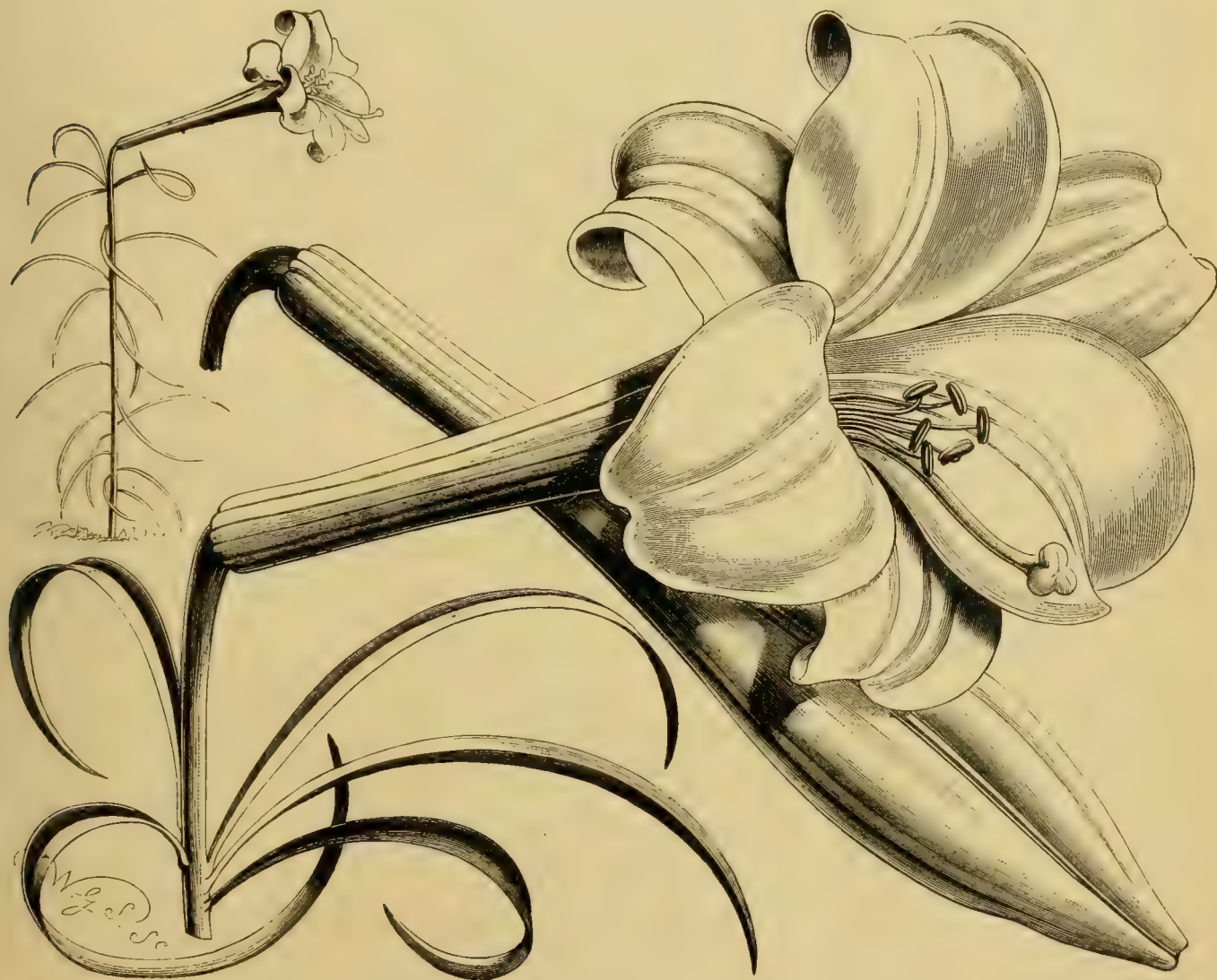


FIG. 17.—*LILIUM PHILIPPINENSE*. (SEE P. 80.)

quantity. Plants have been selected anywhere in the country that they could be met with, possessing the required colour, size, and form of flower, and general habit—not those producing the very largest individual blooms, but with a profuse disposition to flower, clear distinct colours, and compact leaves. The plants raised from seed, some sixteen months ago, now fill a large house. I measured many of these, and found the corms to be fully 3 inches across, bearing scores of flowers, and dense masses of leaves a foot through. Immense quantities were already potted off, and others in large boxes up through the soil as close as beds of Mustard. Exact numbers of this plant cannot be calculated upon as correctly as some things that are raised from cuttings, but Mr. Ladds intends to grow as near 50,000 as he can manage this year. The plants are

reduced so as to give them a short rest before being pushed on again to come in during the London season, when there is the greatest demand for the flowers.

Two 150 feet by 25 feet houses are filled with *Camellias*, all planted out, which in another year will require as much more room, as every other plant will need taking away. They are medium-sized examples, in excellent condition, profusely set with buds.

Fuchsias are grown by Mr. Ladds in quantities probably not approached by any other plants, taking the place in spring of other things cleared off. The speed at which they are got up, from the time the cuttings are put in to their being established and full of flower in 48-pots, would astonish those who treat *Fuchsias* in the usual way. A large house is employed for their propagation alone all through the winter and

Vines their second season had at the time of my visit in December last finished a splendid crop of fruit, in fact more than most growers would approve of for Vines of their age, although they are exceptionally strong. The crop would average from 12 lb. to 15 lb. to each Vine. The sorts are *Black Alicante* and *Lady Downe's*, fair-sized compact bunches, as black as possible and in faultless condition. Even at that time, when occupying only the lower part of the roof on each side to less than half way up, this immense house was a sight such as many Grape growers have not seen. Ten more houses, each 100 feet by 25, were to be built for Vines this spring, so as to get them planted by midsummer. It is scarcely needful to say that all work of this kind is done by men permanently employed on the place, even to the building of the market vans, several of which

were in hand at the time I was there. Each van holds forty dozen plants in 48-sized pots.

As a matter of course, the watering, air-giving, and general attention to the various things grown, are carried out by a regular staff of men and boys, with the help of women in summer; but all that can possibly be done by piece-work is managed by the regular hands during overtime; all the potting is so done at the rate of 5s. per 100 dozen from the cutting-pots into 60's, and from these into 48's, which latter is almost the only size used here for market. Everything is hard-potted, and an expert hand can do 200 dozen in the course of a long day, with a boy at 6s. a-week to crock the pots, the material used for which is mostly burnt clay ballast. Mr. Ladds' expenditure for pots is a serious item, amounting, I understand, to over £1200 per annum for 48's and 60's alone.

There are two things that strike the visitor here—the regular uniform healthy vigour of the stock throughout the various houses, each plant being a counterpart of its neighbour, as if the whole had been cast in a mould; and the few hands that get through the immense amount of work. It is an evidence that, even in gardening matters, where the things grown are confined to a few kinds, the division of labour, where skilfully directed, can accomplish that which otherwise would not be possible. *T. Baines.*

THE COOL ORCHID HOUSE.

To keep pace with the times there must be an advance movement made even in the matter of the construction of Orchid-houses. Any one who knows anything of the culture and wellbeing of Orchids has learned that lofty houses are ill-suited for most of the family, unless it be for such of them as can be suspended in proximity to the glass, and even they are apt to get scant justice, not only in the matter of watering, but the eye of the keeper cannot be so constantly upon them as is desirable. Of course there are always exceptions, as is the case in the great house at Chatsworth, where Mr. Speed manages to grow on a raft, set up perpendicularly, *Renanthera coccinea*, and flowers it, too, in such profusion that, go when you may, there are panicles either in course of formation or loaded with flowers. But it is well known that the *Renanthera* is a wandering, wayward subject, refusing to be treated like its ordinary companions, and looking to its condition and the abundance of its succulent roots, twined in all directions round the raft, it might go, for aught one knows, to 50 feet high. But it is not so with the family in general, consequently some other description of house than a lofty one must be provided to command anything like satisfactory cultivation.

This, so far as it goes, has been well known and followed up for years, but there are other matters to be considered in construction which aforesaid were not so provided for. In the matter of cool Orchid-houses in particular there has not until recent years been the same attention given to the particulars of a suitable groundwork for moisture supply. Now every culturist knows how invaluable a copious supply of moisture is at the present season, for instance, but in times past there have been instances where these supplies, copious as they may have been, have not had anything like proportionate beneficial effects. A house right enough in respect of length, breadth, and general superficies, with a stone, slate, or wooden stage, and a path of some kind to walk on, seemed to be the be-all and end-all of horticultural architects and others having a say in the matter. It might be right even in the matter of ventilation, having all the appliances for ease to the operator, and good to the interior of the house itself; but the most important part had been vastly underrated until the experienced practitioner demanded some additional means for holding and giving off the moisture. This apparently simple matter is only beginning to be understood as it ought to be, and is catered for accordingly. Of course, I shall be told that long since there were tanks for setting such tropical plants in on inverted pots, raised out of the water, but that is not altogether the proper thing. Moisture ought to be held in reserve in some kind of medium where the eye does not exactly see it. I don't believe in miniature duck-ponds or oblong aquaria: there is a place for them, and very interesting they are in their way, but it is not in the Orchid-house,

What are wanted and what are supplied in the places I shall hereafter name to more or less purpose, are a comparatively water-tight stage, with 2 or 3 inches of pebbles, or shell, or gravel, to hold and give off moisture in a natural way; a waterway underneath and below the level, and out of the way of your feet as you walk along, and a vacuum under the grated path. If you have a tap you can use it in the layers on the top of the tables to some purpose, you can irrigate your paths and fill your cisterns without annoying or interfering with any one's comfort, and the healthful consequences to these examples of alpine life that you have bought in to see growing and unfolding their wondrous beauty, other things being equal, do not need my pen to pourtray.

By adopting a system of this kind you do battle successfully against the rays of a midsummer sun. Of course I am estimating that your shading is down, and that you have a current of air playing between the glass and the shading, whatever that may be. Depend upon it, the want of success of the summer culture of cool Orchids is attributable to an atmosphere insufficiently charged with moisture. On the continent of Europe and in the United States the chief difficulty all along has been in doing battle against the sun and its powerful influence, particularly with the cool division of the Orchid family; but I feel quite confident that if something like an approach to a dripping atmosphere could be provided, much of their want of success would be rectified. I say so, and it is within my knowledge that the thermometer in the shade on their famous Fourth of July all but touched 100° about Boston and New York. One correspondent, and a tolerably successful grower in the States, says by sunk pits—that is, pits wholly below the surface level—he can manage to grow and flower *Odontoglossum Alexandræ* pretty well. With adequate moisture under the level of the pots drawn by capillary attraction among the leaves and pseudobulbs, the desiccating effects of such extreme heat would be considerably modified.

Well, all this is known and practised by not a few in this country now, and my object in touching upon it is to draw the attention of the beginner and any one interested, so that they may reap the best effects by following out what cannot be called other than sensible advice. This system I saw adopted at Burford Lodge; at Mr. Lees, Downside, where there are the beginnings of an excellent general collection of Orchids; at Mr. Hill's, of Arnot Hill, Nottingham, which is undoubtedly one of the rising places for Orchid cultivation in the midland or any other counties; at Mr. Winn's and Mr. Chamberlain's, in the neighbourhood of Birmingham, the former gentleman particularly having a very finely grown lot of cool Orchids—all of which were doing excellently under something like the conditions which I have shadowed forth. There are many others that might be named, where the system is carried out in lesser degree but on the same principle. Of course it is quite within the province of a grower to keep up moisture, but look at the labour and the flooded paths which prevent ladies from even moving over them with tip-toe carefulness, when it can be so easily avoided especially in building new plant-houses. In truth it would pay to renovate old houses, for if you could not save a man's labour his time undoubtedly could be more profitably employed in keeping his plants and his houses in order. *James Anderson, Meadlowbank.*

ADDITIONAL NOTES ON NEW ZEALAND PLANTS.

At a meeting of the Edinburgh Botanical Society, held on January 8, I read notes on thirty New Zealand plants that had withstood the unusually severe winter of 1878-79 in my garden. The winter of 1879-80 has been still more destructive of plant life, in consequence of the greater intensity of its frost having been preceded by such an ungenial growing season, many plants never attained to a properly matured state. I now submit the following remarks on the effects of the past winter, which for sake of references are given in the numeral succession formerly adopted.*

* The minimums of the seven months of winter 1879-80, in which the temperature fell below the freezing-point, were as follows:—First column from observations taken at Edinburgh by the Scottish Meteorological Society, with thermometer protected from direct radiation by louver boarding, in the usual

1. *Pittosporum tenuifolium*.—The 5 feet high plant on a south wall was reduced to 4 feet, most of its young shoots, and some older branches that stood out from the wall, having been killed. Only a few of the smaller plants in the open ground are now so far alive that they are producing shoots from at and below the earth's surface.

2. *Plagianthus betulinus*.—The 23 feet high plant on a south wall lost about 7 feet of its top from some unaccountable cause, but all below is in perfect health. The 15 feet high plant in the open ground was uninjured; and has now a handsome, profusely leafy top.

3. *Plagianthus divaricatus*.—Having lost fully a third of its height, the plant is now only about 2 feet, but is pushing out young shoots freely.

4. *Aristolelia racemosa* was killed to the ground on a south wall, as well as in the open borders, but all the plants are reproducing healthy shoots from above their roots.

5. *Discaria Toumatou* is perfectly free from injury, but has not flowered this season, although growing freely.

6. *Coriaria ruscifolia*.—Planted out last autumn in front of a south wall, it has been killed to the ground, but is budding from below.

7. *Edwardsia pulchella*.—A plant fully 8 feet high, which overtopped a south wall was killed to within a foot of its base; while some small plants at the bottom of an easterly exposed wall were uninjured. *E. grandiflora*, 2 feet high, on a south wall, had only some points of its young shoots slightly hurt, and is now in healthy growth.

8. *Chianthus puniceus*.—I had no plants outside last winter, but one of the variety, *C. p. magnificus*, stood the winter in a cool frame, and having been planted on a south wall in March it is now growing vigorously.

9. *Rubus australis*, and *R. a. cissoides*.—Both the species and variety were completely killed.

10. *Leptospermum scoparium*.—A number of small plants in the open ground were all much cut down, but none were entirely killed.

11. *Fuchsia excorticata*, on a south wall, was killed to the ground, but is now sending up vigorous shoots.

12. *Fuchsia procumbens* still continues to grow freely on the rockery.

13. *Aciphylla Colensoi*.—Four rockery plants in different exposures have all stood perfectly unharmed. One that flowered last year has now three strong crowns or tops, and many of its Palm-like rigid sharp-pointed leaves are over 2 feet in length; neither it nor the others have any appearance of flowering this season.

14. *Griselinia littoralis*.—In consequence of the young shoots and foliage of this handsome evergreen not having been nearly matured when subjected to the almost zero temperature of December 3 and 4, it has suffered fully as much as the common *Laurustinus* and *Aucuba*. My plant, that was 6 feet in height, as well as others of smaller size, were killed down to near the ground, but they are now sending up vigorous growing shoots.

15. *Corokia cotoneaster*.—Two varieties on a south wall had the points of their most protruding young shoots a little injured, but both were covered with a profusion of their small yellow flowers in March and April. One plant in the open ground was entirely killed, but another is producing young growths from its base.

16. *Olearia Haastii*, growing in the open ground, was not in the least injured.

17. *Veronica Traversii*.—My oldest plant, which is now about 2½ feet in height by fully 2 feet in diameter, had not a single leaf in the least injured; neither had a number of recently rooted cuttings that were planted out in different exposures during last November.

18. *Veronica salicifolia*.—Several plants (the largest of which had a stem 2 inches in diameter) that were injured in 1878-79 were entirely killed last winter.

19. *Veronica pinguifolia*.—Five plants in different exposures were uninjured.

20. *Veronica Hulseana*.—A plant put out last autumn was completely killed.

manner: and second column, from observations at the Edinburgh Botanic Garden, by a thermometer fully exposed to direct radiation—November, 1879, 18°; December, 1879, 1°; January, 1880, 10°; February, 1880, 23°; March, 1880, 22°; April, 1880, 27°; May, 1880, 29°.

21. *Muhlenbeckia complexa*.—Two old plants growing on south walls, and one in the open border, were killed to the ground, but all are now producing an abundance of rapid-growing shoots.

22. *Libertia grandiflora major*.—Of many plants growing in different exposures a few have been killed, and the growths of the others are more weakly than hitherto; nevertheless, many have flowered, and the plants generally seem to be recovering their natural vigour of growth.

23. *Libertia ixioides* seems much harder than the last.

24. *Cordyline australis*.—Several plants that were seemingly killed when 3 to 4 feet high have put up shoots from depths of from 3 to 6 inches. Some of these have perished, but others that were covered with snow during the hard frosts of last December are still growing. The one that stood unharmed till it was cut down by the winter of 1878-79, and which the late Dr. Moore, of Dublin, said was *C. callicoma*, put up a young shoot last spring which now measures 21 inches in height.

25. *Chrysobactron Hookeri*, from one-year-old seedlings upwards, has stood unharmed in various exposures, and the larger plants lately produced a profusion of their beautiful yellow flowers.

26. *Phormium tenax*.—The common green, as well as two variegated leaved varieties, had their leaves killed to within about a foot of the ground, but they have now got new leaves, and are growing freely.

27. *Carex secta*.—Of about a dozen plants three perished last winter, but all the rest are growing well.

28. *Arundo conspicua* has been entirely killed.

29. *Aspidium Richardii* is unharmed and growing freely.

30. *Todea superba*.—In a cool shaded frame on the north side of a wall this most elegant of Ferns withstood the last, as well as it did the six preceding winters, and is now growing fully as freely as ever, several of its young fronds being over 21 inches in length.

With the view of conveying still more correct ideas as to the hardness of the forementioned, as well as of the many other unimported or little known New Zealand plants that are associated with them in their native habitats, I append the following remarks, showing the effects of the last two winters on a few generally well-known plants that were grown along with and under the same circumstances as the forementioned.

Asplenium marinum (the Sea Spleenwort), gathered some years since on the coasts of Arran, was killed last winter in the same cold frame where the *Todea superba* (30) has thriven so well.

Aucuba japonica.—Plants of the common variety lost most of their leaves, and were killed from a third to half-way down.

Ceanothus aureus dentatus and *rigidus*, all well-established plants, 10 to 15 feet high. The two first species were a good deal injured by the winter of 1878-9, while the last was impaired; but all were killed last winter.

Euonymus latifolius, and its variegated varieties, were scarcely hurt in 1878-9, but all lost their branches and much of their main stems last winter.

Fuchsia Riccartoni, which had attained to a considerable size, was killed to the ground, but has sent up strong young shoots.

Laurus nobilis.—Of two plants of the common, one Willow-leaved, and one variegated Sweet Bay, the latter was killed, while the others remained uninjured, in 1878-9; but last winter one of the first and the second were also killed, while the other plant of the common variety only lost the points of its shoots, with a few of its small branches, and is now pushing fresh leaves and young shoots.

Lavatera arborea (the Tree or Sea Mallow).—In an essay recommending the use of a tall growing variety, which I found in Arran, as a fibre plant for paper making, for which I received the Highland and Agricultural Society's Gold Medal in 1877, I mentioned that many of the plants suffered when the thermometer fell to about 15° Fahr., and that most of them were killed when it fell below 10°; hence all of my young plants perished in each of the last winters. Sown in March of each year, the young plants of the tall variety had attained heights of 6 to 8 feet before the winter set in, while those of the east coast or "Bass Rock" variety, were only about half their size, but all seemed equally tender.

Passiflora carulea.—A fine plant which had grown for eight years on the same wall as *Muhlenbeckia complexa* was killed in the winter 1878-9, and a young one, planted in spring 1879, was killed last winter.

Roses.—Many of the hybrid perpetual and Chinese varieties, which have of late years almost superseded the old hardy sorts in cultivation, have either been killed or so much injured by the severity of last winter, that only comparatively few, weak, and unsatisfactory blooms need be looked for this year.

Veronica decussata was completely killed alongside of *V. Traversii* (17) in 1878-9, and plants that were put out in spring, 1879, were destroyed last winter. The recently-introduced fine hybrid shrubby *Veronica*, that withstand our milder winters, have all been killed; but in a letter recently received from General Burroughs, he mentions that a collection of those that I sent him some years since are all thriving well in the island of Ronsay, Orkney, where *V. decussata* has become naturalised, and is one of the best of seawind resisting shrubs.

Viburnum Tinus.—The common *Laurustinus* has either been entirely killed to the ground, or so much cut down that only the thicker parts of the larger branches are alive.

Ulex nana (the dwarf Whin or Furze).—Fine established plants were killed on the rockery in 1878-9, as was also a young plant of the double-flowered *U. europea*; while last winter large plants of the latter were either entirely killed or cut down to the ground, as were also those of the Irish Whin, *U. stricta*, and of the French Whin, *U. provincialis*. William Gorrie, Rait Lodge, Trinity. (Read at the last meeting of the Edinburgh Botanical Society.)

POTATO PROSPECTS.

THE universal verdict upon the present appearance of Potatos is, that it is splendid. Everybody says the breadths of Potatos never looked better; and, for once, everybody is right. My own breadths excel all that I have had here for the past five years. The promise now is magnificent; what it will be in a fortnight hence no one can tell, but upon what takes place during that period pretty well hinges the fortunes of the Potato crop. Not only is there this superb growth, but there is a fine bloom, and without doubt that means strength, and, in spite of all the wails of stupid alarmists, it means health also. If the Potato was that degenerated, worn-out, exhausted, diseased thing, that pessimist wiseacres declare it to be, it would not now exhibit all those evidences of robust health and strength that are seen. There is not the least evidence of loss of vitality, and no stronger illustration of the life that is in the old dog yet can be found than in the abundance of bloom that adorns the Potato breadths.

We have, so far, got a Potato season. Perhaps this is a rare visitant now, but we have it none the less, and the result in growth is seen in a remarkable degree. Writers should be careful in the future how they prate about a degenerate stock and a worn-out tuber. Facts now and then suddenly spring up to confound them, as facts have done this year. But we shall be asked, Is not this great robustness an element of danger, after all? When the disease comes, will it not strike with all the more force into this extreme luxuriance? There is too much reason to fear that it may, for our knowledge of the action of the *Peronospora* shows that a robust growth is just the condition upon which the fungus most rapidly feeds. On the other hand, this luxuriant health is less due to high cultivation than to the kindly nature of the season, which has so universally promoted Potato growth. Where there is special stimulus there is, of course, extra, and in many cases excessive, plant development; but generally, even where there has been little or no application of stimulants, the growth is still remarkable and good.

Judging by analogy as found in animal life, the Potato plant ought to be all the better able this year to resist the attacks of the fungus; but this, and indeed all the concomitants of the disease, hinge now more upon the prospective nature of the weather than upon anything else, and that is such a very uncertain factor that we can hold nothing certain, but live only in hope. In penning this I do not forget that last year was one of the worst disease visitations known for many years; that if ever the ground was infected with disease-spores it was last autumn, when thousands of tons of diseased tubers were left to rot in the soil, and upon it many thousands of tons of haulm

went to decay. Yet what now do we see? Avoid in the rows is rare, showing that the sets must have been sound; and in spite of frequent rains, and heavy electrical storms, no alarm worth notice as to the presence of the disease has yet been raised. I do not say that all this shows that those who demand the destruction of the haulm and all diseased tubers are mere alarmists, but I say that, so far, their theory is not yet finding practical support.

There is another point that merits attention. Great stress is constantly being laid upon the necessity for change of both seed and soil. I have never insisted that these are essential conditions to good Potato culture, but it suits the purpose of some persons to assert the first somewhat loudly, because it leads to trade. I want to serve the interest of truth and exactness rather than trade just now, and therefore I prefer to say that in my own breadths the growth from sets saved from stocks grown here for several years is quite as good in all respects as is seen in plants from sets obtained from divers sources. There is much more in saving or storing your seed-tubers well and safely than there is in relying merely upon change of seed. Then I am growing large quantities of Potatos of all kinds upon soil that has produced them for five successive years, and some for a much longer period, yet there is the fact that never, at any time, were the plants more healthy, robust, or even, than now. The simple fact is, that the soil is but just becoming Potatoised; that is to say, during the first few years since it was broken up from pasture it retained its crudities, but now it is getting more friable and full of the elements of health for Potatos. I am sure that both Mr. McKinlay and Mr. R. Fenn would endorse this opinion, for the one grew his grand specimens year after year on the same soil at Beckenham, his samples improving from year to year; and the latter found his soil in the old rectory garden at Woodstock fuller of Potato vigour at the end of twenty years than when he began to grow his favourite tuber.

But the experience of years gives some hint that is worth noting; and the first in relation to the successful culture of the Potato is found in deep tillage. Soil trenched 2 feet, without any dressing, is now showing better results than soil that was well manured but only dug the usual depth. The deep tillage allows all surface moisture to pass away quickly; it promotes more even temperature at the root, and maintains growth long after shallow-planted breadths have succumbed to the drought. Then plenty of room between the rows is essential. For strong growing kinds I have never seen the rows too wide apart, and this year some of mine that have now 3 feet in an open field would have been all the better for another foot of room. The wider space admits of free cultivation with the fork, the more complete earthing-up of the plants, and, after that is done, the breaking up roughly of the trodden furrows permits all surface-water to escape freely. If ever we are to deal with the haulm in the way of promoting its speedy destruction, I see no better plan than the growing our Potatos in from 4 feet to 5 feet rows; then, as soon as the disease appears in the leaves, turning the haulm of two rows into the intervening furrow, treading it down and smothering it with quicklime, then covering up with earth thrown out from the furrows on either side. This plan would not necessitate the immediate lifting of the crop, or the cutting off of the haulm, as that remedy generally proves as bad as the disease. A double row of Cabbages might be planted on the buried haulm. Even this plan would involve a considerable cost for labour, and its adoption would be of little avail unless universally done. To do this with a few rods in one garden whilst 20 acres in the next field were untouched, would be absolutely useless. To remove all the haulm bodily, and to burn it, is impossible. If we take the produce of an acre of ground to be in haulm as in Potatos, we get from five to six tons of haulm per acre—an enormous bulk over 20 acres, that it would take weeks to cut and remove, whilst burning would be out of the question. It might be baked in enormous ovens, but how, and by whom? The whole thing is literally too stupendous, and beyond the power of the grower to accomplish. Even if this were done, who will assert that any good is accomplished? There is no proof that all the spores of the *Peronospora* would be found on the plants; there is no evidence as to the time when the fungus reverts to Mother Earth; in fact, all our stamping-out measures would be taken in the dark, and when carried out might, in the end, leave us not

one whit the better off. Even if we went so far as to prohibit the cultivation of the Potato entirely in this country for several years, there is not the least certainty that the re-introduction of the tuber might not find the air, somewhere about this time of the year, as full of fungus-spores as ever.

To urge the need of greater care in the selection of seed tubers, and in the winter storing of them, is to tell an oft-told tale. To urge the avoidance of partly diseased ones is another of the same kind, but it is not one that has great force, as few tubers that are affected by the disease live to be fit for seed eight months after being lifted from the ground. These, however, are the chief remedial measures as far as the grower is concerned. The report of the Potato Disease Committee, it is hinted, will point to the desirability of more being done in the future by the raiser, and even proposes that Government should take the matter of Potato raising in hand. The Government will do well to let this alone. Private raisers will do what can be done far better than any Government official, be he ever so learned, will do, and the trade will soon put any kind having special merit into commerce; none the less, however, must we look in the direction of getting eventually kinds that do not largely fall a prey to disease, but these can only be obtained by seeking for them, and not by the mere turn of good luck.

The present season offers opportunities for cross-fertilisation that many will doubtless take advantage of. I have made several crossings between the best disease-resisting kinds, and should the disease permit the seeds to ripen, shall next year have seedlings enough to plant a large piece of ground. It is here that some external help to the raiser is needed, as all his work now is experimental and costly, because it takes six years at least to determine the value and good qualities of any kind, and out of thousands of seedlings there might be several score that present features marking them out as needing further trial. It is when this stage is reached that Potato raisers in a large way shrink from the work and responsibility they have undertaken. It is unfortunate that one of our most favoured resisting kinds should be deficient in pollen, whilst those kinds that have abundance, and produce berries by bushels, exhibit the disease most freely. If those who fertilise use such kinds as these their labours are likely to end in failure. If a great end is in view the means to attain it must be adapted to the object, and these must be guided by intelligence, or the results will fall lamentably short of what is aimed at. A. D.

FERTILISATION OF THE TULIP.

It has been believed that the nectar of the Tulip is poisonous to bees, and that they rarely escape from the flower alive. However this may be with the yellow Tulip (*Tulipa sylvestris*), in which Kerner (*Flowers and their Unbidden Guests*, p. 88) has described a special contrivance for excluding small insects from the nectar secreted at the bases of the filaments, it cannot apply to our common garden Tulip, *T. Gesneriana*, for in this species there are neither glands to secrete nectar nor tangles of hairs to protect it, and I have never found nectar in the flowers. It is, moreover, small insects which the plant appears to attract, although the smooth cup of the perianth probably excludes crawling insects. Some of the smaller species of bees of the genus *Halictus* I have, during the past five years, observed to be frequent guests, coming for the pollen. They always alight upon either the perianth or the stigma, most frequently upon the latter, and crawling down from their alighting place to the base of the stamens, they then climb up to reach their booty. Whatever pollen they bring from other flowers has therefore a chance of reaching the stigma first. The perianth of the flower is red, the stigma is yellow, and the stamens—which are deeper down in the cup of the flower, and thus to a certain extent out of the line of the bee's flight—are black; and it is probable that the marked difference in the colour of the stigma serves to attract the bees to the proper and most convenient landing.

There appear to have been no direct observations hitherto made upon the fertilisation of the Tulip by insects. It may be that in the native home of the plant large insects are concerned in its fertilisation, or that *T. sylvestris* thus differs from *T. Gesneriana*; but Kerner's supposition that the trichomes on the filaments of *T. sylvestris* are intended to exclude small insects from the nectar, is open to doubt in view of the observations upon the visits of small bees to the other species. A similar structure for protecting the nectar in *Geranium sylvaticum* was believed by Sprengel to serve as a shield against rain, and it may be that this is the real purpose in the Tulip. Whether the supposition (of which mention is made in Miss Staveley's *British Insects*, p. 250), that the nectar of the Tulip is poisonous, is founded upon authenticated facts, is also worthy of further investigation. W. H. Patton, Waterbury, Connecticut, in the "*American Entomologist*."



FIG. 18.—LILIUM CORDIFOLIUM. (SEE P. 80.)



THE NECTAR CUPS OF THE MARCGRAVIACEÆ.

MR. W. B. HEMSLEY, to whom I am much indebted for lending me the drawings of the *Marcgravia affinis* (Hemsley) has made some remarks in your number for July 3, to which I now beg to reply.

Mr. Hemsley says:—"With reference to the position of the orifice of the nectar-cups, Dr. Wittmack seems to have been in the dark until near the end of his work, and then not to have thoroughly comprehended it. . . . All the species of *Marcgravia* itself figured in the *Flora Brasiliensis* are represented with the inflorescence erect, instead of pendulous, so that the orifices of the nectar-cups are directed downwards, yet in his description of the genus the author describes the umbel as pendulous. On the other hand, he states that it is worthy of note that the opening of the nectaries is usually directed downwards, yet the honey does not flow out."

Why did not Mr. Hemsley give the direct continuation of this latter sentence of mine, in which I give the explanation why the honey does not flow out? I must now give the translation of the whole passage from my original report in *Sitzungsberichten der Gesellschaft Naturf. Freunde*, 1879, p. 21, that the reader may judge:—

"As to the nectaries (of the *Marcgraviaceæ* in general, not only of the genus *Marcgravia*), it may be observed that although their orifice is commonly directed downwards, yet the honey does not flow out. In most of the species of *Norantea* with large nectaries, the pitcher-like nectary turns over when filled with honey, as Aublet figured in *Plantes de la Guyane Franc.*, i., t. 220 (cf. Martius, *Flora Bras.*, fasc. 81, t. 47, iii., 2); in *Souroubea guianensis*, where the bracts are equitant, the spur which is at first directed upward afterwards bends downward, if it have not already come into this position by the downward movement of the pedicel. But in *Marcgravia* the whole inflorescence is pendulous (this word is printed in the original, in italics, "gesperrt"), so that the large ascidia with their wide orifice turn upward."

As to the genus *Marcgravia*, I think this sentence is quite clear; I was never in the dark about the pendulous character of the inflorescence, for the oldest and the most recent descriptions describe them as pendulous, and Mr. Hemsley himself quotes the passage of Patrick Browne, who described so well all he saw. When, not only in the *Flora Brasiliensis* but in several other modern works, the inflorescences of *Marcgravia* are represented wrong side upward, as Mr. Hemsley calls it, it is because it is mostly the practice in systematical publications to arrange the objects so that the organic base is turned toward the base of the plate. Even in pomology nobody draws an Apple in its pendulous direction, but always with the calyx, or "eye," upward. If it is merely the question of giving the habit, a pendulous inflorescence would be more correct, and in the *Kosmos*, iii., p. 263, I therefore gave the inflorescence of *Marcgravia picta*, Willd. (nepenthoïdes, Seem.), pendulous, as did Belt in the *Naturalist in Nicaragua*, p. 129.

After all, I think it was not necessary to indicate the pendulous position of the inflorescence of the genus *Marcgravia* more prominently than I did—the morphological nature of the flower is only rendered difficult of comprehension by doing it so; and as to the text-books I can name Eichler, *Blüthendiagramme*, ii., 249, where it is distinctly said that *Marcgravia* has a pendulous inflorescence. Prof. Dr. L. Wittmack, Berlin.

Forestry.

THE LARCH.—It is very interesting and instructive to observe both the general and particular aspects of the forests at the different seasons of the year. In these days we hear much about education, but it is not very evident that either all of the most important subjects, or the best mode of teaching them, have been decided upon. Until we are taught how to look at things so as to see them, as well as to know what things first to look at, above, beneath, and all around, at all times and all seasons, we can scarcely be said to have attained the full status to which our general enlightenment and privileges entitle and warrant us.

It is not to be expected that every person will be deeply interested in every subject, or possess alike the faculties of penetration and observation, but it is to be

desired and looked for that much of the time spent in idleness and trifling (not to speak of scandal and gossip) should be employed in a better and more ennobling way. Not every one that sees a tree, and knows it from a potherb or garden vegetable, can tell its name, and much less its history or species; fewer still know the habits of a tree, or can give any intelligent account of their mode of growth, structure, propagation, uses, value, or peculiarities. And we may rest assured that Nature, like a true lover, will not reveal her deepest and grandest secrets to any suitor unworthy of receiving and keeping them.

The primary object of this paper, however, is to direct attention to some features of the forest which may to some extent have escaped present observation. Last season, as we all know, was very remarkable for its abundance of rain and moisture, and scarcity of heat and sunshine; and it is not to be wondered at that every vegetable product whose normal condition depended upon an average temperature and rainfall should suffer under circumstances quite the reverse. As the effects of the dry season of 1868, the short growths of most Pines and Firs are at the present day, and will continue as long as the trees exist, quite observable to even the least instructed in physiology, and so it is, and will be, respecting 1879. Some trees endure adverse conditions better than others, and at the same time appear equally sensitive and appreciative of specially favourable conditions. The Larch is a very remarkable tree in many respects, and deserves more attention by far than has ever yet been bestowed upon it. It requires a considerable amount of moisture from the time it begins fairly to extend its shoots (top and lateral) till it has finished its season's growth, but it also requires a high temperature along with the moisture. Now, last season being a cold and wet one, and unfavourable to the Larch, certain unfavourable results have succeeded it. The sap throughout the season was surcharged with water, resulting in some cases in what is termed dropsy, ulcer, or blister, a so-called skin disease, but actually the result of too much water in the sapvessels for the tree to be able to dispel without the aid of the atmosphere in evaporating it. When the circulation of the sap is feeble the extremities of the tree are the first to suffer, and this is but too obviously manifested in the dead and withered extremities both of the top shoots and branches. On looking over some otherwise fine and prosperous young Larch plantations this week, I find many trees considerably injured as above indicated. Some have lost vitality altogether, some only in the points of the branches; some have lost their leaders, some are dead nearly half-way down the stem, and some only on one side of the tree, and near the top, or the upper branches are alive and the lower ones decayed. Trees situated in secluded places, as deep ravines, are most affected, and those growing amongst Scotch Pines or Norway Spruce have also suffered more than when grown alone. On dry soils, and amongst Whins, the season proved favourable for the Larch, and it was only under conditions where in ordinary seasons the tree languishes for want of moisture that the Larch at all succeeded last year. The Larch tree should not be planted in places inclined to dampness or wet, nor yet on arid and very dry shallow soils; nor in situations much exposed either to the sea-breeze or hard winds. It should not be planted in places liable to spring frosts, because if planted in any place, or under extreme conditions of any kind, when any unusual season occurs, either wet, dry, cold, or frosty, under such circumstances the whole previous labour and capital are lost, and disappointment prevails on every hand.

THE SPRUCE.—The Norway Spruce, though usually regarded as a hardy tree, has proved too delicate and tender to withstand the effects of last summer's rains and sunless atmosphere. There are a considerable number of Norway Spruces under my daily notice, which have lost nearly all their old foliage, and present quite a strange and unique appearance. Not having studied the nature and habits of the Norway Spruce so closely as I have those of the Larch, I cannot speak so confidently of it in several aspects. One point of difference between it and the Larch is, that on exposed situations, as well as under shelter, the same results appear—namely, the falling off of the leaves. I have examined somewhat minutely the various phases of this phenomena, and observe that falling off of the leaves is confined much more to the south than the north side of the trees, and the lower

part; and where the branches are dense the falling off is greater than higher up, and near the top, where the branches are thinner. I observed a similar occurrence in the nursery, in May, in lines of plants 1½ to 2 feet high, and then it occurred only in spots. The plants were also affected with aphides, and the presence of a great number of birds first drew attention to where it was. The plants have now in a great measure recovered in growth, and are free from insects.

I am of opinion that no wood could be perfectly ripened and matured last season; and in confirmation of this several hardy monthly Roses, in a warm and sheltered place, were killed by frost down to the surface of the ground. *Laurustinus* have also been killed, but this occurred once before, in the same place, about 1877. Trees of most species have been rendered very weak, and but for the present congenial weather many deaths might have resulted which, it is to be hoped, the continuance of propitious weather, will do much to avert. C. Y. Michie, Cullen House, Cullen, July 9.

Obituary.

WE much regret to record the death of an old and valued contributor to these columns, in the person of the Rev. W. F. RADCLYFFE, of Okeford Fitzpaine, near Blandford, Dorset. The deceased gentleman, who died on the 8th inst., aged seventy-four, was the fourth son of the late R. Radclyffe, Esq., of Foxdenton, Lancashire. He made his mark as a horticulturist while rector of Rushton, which parish he left in the spring of 1866 for the one in which he ended his days. His great specialities were Roses, Strawberries, and Peaches and Nectarines, and on these four subjects his contributions to periodical literature have been of a voluminous character, his tersely written letters being marked by a freedom from egotism and narrow-mindedness by no means common in specialists of his enthusiastic type. He was in all respects a man of whom the world spoke well, and a better amateur gardener perhaps than any whose name will be found within the covers of next year's *Clergy List*.

— Many of your readers will read with regret that M. HENRI-ÉDOUARD DESFOSSÉ THUILLIER, head of the well-known firm of MM. Desfossé Thuillier et Fils, of Orleans, died on Thursday last, at the comparatively early age of fifty-eight years. M. Desfossé Thuillier had for many years occupied a prominent position amongst French horticulturists, by whom he was widely known and greatly respected. In England he was also well known, having frequently visited nearly all the principal establishments connected with horticulture in the kingdom. All who had the pleasure of visiting his establishment can testify to a genial and hospitable reception; and owing to his rare conversational powers, combined with an intimate and practical knowledge of horticulture, acquired by a lifetime devoted to that subject, a few hours spent in his company were always very agreeable ones. The English nurserymen who are in the habit of visiting Orleans will feel that each one has sustained a personal loss by his decease; but although he has gone to "that land whence no traveller returns," his memory will long be cherished by all who knew him; for he was an honest man, and "an honest man's the noblest work of God," A.

Garden Operations.

KITCHEN GARDEN.

CUCUMBERS OUT-OF-DOORS.—These are not in a general way extensively grown in private gardens, simply because the chief supply for domestic purposes is furnished by choice varieties grown under glass. In consequence of this the cultivation of Cucumbers out-of-doors is restricted to the supply of fruits for pickling, and these are usually obtained during the summer months. The seeds are sown towards the end of April, and the plants reared artificially until they are large enough to be hardened off prior to their being planted out, which takes place about the second or third week in June. For private consumption a frame or two of each, or a few hand-glasses, will produce an ample supply. In growing them in such a limited way it is advisable to prepare places for them by introducing a bed 3 or 4 feet square of fermenting materials beneath where the plants are to be placed, on which prepared soil, consisting of

fresh loam and good manure in equal proportions, should be placed, about 16 inches in thickness. If handglasses are used these should be employed immediately the plants are put out. In each of these two or three plants should be placed, and be kept moderately warm for a few days, after which the ordinary course of treatment should be pursued till the vines require more room to extend, when the lights should be elevated on pots, for the purpose of letting them run out. Another plan, which dispenses with any further preparation more than the addition of a little fresh loam to be intermixed with the existing soil, and the one which we practise every season, is to utilise for these plants the frames where early crops of vegetables as Carrots and Potatoes have been forced; by so doing no danger need be apprehended from late frosts, because the lights can be left on until it is found expedient to remove them altogether—which is only rendered essential when the plants are making growth too exuberantly, as under such conditions they are not generally so fruitful. In the course of cultivation stoppings should be made until such time as a sufficient number of shoots are obtained to run out equally over the whole surface of the bed, and the lateral branches from these should be kept pinched at the second leaf after every break, only removing those which are too thickly placed. As Gherkins are required to be of a particular size it will be needful when the plants come into bearing to look over and gather such as are fit every other day or so.

Of late years a wonderful improvement has been effected in the ridge section of Cucumbers, some of the new varieties attaining to a good length, and in appearance being much more inviting than they formerly were. If these are grown simply for private use, the method of cultivation as described above cannot well be superseded.

ORDINARY WORK.—The training and stopping of Tomato plants out-of-doors, on walls and other places, will now demand considerable attention. The way in which these are trained must depend on the nature of the position they occupy. If the space will admit of the plants having a perpendicular or longitudinal run of about 6 feet this plan is commendable for growing them with single stems; if less space can only be had, more shoots and a wider spread should be indulged in. In both cases all divergent shoots should be removed from the main stems at an early stage, and the rest of the foliage should be secured intact until such time as it may be prudent to remove some of it, in order to assist the fruit to ripen properly, which, however, is scarcely ever needed unless they are very late. In the process of nailing or tying use strong shreds or ties, and give ample space for the growth to enlarge.

Gourds of ornamental character are planted mostly in conspicuous places; let these also be kept in proper trim by nailing them up securely as the growths proceed. Annual kinds of herbs, such as Sweet Basil, Knotted Marjoram, Summer Savory, &c., if not already sown, should no longer be delayed. Frames or unheated pits will provide suitable accommodation for growing these plants at this season. The ordinary way is to sow in drills about 15 inches apart, and thin out the plants afterwards from 6 to 12 inches from each other. Chilies and Capsicums can also be done with a greater degree of certainty as regards results in such places than under other conditions out-of-doors. The prevailing state of the weather is of a most salubrious nature, and vegetables now in season are of the greatest excellence. Potatoes are excellent, and the yield abundant, and at the present time no disease has been discovered here either on the haulm or in the tubers. I have come to the conclusion that for culinary use early crops of these can be lifted with impunity, when the tubers have attained a fair size, providing the disease has not attacked them, and thus a great waste is avoided. If possible a drying day should be chosen for the work, as under such influences the skins speedily harden, and the tubers keep better. Cleaning operations, as a matter of necessity, must in some way or other be proceeded with, although circumstances seem so adverse for it. At such times hand-weeding is the only means that can be pursued with advantage amongst growing crops, and any spare time may be profitably bestowed in this way. *Geo. Thos. Miles, Wycombe Abbey.*

FRUIT HOUSES.

THE CHERRY HOUSE.—The effects of forcing Cherry trees year after year is so patent, in promoting a secondary crop of flowers, as to need a remark in reference thereto, so that precautionary measures may be adopted in time to arrest or obviate the evil. In view of this the progress of development in the trees should be observed, and at the earliest date consistent with prudence—after the wood has become sufficiently matured—the trees should, if practicable, be fully exposed; but if this cannot be done the place should be thrown completely open. It is already evident that the growths made this season will mature at a much earlier date than they did last year, and I have already removed the sashes from off the trees in the

early compartment, so that the subsequent attention required will be confined to keeping the foliage of the trees free from insect pests and decayed leaves, and to syringing them if the atmosphere should be very arid. Above all we shall pay strict attention to the state of the roots as regards moisture, as at this period it is most essential that they should be kept equally moist. If therefore the natural rainfall should be insufficient for the purpose recourse to watering must be had. In the case of trees in a debilitated state of health let the condition of the roots be ascertained; if these be healthy give the surface-soil a slight sprinkling over of guano or some other approved kind of compound, or apply it in the ordinary way of watering to stimulate and increase the health and vigour of the trees. It should, however, always be borne in mind that in the application of such exciting agents weak doses oft repeated are far more efficacious in operation than stronger proportions given occasionally. *G. T. Miles, Wycombe Abbey.*

PEACHES AND NECTARINES.

To maintain a steady supply of fruit throughout the season small houses that will contain two or three trees each, answer better than large ones, and these should be planted with varieties that will succeed each other in their order of ripening. Unfortunately for amateurs and others who cannot devote an experimental house to the testing of new kinds, the long lists now published are rather puzzling, and where glowing descriptions fascinate they often lead to disappointment and loss of time. By way of illustration I may state that a gentleman who called here the other day assured me that although he had planted or potted every new kind he had not succeeded in producing such fruit as he then saw of Abec, Bellegarde, and Royal George Peaches, Elruge and Violette Hâtive Nectarines—good old standard kinds, and of course obtainable in fine trees at every leading nursery. By making these remarks I do not wish to deter any one from planting new kinds, as many of them have good points, earliness being one in their favour, but rather to guard them against giving the best position to a tree until its good and bad points are known. Take, for instance, the immense Princess of Wales Peach, which so often captivates the gentlemen who adjudicate at the London and Southern shows. Although good enough to win prizes, one grower assured me that he only allowed his employer to admire its appearance while fruit worth eating was handed round. Although it is still too early to think of planting fruit trees, their removal to Peach-houses is best performed before the leaves fall; and, judging from the numerous blanks the summer of 1879 has left on open walls, the demand this season is likely to be a heavy one. Under these circumstances I venture to suggest that the selection and marking of young trees for removal from the nurseries should not be deferred after the middle of the coming month; meantime all necessary alterations in the houses should be decided upon, and advanced where practicable, while the weather favours the re-arrangement of the heating apparatus, or exposure of the trees.

For growing under glass the following Peaches are good, and include the best of the early mid-season and late kinds:—Hale's Early, Early Grosse Mignonne, Abec, Dr. Hogg, Stirling Castle, Violette Hâtive, Royal George, Noblesse, Bellegarde, Dymond, Prince of Wales, Barrington, and Walburton Admirable. Of Nectarines, Lord Napier, Murrey, Early Orange, Elruge, Pitmaston Orange, Violette Hâtive, Pine-apple, Stanwick Elruge, Albert Victor, and Victoria. For houses dwarfs or standards are suitable, but for growing on open walls I always give preference to nicely balanced trees on clean stocks 2 to 3 feet in height, as I have found that they are not so likely to become gross, and the union being further away from the ground they are not so much affected by extremes of frost or moisture. *W. Coleman.*

ORCHARD-HOUSE.—It is not necessary to say more about the trees in the early house at present; all the fruit will be gathered by this time, and the treatment will be such as will suit the trees. The gardener or amateur who knows his profession will again be taking steps to make sure of a crop of good fruit for next year. He knows well that the embryo fruit is now in course of formation; consequently, the trees must be well exposed to the sun, and the young wood must also be thinned out now in preference to cutting it away in the winter, after it has been the means of injuring that which remains. See that none of the trees suffer from want of water at the roots. There are some who fancy that keeping the trees almost at starvation point for want of water is the best way to ripen the wood. Nothing will ripen the wood or mature the buds, but the proper utilisation of the heat of the sun. In the late house we have a tree of Early Rivers Peach, and that has ripened its fruit this year in the first week of July. It is better than usual, and gave us a dish or two of nice fruit before such varieties as Early York is nearly ripe. As the fruit ripens it will be necessary to be more careful with water at the roots, and the garden engine must not

be too freely used; indeed, watering must be quite discontinued over the leaves and fruit when the latter is ripe. *J. Douglas, Loxford, Ilford.*

PLANT HOUSES.

ORCHIDS.—Amongst the plants now in flower, the Madagascar Grammatophyllum Ellisii stands out conspicuously. Its large, oblong square bulbs and strong leek-like growths gives it at all times a commanding appearance, the more so as no other Orchid comes anywhere near to it in habit. Still more distinct does it look, when from the young growth depends its ponderous raceme of flowers. Here the raceme consists of forty-five flowers, each as large as the bloom of Lycaste Deppei, arranged cylindrically on a stout stem about 3 feet long. This fine Orchid has always proved very difficult to import, and will, in all probability, never be anything but rare in this country, so those who possess plants will do well to give them every encouragement in the shape of light, heat, and moisture. The colour of the flower is not brilliant, being of a purplish-brown marked out with a dull yellow; but the general effect of the plant when in flower is decidedly handsome, so much so, indeed, that the most gorgeous East Indian would not lose caste in keeping it company. An excellent companion for the Grammatophyllum will be found in the cool house, in the shape of Odontoglossum coronarium. This grand Orchid, when well established, entirely loses its bad character of being a shy flowerer, for the same plant has now thrown a fine spike for three consecutive years, and, judging from the strength of the young break, now well advanced, it feels the weakening effects of flowering as little as any Odontoglossum. I would recommend every one who has a plant of this to grow it in a long narrow teak box in well-drained peat and sphagnum, so that its large fleshy roots have plenty of feeding ground. Keep it well to the roof glass of the cool house, and moist the whole year round. Equally well worth growing, but of wondrous different habit, is the elegant and charming Ionopsis paniculata. This little plant, which does not exceed in stature a strong plant of Leptotes bicolor, produces freely at this time of the year strong, many-branched spikes of small white, or white and purple flowers. In outline the spikes closely resemble a strong frond of Adiantum cuneatum. The individual flower is about the same size, and not at all unlike those of Lobelia speciosa alba. Mr. Blunt, the well known collector, informed me that this Ionopsis grows on the extreme tips of low shrubs, and that when he first saw it in bloom it so covered with flower an irregular line of such, that he was irresistibly reminded of an unshorn English Hawthorn hedge in full bloom. Under cultivation it proves to be a very dainty plant, and no grower that I am aware of has succeeded in growing and flowering it for any number of years. With us it has done best suspended alongside of the Dendrobiums in a small basket, having but a very little peat and sphagnum to root in, and has been kept constantly moist. It is subject to the attacks of black thrips, which must be kept under by sponging. Now that Odontoglossum vexillarium has passed out of flower, and has scarcely commenced to break again, it will be necessary to give it less water for the next few weeks than at any other period. This plant having but little to do, it is an easy matter to over-water it just now, and so perish the roots. Next month is the best time to repot it, or in any way disturb it at the root. Keep this plant for several weeks yet as cool and as much exposed to fresh air as *O. crispum*. Any plants of *O. Phalenopsis* that require more root room may at once have it, for by this time the young breaks will be pushing roots; avoid over-potting and give extra drainage. Keep it alongside of the *O. vexillariums*, and water for the present freely. *O. Roezlii* may also now be potted, and should still be kept at the coolest end of the East Indian house. This species also prefers under rather than over-potting. The *Thunias*, one and all, should now be moved to a light airy house, such as a light vinery, where they will consolidate their growth and gradually ripen off. They will still require to be watered, and also kept free of insects. Such *Calanthes* as *C. Veitchii* and those of the *vestita* section, will now need a maximum of light, heat, air, and moisture. Water them occasionally with weak liquid manure, for when well rooted they enjoy rich food, which certainly increases the size of the spikes, and probably assists in bringing out the colour. The flower-buds of *Disa grandiflora* and *D. Barrellii* will now be well advanced towards opening. In this state they are very liable to the attacks of greenfly, which if unchecked entirely, mar in a few days the shape and purity of the flowers. Let such as are attacked be dipped in an insecticide, and afterwards syringed perfectly clean. A few of the earliest of the *Dendrobiums* will by this time have nearly or quite made up their growth, and should be moved to a more cool and airy house. On no account when in this position allow them to suddenly dry off, or such treatment will cause them to finish up prematurely and start into growth again. *J. C. Snyers, Burford Lodge, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, July 20 { Belgian National Exhibition at Brussels.
opens
Royal Horticultural Society's Evening Fete
at South Kensington.
WEDNESDAY, July 21 { Oxfordshire Horticultural Society's Second
Summer Show.
FRIDAY, July 23 — Botanical Congress at Brussels commences.

BOTANISTS and gardeners alike have reason to be thankful to those cultivators who make it their hobby to collect and get together living specimens of any particular group of plants. Botanically the advantage is great, each species or reputed species is, so far as possible, watched from infancy to decay, and compared in all points with its neighbours. The result cannot fail to add to our knowledge, to render precise and to give relative proportion to that which was already known. Culturally the advantage is great, because the gardener has brought before him numerous beautiful things which otherwise he would never see or hear of unless perchance he happened to visit a herbarium. Even if he did so the chances are that he would not find the specimens there preserved very satisfactory to him, as they would give him but little idea of the beauty of the plants and their suitability for cultivation. Again, there are certain classes of plants extremely ill adapted for preservation in the herbarium, and among them LILIES. Hence the increased necessity of cultivating such plants and of giving accurate representations of them. These remarks have been suggested by the completion of Mr. ELWES' superb Monograph of Lilies.* How much do we owe, for instance, to him and others who have made the culture and study of Lilies their hobby? Compare what we knew of Lilies only ten years ago with what we know now. Look at the enormous importations from Japan—consider the number of gardens that have been brightened by the introduction of Lilies of various kinds. The facts are obvious to all, and it is easy to see that the enthusiasm of the gentlemen we have alluded to has been the main cause for this great increase to knowledge, this vast addition to the intelligent and innocent pleasures of mankind.

Mr. ELWES' book, the publication of the successive parts of which as they have appeared we have already alluded to, is an excellent illustration of what a garden monograph should be. The plates, unfortunately unnumbered, are mostly excellent in design and colouring. They are worthy examples of our foremost botanical artist, FITCH. They comprise representations of all or nearly all the species of the genus, in many but not in all with analytical details, which add so very materially to the value of such plates. The text is well done also. It aims at completeness, and so nearly attains its mark that the modest statements of the author in his preface are felt to be quite unnecessary. The author's comments on the reciprocal relation of Botany and Horticulture are full of sound sense: a botanist who would know plants must avail himself of a garden—a gardener who has similar aspirations must know how to use to advantage the treasures of the herbarium and library.

Mr. ELWES has cultivated and studied in a growing state nearly every known form of Lily, and considers that there are not many more species likely to be discovered, unless, perhaps, in the little known lands between North-eastern India and China. In his classification Mr. ELWES follows in the lines originally laid down in our columns by Mr. BAKER, to whom he acknowledges his obligations. The author, however, rejects the subgenera, with the exception of the very distinct subgenus *Cardiocrinum*, to which belong the superb species *L. giganteum* and *L. cordifo-*

lium, figures of which we give in our present issue, and which show that these two plants really belong to distinct species, and are not forms of one as was at one time supposed. We quite agree with Mr. ELWES in the little stress to be laid on the so-called subgenera, but we could have wished that he had supplied us with some more satisfactory arrangement, or at least with some key to the ready discrimination of species, even if purely artificial. The form of the flower might serve for these artificial groups, and when associated with characters taken from the bulbs, capsules, and seeds, might form the basis of more natural groups.

There are, for instance, the Lilies with the trumpet-shaped flowers, where the tube is much longer than the limb, as in *L. giganteum* (fig. 20), *L. cordifolium* (fig. 18), *L. longiflorum*, *L. nepalense* (fig. 19), *L. philippinense* (fig. 17), *L. Wallichianum*, &c. These would form a group structurally and geographically allied.

A second group might comprise the funnel-shaped Lilies, such as *L. candidum elegans* (fig. 23), or *L. Washingtonianum* (figs. 16, 21), of which there are two marked forms, where the limb and the tube are of about equal length.

In the third group might be classed the bell-shaped Lilies, where the tube is much shorter than the limb, as in *L. Hansonii*. This might be subdivided into two, according as the perianth segments spread or are reflexed, the latter section comprising the Turban Lilies, such as *L. Martagon*.

We make this suggestion on the ground of expediency only, as from a strictly botanical point of view it is very unsatisfactory. Before leaving structural details, we may allude in passing to sundry interesting points, but slightly touched on by Mr. ELWES—as, for instance, the adaptation visible in the two-lipped flower, the position of the spots, and the curved stamens of *L. cordifolium* (fig. 18); all these have evident relation to the fertilisation of the flower by insects. Other points of interest are the stolon of *L. superbum*, intermediate between the globose and the rhizome-like bulbs; the curious constricted scales of the bulb in *L. avenaceum* and *L. columbianum*, the decurved flower-stalks of *L. pardalinum*, not to speak at greater length concerning the varying forms and life-habits of the bulbs—points of first-rate importance to the cultivator, as affording hints for cultivation, forcing, and propagation. M. DUCHARTRE has done some excellent work in this direction, and we hope Mr. ELWES will at some future time be in a position to follow up this line of investigation, as indeed he promises to do.

Reverting to the Monograph we find an interesting section on the geographical distribution of the species. From this point of view the most interesting facts are the existence of two head centres, in Japan and in California respectively. This is significant with reference to Dr. GRAY'S notion as to the migration of Japanese plants across Asia and Europe to Eastern America. But in this well-marked genus there is not a single Lily common to Japan and Western America, nor one which is common to the Pacific and Atlantic sides of America; indeed, great structural differences exist between the Lilies, especially as regards the bulbs, from the two sides of the American continent. Lilies, then, do not seem to have migrated widely, nor, indeed, is their structure well adapted for distant migrations, except, perchance, in the case of the winged seeds.

Mr. ELWES' remarks on the cultivation of these plants will be read with great attention, as the outcome of the experience of a successful cultivator. In the open air, moisture, drainage, shade, the protection afforded by mulching, are principally insisted on; while as to the cultivation under glass Mr. ELWES gives some hints, which we may hereafter transfer to our pages.

A few misprints, especially in the names of persons, occur, but, on the whole, the work bears the marked impress of zeal, intelligence, and care. May Mr. ELWES find many imitators; the good they confer on scientific and cultural botany is not to be measured by words.

— **LILIUM GIGANTEUM.**—Writing on the 14th inst., Mr. NOBLE says:—I have fourteen plants of the above Lily now in full bloom, and, as near as I can count, there are 220 fully-expanded bells, the highest stem being a little over 11 feet high. It is a novel and a somewhat fine sight, and all who wish to see them will receive a welcome.

— **THE PHYLLOXERA.**—We are sorry to observe from the *Cape Times* that M. CORNU has recommended the Cape Government to continue their restrictive regulations with regard to the Phylloxera. No doubt, in the abstract, and if one side only of the case be looked at M. CORNU is right, but there are many points to be considered, and the general outcome is that while, on the one hand, no restrictive enactments can in the long run be efficacious in excluding the insect, they will, on the other hand, inflict gratuitous injury on the welfare of the colony by restricting the importation of roots, bulbs, plants other than Vines, or coming from countries where no Vines grow. If natural barriers and climate do not keep out the Phylloxera from the Cape, no artificial restrictions that man can devise will do so. The evidence on the continent of Europe is decisive on this point.

— **DELPHINIUMS.**—It was fashionable some time since to decry bedding-out plants for their unrelieved glare of colour, and the outcry did good service by moderating the scarlet fever and fostering a more refined taste in floral decoration. It must, however, be remembered that a similar mistake is quite possible with herbaceous plants. A basketful of cut spikes of numerous varieties of Delphinium, received from Mr. STEVENS, of Byfleet, forcibly reminded us of this possibility. Nothing could be more superb than the coloration of these plants. The atmosphere around them seemed aglow with a blue haze. Let us have masses of them by all means, but let them be mingled with other things, to contrast with them and set them off. Long lines of such plants would be as objectionable as ribbon borders. Yet they are so magnificent that no garden should be without them.

— **MEMORIAL TO THE LATE PROFESSOR KARL KOCH.**—A committee, comprising some of the leading botanists and horticulturists of Berlin, has set on foot a project to erect a memorial stone on the grave of the late KARL KOCH, and appeals through the press to his friends and admirers for subscriptions wherewith to carry out the project in a manner worthy of him whose memory it is desired to perpetuate. Subscriptions may be sent to HERRN SPÄTH, Baumschulbesitzer, 154, Köpenickerstrasse, Berlin, S.O., and will be publicly acknowledged.

— **ARETHUSA BULBOSA.**—A white-flowered variety of this rare and beautiful North American Orchid has recently been discovered in Rhode Island. It has the yellow markings of the labellum, as in the ordinary red flowers. GOODALE, in his *Wild Flowers of America*, states that the plant grows in bogs, with its corn imbedded in the sphagnum or peat moss, sometimes 2 or 3 inches below the surface.

— **CAREX ACUTIFORMIS AS FODDER.**—A correspondent of the Horticultural Society of Berlin sends a sample of the above-named Sedge, asking for its name, and whether seed of it can be obtained, he being desirous of propagating it for feeding purposes, as it makes capital pasturage for cows. In reply, Dr. WITTMACK observes that it would be interesting to learn whether this, or any other Sedge, is regarded as good fodder in any other place.

— **BOTANY OF THE WEST INDIES.**—Baron EGGERS, who has long resided in the West Indies, and devoted much time to the study of the flora, has issued a prospectus, in which he proposes an organised exploration of the islands, for the purpose of thoroughly investigating their natural history. The object of the prospectus is to secure the co-operation

* A Monograph of the Genus *Lilium*. By H. J. ELWES, 48 folio coloured plates.



of botanists by subscribing for sets of dried plants already made and still to be made. The price per hundred species is 12 dols. 50 c. for Phanerogamia and 10 dols. for Cryptogamia—about £2 11s. and £2. Arrangements can be made to purchase desiderata only. Persons desirous of participating should communicate with Baron EGGERS, St. Thomas, West Indies.

— UNIVERSITY OF BERLIN.—We learn from our Berlin correspondent that Drs. WITTMACK and MAGNUS have been appointed "Professors Extraordinary" in the faculty of Philosophy.

— BREDIA HIRSUTA.—In one of the warm compartments of the T range at Kew there is a nice example of this pretty Melastomad in full flower. It is a very neat-habited and free-flowering plant, flowers in a small state, and produces a long succession of charming rosy-pink blossoms. A figure of it is being prepared for the *Botanical Magazine*.

— TESTIMONIAL TO MR. AND MRS. WILLS.—On the evening of the 5th inst. a large party dined together at St. James's Hall, under the presidency of Sir PHILIP CUNLIFFE OWEN, in order to present Mr. and Mrs. JOHN WILLS with some small mark of esteem on the occasion of the General Horticultural Company taking over their business. The subscription was confined to the leading *employés* of the firm, those growers from whom Mr. WILLS makes large purchases, and a few personal friends; and the whole proceeding was conducted with the greatest privacy. In the name and on behalf of the subscribers Sir P. OWEN presented Mr. WILLS with a handsome gold keyless hunting-watch, made by the Waltham Company; to Mrs. WILLS a diamond ring containing five stones of pure white diamonds, and a five-stone diamond keeper to match, and to both a very handsome clock of the pure Gothic style, with ormolu and nickel-silver mounts, Swiss China ornaments, &c., with silver plate inscription, and side vases to match. These were manufactured expressly for the occasion by Messrs. ISAAC DRUIFF & Co., 63, Hatton Garden. Mr. WILLS, who was deeply touched by this unexpected mark of the esteem in which he and his wife are held, made a suitable acknowledgment.

— MANETTIA MICANS.—We lately noticed this lovely Rubiaceous plant in fine condition at Kew. It is certainly one of the most charming of stove climbers which have found their way to this country within the last two decades. It has pretty light green foliage and leafy panicles of long-stalked, scarlet, tubular flowers. To Messrs. VEITCH is due the credit of introducing so welcome a plant; their collector, Mr. PEARCE, found it at Muna, in Peru, at an elevation of between 3000 and 4000 feet.

— THE GOOSEBERRY CATERPILLAR.—Mr. J. TEGG, of Bearwood Gardens, Reading, reports that the Gooseberry caterpillar is particularly destructive in that locality, and, appearing in thousands, is stripping Gooseberry and Currant trees alike of their leaves, and laying them bare. Mr. TEGG states that he gave his trees a thorough dressing of a mixture composed of lime, soot, and a patent manure; but it had not the least effect in staying the progress of the invaders. In the cottage gardens especially this pest has been particularly busy, and many of the cottagers are looking with dismay upon an irruption they are powerless to prevent.

— PTERIS ARGYRÆA.—It is surprising how charmingly coloured are the leaves of this Fern in a young state when properly grown. We have seen quite small plants in pots having at most three or four fronds, but with the leaves richly marked, the silver bands shining with a peculiar lustre and distinctness. In that state it is one of the most charming of table and decorative plants, and it is, as might be supposed, in great demand.

— DRESSING CARNATIONS FOR EXHIBITION.—It would sometimes appear from remarks made in some of the horticultural journals that the practice of dressing Carnations for exhibition is one of somewhat recent introduction. As far back as 1822, THOMAS HOGG, in the edition of his book on florists' flowers, published that year, stated in reference to this practice that "Art is called in to the assistance of Nature, and the skilful hand of the florist dexterously

extracts the self-coloured and defective and overcrowded leaves, and sometimes even will insert others, and arranges and adjusts the whole with surprising nicety." And this notable florist goes on to say that "One CHRISTOPHER NUNN, of Enfield, Middlesex, a noted florist in his day, was eminent for his skill and dexterity in dressing Pinks and Carnations for prize exhibitions; some will even tell you that KIT was the father of the art: upon such occasions he had as many applications to dress flowers as he had to dress wigs; for he was a barber and *friseur* by trade, and withal a good-natured facetious prating barber, and could both shave and lay a Carnation with the greatest nicety. The novices of that day, who, being unacquainted with his secret art, trusted to Dame Nature to open, expand, and perfect their flowers, were no match for NUNN; for he began where she left off, and perfected what she had left imperfect. His arrangement and disposition of the petals were admirable, and astonished these novices. KIT's art of dressing is still an enviable art, and attainable only by few." To insert petals in a flower is an offence against all laws of fair play, and injurious to the best interests of floriculture; but to remove defective ones, and thereby expose fully to view those that are perfect, is an acknowledged practice that will be followed so long as the Carnation is grown as an exhibition flower. Some growers excel in the art of dressing a flower over others, and can impart a greater smoothness and regularity to the flower than one not so well qualified; but it is a practice soon learnt when diligent attention is given to mastering it. But there must be stoutness, breadth, smoothness, and rotundity of the petals, and that fine and distinct marking that gives such a high tone to an approximately perfect flower; for it is beyond the art of the dresser to apply these if they are not already existent.

— CYANUS MINOR (CENTAUREA CYANUS).—Only recently, at a flower show, a gardener of some note, filled with delighted enjoyment over the rich blue of this common flower, asked for the name of it. It was as if a new existence had suddenly burst upon his vision. It is sometimes, probably erroneously, termed the Corn Cockle, but our forefathers (for *Cyanus minor* is an old introduction) termed it the Blue Corn Bottle, and PHILIP MILLER named it *Cyanus segetum flore cerulea*. For years the lovely blue of the flowers was an entire stranger to many gardens, till some one of simple, yet of exquisite taste, placed it in their table decorations, and it has now become an almost general agent in decorations of this character. Even PHILIP MILLER bewailed its exclusion from gardens 150 years ago, speaking of the Corn Bottles as annuals, "which for the density of their flowers were propagated in gardens, but of late years they are almost excluded; however, the variable flowers are worthy of a place in any good garden." And MILLER well understood their usefulness when he recommended that the seeds should be sown in the autumn and the plants transplanted into borders, where they will endure the cold, and flower early the succeeding summer, and will grow in almost any soil or situation. Only suffer the Blue Corn Bottle to grow for one season in the garden, and it will sow itself, and furnish a constant supply of blossoms.

— THE DAHLIA.—The Dahlia is growing away lustily, the warm drenching showers are imparting a wonderful vitality to the plants, and should we get a warm and sunny August a fine head of bloom may be expected. It has been said that August is the month when Dahlias are in their glory, which is very true, and especially so if no long droughts keep them back. The Dahlia is one of the most succulent of moisture-loving plants, and there can be no fine blossoms unless there is an abundance of rich food at the roots, and liberal supplies of moisture, overhead as well as in the soil. An ungenial season robs the Dahlia of much of its summer glory, and next to this nothing disfigures the flower so much as the depredations of the earwig, and it must therefore be hunted after in every practicable way. To invert a flower-pot on the top of the main stake with a little moss in it is a method that, though old, is yet simple and effectual, and has outlived the registered earwig-traps of the past thirty years. The old custom of hunting for the enemies of the flowers early in the morning, and then placing the pot beneath the foliage of the Dahlia for the day, putting it on the stake

again in the evening, is one still followed by growers. Some leave the pots on the stakes constantly; and we have known lobsters' claws and tobacco-pipe bowls to have been used for the purpose. Another important August practice is to thin out superfluous shoots; but to do this constantly, so that too much be not cut away at a time. Much depends on the habit of growth and size of the flowers, as well as the application of the powers of observation of the cultivator. The side branches need to be securely tied to stakes, or they will be blown about by winds, and some mulching of manure applied to the roots, turning up the surface soil about the roots a little before this is done. In dry weather there should be given a good soaking of water at the roots at least twice a-week, and a sprinkling overhead every night if it can be done. The importance of this diurnal shower-bath can scarcely be over-estimated.

— UTILISING A WEEPING ASH TREE.—Recently a ball to the Prince of WALES was given by Mrs. R. C. NAYLOR, in Belgrave Square, and to give sufficient accommodation to the numerous guests a spacious pavilion was thrown across the back garden, covering in a good portion of its space. It was found necessary, in order to have adequate room, to enclose a Weeping Ash tree; and then the question arose how best to utilise this tree. Mr. JOHN WILLS, to whom the floral decorations were entrusted, hit upon the happy expedient of converting this tree into a fountain, and for this purpose pipes were laid on to the tree and cunningly conveyed up the trunk to the branches, the trunk having an outer covering of cork covered with creeping plants; and from amid the branches a fine spray was thrown out towards the circumference of the branches. At the foot of the tree was a circular pond, formed of stout zinc, and fitting so close to the trunk of the tree as that no water could get to the roots; and in this pond were arranged choice water plants, including Nymphaeas in bloom, Australian Pitcher-plants, Filmy Ferns, &c., and with so much tact and skill and in such a natural manner that they appeared to have been growing there for weeks past. From the circumference of the basin cooling spray was discharged towards the centre, and when the interior of the branches was lit up at night by means of Japanese lanterns, the effect was indescribably charming, and the success of the work complete. On either side of the broad flight of steps leading from the drawing-room to the pavilion large grottos were constructed with waterfalls, and the surroundings were in thorough keeping with the main idea.

— THE LEEDS HORTICULTURAL SOCIETY.—The proverbial luck of wet weather by which this Society has now for so many years had the misfortune to have their efforts crippled, has this season again followed them to such an extent that the June exhibition entailed a loss of £400; but the committee have resolved on another venture, in the shape of a supplemental show, to be held on August 2, 3, and 4, in the Cardigan Fields, the old grounds where these exhibitions first took place. It is to be hoped that on this occasion exhibitors will support the committee liberally by making such a display as will attract the public, and that the weather may be so far propitious as to place the promoters in a position to enable them to continue their annual gatherings, which have done no little to improve horticulture in the neighbourhood, as those can testify who know what it now is as compared with what it was before the exhibitions first took place.

— AGRICULTURAL TEACHING.—We have been requested to give publicity to the following:—It having been represented to the Lords of the Committee of Council on Education that persons in many parts of the kingdom are still in ignorance of the system of aid to the formation of classes for instruction in the principles of agriculture afforded by the Science and Art Department, South Kensington; that the supply of teachers who have obtained the necessary qualification to earn payments on results is very limited; and that a strict adherence to the rules of the Science Directory, which require that, in order to obtain aid, classes must be under the instruction of such teachers, would entail the delay of a year in the commencement of classes in this important subject, it has been decided that Sections 34 and 36 of the Directory may be relaxed for this year in the following manner:—

Any application from any committee, formed in accordance with Section 10 of the Science Directory, to grant a temporary qualification to any person selected by it as fitted to teach the principles of agriculture will be considered, and, if such application be found satisfactory, the teacher will be permitted to earn payments on the results of the examination in May, 1881; on the condition that this provisional qualification shall then determine, and that the only teachers who can after that date be recognised as qualified to earn payments on the results of their teaching in this subject will be such as have complied with the ordinary rules. In making the application, the committee must show that there is no technically qualified teacher in the locality who could be employed to instruct the class, and also state the grounds on which the proposed teacher is considered to be really capable of giving instruction in agriculture, by his knowledge of chemistry and other sciences bearing on the subject.

— THE TREES IN KENSINGTON GARDENS.—We are glad to see that a Commission is to be appointed to enquire into the condition of the trees in Kensington Gardens, with a view to suggest a remedy. Our own views on this subject have frequently been expressed.

— SALE OF MR. PHILBRICK'S COLLECTION OF ORCHIDS.—On Tuesday and Wednesday last Mr. J. C. STEVENS sold the entire collection of Orchids made during the last seven years by Mr. PHILBRICK, Q.C., of Avenue Road, Regent's Park. Amongst the prices realised were:—*Anguloa Ruckerii* sanguinea, 14 gs.; *Dendrobium Wardianum*, 9 gs.; *Angraecum sesquipedale*, spring flowering variety, 19 gs.; another splendid plant, with twenty-five leaves, 10½ gs.; *Aerides Schroederi*, with nineteen leaves, 24 gs.; *Saccolabium Holfordii*, 19 gs.; *Saccolabium Blumei majus*, 11½ gs.; *Cattleya dolosa*, 11 gs.; *Lælia anceps*, 9 gs.; *Aerides crispum* Warnerii, 9½ gs.; *Cattleya labiata*, 12½ gs.; *C. Trianae rubra*, 15 gs.; *Lælia anceps alba*, 14 gs.; *Odontoglossum Andersonianum*, 10 gs.; *Lælia elegans* Turneri, 10 gs.; *Lælia Wolstenholmiæ*, 14 gs.; *Cattleya labiata*, autumn flowering variety, 13 gs. and 17 gs.; *Oncidium macranthum hastiferum*, 16 gs.; *Sophronites grandiflora*, 10 gs. The total amount realised was £1075 19s.

— FREE TRADE.—A German gentleman residing in the north of Germany informed us the other day that he cultivated five acres of Lily of the Valley for the English market, and some hundreds of acres of Potatoes, which also find their way to this country.

— LILIUM PARRYI.—M. MAX. LEICHTLIN, of Baden Baden, writes:—"Lilium Parryi, WATSON, entered into bloom here about June 20, and was very fine all this time until a few days ago. My plant had seven blooms on a stalk of 5 feet in height; the flowers are about 4 inches in length, slightly nodding, of a bright deep citron-yellow, with a few crimson spots, and delicious fragrance. It is a very elegant plant, well deserving the attention of Lily growers. To have bloomed it so fine is, however, not my merit, but that of my friend, W. O. GROONEN, Esq., of Davenport, who had sent me the best bulb brought home by Dr. PARRY.

— ORCHIDS IN FLOWER AT KEW.—One of the most singular in colour, as well as quaint in form, of the Orchids now flowering in the Kew collection is *Epidendrum Brassavola*, one of the discoveries of SKINNER on the mountains of Guatemala. The flowers—which remain a long time in full beauty, are scentless by day, but agreeably fragrant by night—measure about 4 inches in diameter; the narrow sepals and petals are yellow, the column blotched with dingy purple, whilst the lip, wedge-shaped at the base and acuminate at the apex, is white below, and a lovely mauve-purple at tip. *Oncidium dasystyle*, an elegant species recently introduced from the Organ Mountains of Brazil by Mr. B. S. WILLIAMS, has bright-green leaves, 4 or 5 inches in length, and slender scapes about 1 foot long. The oval lanceolate, nearly equal sepals and petals are blotched with brown-purple on a pale straw-coloured ground; the lip is 3-lobed, the lateral lobe being small, while the terminal one is produced into a broad, wavy, kidney-shaped pale yellow blade; the glossy dark purple basal crest forms a striking

contrast to the other portions of the flower. *Epidendrum raniferum*, with its drooping racemes of about twenty flowers, is a pretty if not a remarkably showy plant; the yellowish-green sepals and petals are spotted with purple; the column is white, and the lip too, with the exception of the green edging and the claret-coloured blotches. An interesting and peculiar terrestrial species is *Habenaria intermedia* from India. It grows about a foot high, and each stem bears two or three large, long-spurred flowers; the sepals are green, the petals white, whilst the 3-lobed lip—the lateral lobes of which consist of a deep fringe, and the terminal one of a narrow, almost filiform process—is the same colour as the sepals.

— SALE OF BUILDING LAND AT TOOTING.—One of the most successful sales of building land that has hitherto been held in that locality, took place last Monday at the Castle Tavern, High Street, Tooting. The estate, comprising something under 6 acres of land, was formerly the celebrated establishment of Messrs. ROLLISSON, who carried on the business of nurserymen, seedsmen, and florists for so many years. The auctioneers (Messrs. PROTHEROE & MORRIS) have held a series of sales, which have all been attended with remarkable success: first the nursery stock, then the whole of the stove and greenhouse plants, the renowned collection of Orchids, and, preparatory to the sale of the land, they sold all the greenhouses and erections. As soon as Mr. MORRIS had dilated upon the various features of the property, and replied to the questions as to title and restrictions, he commenced the sale by offering some of the plots on the high road selected for shops, which after a keen competition sold for £200 to £210 per plot, each having frontages of 16 feet 6 inches by depths of 60 feet to 80 feet; the back plots, of 15 feet frontages and depths of 27 feet to 86 feet, sold at from £35 to £75 each. The auctioneer announced that all the plots were sold excepting lot 134, a large block of land in the rear, containing 1 a. 1 r. 8 p. (which was withdrawn at £3000), the amount sold fetching £8500.

— HORTICULTURAL CLUB.—The usual monthly dinner took place on Tuesday last, when the following gentlemen were elected members:—Sir RICHARD WALLACE, Bart., M.P.; Messrs. G. H. HAWTREY, J. P. HAWTREY, G. F. FRANCIS, and E. P. WOLLASTON.

— THE WEATHER.—General remarks on the weather during the week ending July 12, issued by the Meteorological Office, London:—"The weather was cloudy, showery, and very unsettled. Frequent thunderstorms were reported from almost all parts of the kingdom, with extremely heavy showers of rain and hail. The temperature was below the mean for the time of year in all districts, the deficit varying from 1° in Scotland to 4° in "England, E.," the Midland Counties, and "England, S." The readings were highest during the latter half of the week, but the maxima seldom exceeding 70°, even at our central and southern stations. The minima were also low for the season. The rainfall was more than the mean in all districts excepting "Scotland, W." The excess was not very large in "England, E." or "England, S.," but considerable in all other districts, especially the Midland Counties, where the total fall amounted to three times as much as the mean. At Barnstaple the aggregate fall was 3.23 inches, or nearly half an inch more than the mean for the whole month of July. The heaviest amounts measured in one day were 0.90 inch at Dublin on the 12th, 0.94 inch at Kelston on the 7th, 1.31 inch at Shrewsbury on the 12th, and 1.79 inch at Barnstaple on the 9th. Bright sunshine showed a slight increase over that of last week in Scotland and the north-west of England, but a falling off in most other districts. The percentage of possible duration varied from 20 in "Ireland, N.," to 34 in "England, E. and S.," and 35 in "Scotland, W." and "England, N.W." The wind was moderate or fresh at first, from the south-west generally, but veering to north-west on our western coasts on the 7th, and to north over Scotland on the 9th. Very light breezes prevailed during the remainder of the week, from north-west or north in the north and west, and from west or south-west in the east and south.

— PUBLICATIONS RECEIVED.—*Bulbs and Bulb Culture*. Part III. By D. T. FISH. (Bazaar Office, W.C.)—*Cucumber Culture for Amateurs*. Illustrated. By W. J. MAY. (Bazaar Office, W.C.)—*Proceedings of the Academy of Natural Sciences*, Philadelphia. Part I., 1880.

Home Correspondence.

Lychnis Haageana, &c.—Is there any one in the kingdom who can grow this very handsome and showy hardy herbaceous perennial to his satisfaction? If there is, he would oblige many gardeners by telling the conditions it requires, for I can meet with no one who succeeds with it. It comes up well enough from seed, and a very small percentage do just enough in the flowering way to tantalise us by showing what they could be if everything was to their liking; but most of them curl up their stalks and their leaves with every kind of contortion, and just as they seem about to flower break off below the ground line without any discoverable cause. Another disappointing flower with me is *Dahlia coccinea*, which, as soon as ever it is open, drops all its petals, doing this in all soils and situations alike. *C. Wolley Dod*, Edge Hall, Malpas, July 8.

Potting Orchids.—At p. 15 Mr. Spyers gives instructions as to the potting of *Cattleyas*; as a rule many of them are now starting to grow, and I quite agree with your correspondent that no better time could be chosen to pot them; but I cannot agree with him about the *Anguloas*—these are not starting to grow, nor have they completed their growth. The pseudobulbs are but half formed, and to turn the plants out of their pots and remove the exhausted compost would give them a serious check. That they may be potted now or at any other time without much injury if it is not necessary to disturb the roots I freely admit; but it is far better to repot when the plants start into growth in early spring: then there is no danger of the plants receiving any check, whether the compost has to be removed or not. *J. Douglas*, Laxford, Ilford, E.

The Tulip Tree.—Some very interesting letters upon the Tulip tree and its culture having appeared in some of the journals for last year, I resolved to procure and plant a few last autumn. Two were planted in a friend's garden at Ewell, near Epsom, one in the grounds of Mr. Morley Atkinson's Convalescent Hospital at Wimbledon, one in the garden of the Consumption Hospital, Brompton, one in the garden of the Zoological Society, Regent's Park, one in the grounds of the Lock Hospital, Harrow Road. The trees were procured from three of the most eminent nurserymen near London, and were reported to be in excellent condition; each was inserted in a suitable soil about the middle or end of November last. Whether from the unusually prolonged winter I know not, every tree has perished; and my object in writing is to elicit all possible information from gardeners relative to proper precautions to be taken on a future occasion. Would it be better to postpone planting the next trees I intend to give to these several institutions till the spring of 1881? The soil in the Lock Hospital garden at some depth below the surface was found to be of tenacious clay, like that peculiar to the Weald of Sussex, and I think the same kind of argillaceous earth exists in the Zoological Gardens, still I believe every pains had been taken to secure a proper soil for every tree, but all in vain. A few years ago I planted two Tulip trees in the Ewell gardens; they, too, died—perhaps site or soil not adapted for their growth may have killed them. The tree planted at Wimbledon was in the same situation where another fine Tulip tree existed not very long ago; the latter was either blown down or died of age and decay. I should esteem it a great favour and a personal kindness conferred upon me if some contributor to your journal will supply me with further information. *Nili desperandum* is my motto, and I am resolved to persevere, at all events at Ewell, Wimbledon, and the Zoological Gardens. I have sometimes noticed various trees reach their destination without a particle of earth: might it not be safer to have each Tulip tree (always, I believe, rather delicate when young) thoroughly encased as to its roots with the soil to which it had been accustomed? *J. Colebrook*, 17, Walton Place, Chelsea, S.W.

Lilium pomponium.—This appears to be one of the most satisfactory Lilies I have yet attempted to grow. Mr. Ware rightly says of it in his Catalogue that it is a rare Lily, *L. pyrenaicum rubrum* being generally sold for it. Three bulbs obtained from him last autumn are now fully out; they were planted in October in different parts of the open border in soil composed of two-thirds hill peat and one-third rich loam. They are nearly a yard high, and bear, one of them seven flowers, the other six each, all open at once, and spreading well out from the stem. The colour is quite as brilliant a scarlet as that of *L. chalcedonicum*, which is a far more difficult species to establish in any soil which I have yet tried. I must, however, except a variety of *L. chalcedonicum* growing 5 feet high, with flowers nearly as large as

those of *L. colchicum*, which I should have considered a distinct species had I not two or three times bought it under the ordinary name. It is a magnificent Lily. *C. Wolley Dod, Edge Hall, July 11.*

Southwood Hardy Flower List, July 12, 1880 :—

Acantholium glumaceum
venustum
Achillea aurea
aezoptica
Adenophora coronata
stylota
pereskiaefolia
Ajuga alpina
Allium azureum
Moly
cernuum
Amaryllis formosissima
Alyssum spinosum
Anagallis Moreli
Anchusa incarnata
Anemone rivularis
cylindrica
Anthemis Biebersteini
Antirrhinum asarina
Aquilegia Bertoloni
Armeria juncea
maritima rosea
Asperula cynanchica
azurea setosa
Astragalus Narbonensis
hypoglottis
Borago laxiflorus
Bahia lanata
Brodiaea coccinea
congesta
Bellium crassifolium
minutum
Calliprora lutea
Calopogon pulchellus
Caltha leptosepala
Campanula aggregata
allariaefolia
alpina
carpatia vars.
celidifolia
rotundifolia
vars. Collina, Hestii,
Lenella
fragilis
garganica
glomerata vars.
grandis
lactiflora
latifolia vars.
macrantha vars.
muralis
persicifolia
pulla
pusilla alba
rupestris
turbinata vars.
Wanneri
Waldsteiniana
Catananche corulea bicolor
Cerastium Biebersteini
Cistus creticus
lusitanicus
laurifolius
albidus
Claytonia sibirica
Coronilla varia
iberica
Cyananthus lobatus
Delphinium Barlowi
Belladonna
Mahomet
Madame H. Jacotot
bicolor grandiflorum
cashmianum
Keteleeri
Dianthus mariscus
petraeus, true
atrorubens
Cesius
deltoides glaucus
tymphestus
suavis
superbus hybrida
Dracocephalum peregrinum
Epilobium angustifolium var.
album
rosmarinifolium
Epipactis palustris
Erigeron glabellum
alpinus
uniflorus
speciosus
Erodium cheilanthesifolium
macradenium
petraeum
romanum
Reichardi
Erpetion reniforme
Eryngium amethystinum
Bourgatii
Fuchsia procumbens
Funkia Sieboldii
Fortunei
cordata
Gaillardia aristata
Galega persica
Galium Billardieri
urceolatum
supinum
Gentiana cruciata
gelida
septemfida
Geranium armenum
argenteum
cinerum
nodosum
striatum
Endressii
sanguineum
lancastriense
angulatum (?)
Ceum montanum
triflorum
Gillenia trifoliata
Gypsophila dubia
T. D. H.

Gypsophila repens
Gratiola officinalis
Gnaphalium arenarium
leontopodium
Gerata sagittalis
Hieracium aurantiacum
Houstonia corulea
Horminum pyrenaicum
Hypericum Coris
humifusum
Inula Vaillantii
Iris Kämpferi var.
Lamium longiflorum
Lathyrus Turneri
Liatris spicata
Lilium Kramerii
pyrenaicum
pardalinum
giganteum
candidum
Washingtonianum
Linaria alpina
pilosa
saxatilis
reticulata var. purpureo-lutea
organifolia
Linum viscosum
Narbonense
perenne
alpinum
campanulatum
Lychis Bungeana
Haageana
Flos Jovis
Lagascæ
Lysimachia verticillata
Mazus pumilio
Mertensia alpina
Micromeria piperella
Monarda didyma
Morina longifolia
Nepeta parnassica
Reichenbachiana
Nierembergia rivularis
Ononis arachnoidea
Eriogonum glaucum (?)
Fraseri
niacrocampa
missouriensis
pumila
taraxacifolia
rosea
eximia
ripensis
speciosa
Omphalodes Lucilæ
Onosma taurica
Papaver armeniacum
pi'osum
alpinum, vars. nudicaule (?), pyrenaica (?)
Parnassia palustris
fimbriata
Phlox ovata
Phyteuma orbiculare
Polemonium Richardsonii
Polygonum capitatum
Brunonis
Potentilla dubia
aurea
Russelliana
nepalensis
lupinoides
Primula Munroei
Prunella pyrenaica
Ramondia pyrenaica
Reseda glauca
Salvia rubicunda
Sanguisorba sitchensis
alpina
Saponaria ocymoides
vars. splendens
Saxifraga aizoides autumnalis
Hirculus major
pubescens
Scabiosa caucasica var. con-nata
Scutellaria altaica
Bolanderi
Sedum anopetalum
Brauni
kamischaticum
spurius vars.
pulchellum
pulchrum
corcicum
stellatum
monregalense
Sidalcea malvaeflora
oregana
Elizabithæ
quadrifida (true)
maritima rosea
Sisyrinchium Sellowi
Spergula nodosa
Spiræa filipendula pl.
palmaria
venusta
Stachys coccinea
corsica
Swertia perennis
Telephium Inupervati
Thymus patavicus
Serpyllum borealis
lanuginosus
Trifolium alpinum
rubens
Verbascum phœniceum
Veronica spicata
incana
Viola Munbyana
palmensis
Vittadinia triloba

The Variegated Elm.—In reply to Mr. Gardiner's query (p. 53) regarding the above, I beg to inform him that there are two very fine specimens of the silver variegated Elm growing in the pleasure-grounds at Hanbury Hall, near Droitwich, Worcestershire. The specimens in question are the variegated forms of *Ulmus campestris*, and are supposed to have been planted in their present situation upwards of 100 years ago. I regret that I am unable to furnish him with the exact dimensions, &c., but I will write to the gardener there, and give the result as early as possible. *T. W. S., Buxted Park, Sussex.*

The Lucombe Oak.—I know of a splendid tree of the Lucombe Oak that is in danger of being cut up into firewood, and I am desirous of sparing its life if I can show that it is worthy of it. The person to

is it that it attracts the attention of the railway passengers, for when seen from the line in the early sun it is grand. It is astonishing that it should be so little grown: this can only be for want of being better known, as it has no equal for the number of its flowers or power to withstand wind or rain. *S.*

The Peas of the Season 1880.—I have seen nothing like the two rivals, Telegraph and Telephone, both Peas of the finest appearance, with pods containing from ten to a dozen fine Peas. Unfortunately I have no personal experience of their quality, as I am becoming so sceptical about any Pea really beating Ne Plus Ultra for general purposes that I have fought shy of new varieties. I have, therefore, not grown either of the above Peas this year, but meeting with them and testing them in judging at different shows,



FIG. 21.—LILIAM WASHINGTONIANUM. (SEE P. 80.)

whom it belongs loves trees and will, I know, be sorry to part with it, and I am sure he will be still more sorry to do so if I can elicit such information as will show that it is a scarce variety and has a local rather than a wide distribution. The points on which I wish for information are the size of existing trees and if it is generally known in the North and South of England. The tree I am alluding to is a better specimen than the one standing in the Exeter Nurseries; in fact, having seen both trees, I am not quite sure that the tree under notice does not look to be the oldest tree of the two. If any of your readers can give any information I shall be very glad. *Y. C. Clarke, Colthelstone, Somerset.*

Viola Grieviei.—This is without doubt the most free-flowering of all the Violas. A large bed in the Newtown Nursery, Chester (James Dickson & Sons), has been in flower many weeks, and bids fair to continue in flower many weeks longer. So conspicuous

I have been much struck with their apparent superiority. I also know there was some controversy about them, but was so little interested in it that now while writing I am entirely oblivious of who sent out either Pea. I must, however, express my surprise at one thing—that any one should say these two Peas were alike. Both in size and form of pod they vary but little, but the moment the pod is opened Telegraph reveals itself to be a green Pea and Telephone a white one. And this distinction is constant, as far as my tests and observation have gone. And it is no unusual thing to find white and green Peas in the same variety: Prizetaker is a notable example, familiar to every one; but supposing any one were to pick all the green Peas out of Prizetaker and sow these only, he would have about the same proportion of white in the selected seed as before. Now, assuming that this was the mode of selection adopted in picking out Telephone from Telegraph, the marvel is that the two strains continue constant.

More than this, the two Peas not only differ in colour but in flavour, in a raw state, and no doubt also when cooked. The Telephone is by far the sweeter Pear of the two. This raises a very interesting question, how far the much-desiderated greenness of green Peas affects their quality. I strongly incline to the opinion that it lowers it; if so, are not white Peas, after all, the best—that is, the sweetest? This suggests another query: Why use Mint with Peas? Mint is good, Mint sauce especially so to cold lamb, inasmuch as it needs some addition to add to its piquancy; and Peas are good, superlatively good. But surely much of their individuality, that is, the very essence of their goodness, is lost when Mint is cooked with them. As well almost add Tomato to Pine-apple as Mint to sweet, luscious green Marrow Peas. *D. T. Fish.*

Lilium Parryi.—This rare and beautiful plant, referred to in your last issue, is now in fine flower in the Newton Nursery, Chester (James Dickson & Sons). The colour is deep citron-yellow, with a few scattered purplish spots and chocolate anthers. It is very distinct from other species, and appears to possess a better constitution than many of the North American species. It should be in every select collection. *S.*

benefiting under the solar influence they flag and languish till they become a prey to red-spider or canker, and refuse to perfect the fruit they have on them. These evils may in a great measure be averted by simply breaking up the surface of the earth and covering it with some littersy manure, over and through which water may be poured at any time, with a certainty that it will soak in and the roots get it, instead of its being licked out by the hot, thirsty air before it can penetrate to such a depth as to be of much service. Applied in the above-named manner a watering means something, and stands the tree in good stead, but given without the mulching in nine cases out of ten it does little or no good, and often ends in positive harm, as the washing the soil undergoes causes it to crack open to such an extent as to place the roots in a very awkward position. Under a mulching they can pursue their work with a regularity and comfort unattainable in any other way, for however dry the weather may be they do not feel it, but continue to ramify and respond to the demands made by the top. For proof of what a little mulching will do for land, one has only to kick aside the fallen leaves and rubbish to see the condition of the earth, for it must be dry indeed if moisture is not to be found under such circumstances even during the

come into existence. As already stated, a mulching affords water time to soak in, and when in it cannot well get out, but remains where wanted for the plants to feed on. The great point is to apply the mulching early, so that it may be there before the ground becomes unduly heated, as then when rain falls it is conserved, and the necessity for watering is in a great measure dispensed with. Next to Peas, Cauliflowers are perhaps the most difficult summer crop to manage, for when hot weather comes they refuse to turn in, but shade the land; it is surprising the difference made in their behaviour, and especially if the shading can be carried out by the use of seaweed, which not only lies close but holds moisture under it better than any other substance I am acquainted with. This with liquid manure works wonders with all the Brassicas, and not only so, but it is of equal value for Celery. When laid along the sides of the rows it prevents slugs travelling, and worms, which are often such a plague to this esculent, soon vacate the spot and take up their abode in more congenial quarters. Were it not for these pests short grass might be used with excellent effect, as by the time the Celery is ready for earthing the grass withers or rots away, and is then no detriment to the plants. For Strawberries, however, it is one of the worst things that



FIG. 22.—LILIUM AVNACEUM. (SEE P. 80.)



FIG. 23.—LILIUM ELEGANS (THUNBERGIANUM) FL.-PL. (SEE P. 80.)

Mulching as a Means to Keep Out Drought.—If prognostications went for anything we ought to have had a very dry summer, and judging from the little rainfall we had up to recently, there seemed some reason in them. If such had turned out to be the case, trees and plants in gardens must inevitably have suffered, for owing to the excessively arid condition of the atmosphere for a long time past there was little moisture left in the surface of the earth, the winds having absorbed the greater part and carried it away from the roots. To think of giving sufficient water artificially was quite out of the question, and had it been possible to do so it could not be turned to profitable account by the plants unless the soil about them is shaded by a mulching, which mulching might consist of half rotten manure, old tan, leaf-mould, the grass from lawn mowings, or anything of that kind, which if laid on moderately thick intercepts evaporation. This, without some means to prevent it, goes on at a rapid rate, especially from borders under walls, where, laid as the soil generally is at a sharp angle, the sun hits it with great force. Trees under such circumstances having their roots unprotected in the natural way by the branches and leaves, feel its effects, and instead of

hottest summer, which shows how Nature provides if left to herself. In our artificial modes of cultivation we alter conditions, but to be successful we must not be blind to the teachings so prominently brought under our notice, for not only are fruit trees greatly benefited by having the soil shaded, but the same good results attend almost every plant or crop we have to do with. Take Peas, for instance, which we run up sticks, instead of allowing them to trail on the ground in the way they would do if left to themselves, where they would form their own root shelter, and see the difference between the two as regards standing drought, but mulch the sides of the rows, and you at once render the ground cool and the conditions more equal, which causes the flowers to set and the pods to swell with great freedom. In shallow soils this is the only mode of treatment by which a supply of Peas can be kept up, for if water be given without the mulching roots are attracted to the surface, where they soon perish. I have seen repeated instances of this, and the cause is not far to seek, for instead of the water wetting the subsoil, and enticing the feelers in that direction, it rarely moistens more than a few inches, and to this the feeders rush, but as the supply lasts only so short a period they die as quickly as they

can be used, for when it gets wet it is a long time drying and therefore causes rot, but, what is even worse than this, is that it spoils the quality of the fruit by imparting to it a musty flavour. The best mulching for Strawberry beds is Fern that has been used for covering up frames or other purposes of that kind, in which work it gets broken into short lengths, when it is just the thing for distributing regularly among the plants. The great advantages of Fern or Bracken are that it dries quickly, and its numerous splinters and sharp points offer such an obstruction to slugs that they cannot travel on it, and it is therefore an excellent safeguard where these garden pests are common. If put on early, that the rains may wash and sweeten it, straw stable manure answers well, but when this is used the droppings should be shaken out that there may be nothing offensive left for the fruit to come in contact with. Although short grass from lawns is not suitable for Strawberries it comes in admirably for flower-beds, the plants in which bloom with much more freedom and last in beauty considerably longer when they have something of this kind to keep the soil moist. For Calceolarias a mulching is an absolute necessity, as they only succeed in soils that are naturally cool and deep, or in such as can be

rendered favourable by laying on the surface a light non-conducting shade, which with water enables the plants to flower without being distressed by the heat. Verbenas, too, require similar assistance, and it will be found good practice to dress the beds of these, and, indeed, all others, with some material, which not only helps the plants to yield more bloom, but lessens the labour of weeding and watering. *F. S.* [Cocconut fibre refuse is a good material for the purpose. *Eds.*]

The Sparrow Question.—Would that "the hot blast of indignation" had the power to rid gardeners of such winged vermin as sparrows, bullfinches, chaffinches, greenfinches, linnets, and bluecups. I can endorse all that Mr. Fish has said about that worst of all winged vermin, "the unspeakable sparrow." The unusual severity of last winter did not diminish the number of sparrows in this district for there, are countless multitudes. Eat caterpillars indeed! Any one looking at the Gooseberry bushes in this district would soon become an unbeliever in such works of charity from the sparrow. They are content only with the best of corn and dainties from the kitchen garden, then scent their bills with sweet-scented flowers. Quite aristocratic of course, more especially now that parochial sparrow clubs are extinct. *H. Eldridge, Chesterford Park, July 13.*

English Gardeners.—Mr. Chapman has evidently from his remarks (p. 21) omitted to take into consideration the great difference of opinion which exists amongst gardeners, as well as every other large body of men. If it were possible to force all gardeners to adopt the views similar in every detail to those he (Mr. Chapman) holds, then I could agree that no material advantage would accrue from the fact of one nurseryman filling more places than another; but, under existing circumstances, and from considerable practical experience, I am fully persuaded that the nurseryman who fills most places gives most employment to gardeners out of place, and treats them at all times as respectable men deserve to be treated, is the man most likely to do the largest amount of trade. I should not like to undertake the difficult task of explaining as to how the "muff" has obtained so much prominence, but it must be evident to all that his introduction has been made from all quarters, and in nine cases out of ten by the aid of gardeners themselves, who, in some instances purely for the sake of selfish gain, have undertaken to teach men at the age of twenty-five and thirty that which can only be acquired by a study from youth upwards. Men in these instances have been tempted to adopt a trade entirely foreign to them in every respect, and being at their age unable to give the time and study really necessary, they are again tempted, after but a limited experience and with perhaps the promise of assistance from their former instructors, to accept situations beyond their capacity, and which they are enabled to obtain simply through having asked a lower salary than a qualified man would feel justified in taking. This "muff" element must continue so long as employers are content with the services they render. Good service might be done to the profession by gardeners combining and forming an institution for their special tuition and protection, with stringent rules laid down for the guidance of its members; but I fear such a society could not be formed without an endless amount of labour, and in all probability many disappointments. Gardeners as a body lack that power of combination so necessary for such an enterprise. Take for instance the Gardeners' Benevolent Institution, offering as it does such advantages as no other club or friendly society can do, and yet it does not receive the support of more than a tenth of the gardeners of England. With such an example before us, is it any wonder that those who would raise a voice in aid of our much-oppressed friends feel somewhat faint-hearted at making a beginning? I quite agree with Mr. Chapman that such an independent source of obtaining situations for gardeners would be far preferable to any at present existing, yet such a society would be of little use unless the managing influence were thoroughly practical and were continually brought in contact with all applicants, otherwise it would drift into a general registry office; and the result would be that employers would become equally tormented by the supply of incompetent gardeners as they now are with respect to their housemaids. I think gardeners often lose the confidence of nurserymen, not so much from the fact of their being but ordinary customers, but more from their desire, while holding good situations, to show their independence of nurserymen, and to take offence at the least seeming negligence on their part. More goodwill between them would be a fair step on the road to improvement. *W. Mackay.*

Reports of Societies.

Royal Horticultural: July 13.—At the afternoon meeting the Rev. G. Henslow, Secretary to the Scientific Committee, gave a brief lecture, the first group of plants to which he called attention being a fine series of *Iris Kämpferi* from Japan, exhibited by Messrs. Veitch. The lecturer explained how the process of becoming double was being carried on, first by the three inner petals, usually small, being much enlarged and resembling the outer ones—an extra number of stamens appearing as small petals, and the style becoming more petaloid, so that, probably by continued cultivation, flowers resembling purple *Pæonies* might be expected to be produced. Mr. Henslow described the fertilisation of *Iris* and *Crocus* by insects (see *Gardeners' Chronicle*, vol. v., p. 505). The chief display of the day was made by *Begonias*, consisting of variations from hybrids between *B. boliviensis*, *B. Veitchii*, and other species. Allusion was made to the tendency to change the sex in *Begonias*; the stamen especially putting on stigmas while one specimen exhibited showed the pistil surrounded by stamens. The stems contain, probably, potassium oxalate, and are sometimes used instead of rhubarb; while the juice may be used like salts of lemon for extracting ink stains, only it is liable to leave an indelible red stain instead. A beautiful species of *Utricularia* and a hybrid *Nepenthes* furnished matter for a short account of the carnivorous habits of these genera. With regard to *Orchids*, a remarkable species of *Nanodes*, *N. Medusæ*, was alluded to, in which the labellum is adherent to the column. A fine *Phalænopsis* furnished an illustration of the fertilisation of *Orchids* by insects; the "caudicle" of the pollinia undergoes a remarkable contraction, so as to curve, while at the same time it is being depressed—the object being apparently to shorten the distance between the viscid disk and pollen, so as to hit the stigma more accurately and effectively. *Gloxinias* furnished an illustration of reversion, for it is presumable that all "irregular" flowers were originally regular, and have become irregular by adaptation to insect agency. Horticulturists now "select" those with erect and regular flowers, thus "reverting" to an ancestral type. *Pelargonias* are remarkable for illustrating the fact that physiological differences are often more pronounced than morphological, for it is found that the forms with five well marked spots, one on each of the five petals, will not cross with those possessing only two spots with the other three wanting or only faintly represented.

SCIENTIFIC COMMITTEE.—Sir J. D. Hooker, K.C.S.I., in the chair.

Fasciation.—Mr. W. G. Smith exhibited a curious example of fasciation in *Chrysanthemum Leucanthemum*, in which the solitary peduncle carried three closely adpressed flower-heads. The specimen was sent by Mr. Scrimshaw, The Gardens, Chatsworth.

Exobasidium vaccinii.—The same gentleman reported that the thickened, bloom-covered leaves of *Vaccinium Vitis-idea* referred to him were infested with *Exobasidium vaccinii*, a fungus of doubtful affinity.

Destructive Action of Smoke on Trees.—Mr. Smith also exhibited four water-colour sketches illustrative of growing Conifers under difficulties, the difficulties being caused by the outpouring of volumes of dense smoke from a smelting furnace; and a life-size sketch of one of Mr. Noble's large plants of *Lilium giganteum*.

Trees Banked-up with Earth.—A conversation ensued as to this point, the gist of which was that some trees suffered less from having their trunks banked-up with earth than might have been anticipated. Some trees in the Euston Road were mentioned in illustration, as also Milton's Mulberry at Christ College, Cambridge.

Nitrification.—Reference was made by Dr. Gilbert to the presence of an organism acting as a ferment in the process of nitrification, and to the fact observed by Mr. Warrington in the Rothamsted laboratory, that certain solutions were observed to contain nitric, others nitrous acid. In some of the solutions vegetable organisms were observed, and the curious point was, that in those solutions in which the organisms were the nitrous acid had become further oxidised into nitric, while in those solutions where there were no organisms, the acid remained as nitrous acid. Dr. Masters stated that he had examined three of the solutions containing organisms. In the one case there were white flocculi, which on examination proved to consist of crystals around which a profusion of micrococci and a few hyphal threads were aggregated; in a second case mucilaginous films were seen floating in the liquid, and which when examined proved to

consist of micrococci and bacteria in the zooglyea stage, together with numerous felted mycelial threads of extreme tenuity. In the third case there were brownish specks, which under the microscope were seen to consist of chains of ovoid cells, somewhat as in *Spermosira*. The specimens were referred to Dr. Cooke for further examination and report.

Simethis bicolor.—Dr. Masters exhibited a specimen of this plant from Dorsetshire. It is considered a doubtful native, but is not without geographical allies in the south-west corners of Ireland and England.

Sugar Cane Disease.—Mr. MacLachlan showed specimen of cane from Queensland in which the tissue of the cane was eaten away by the larva of a moth, which it was impossible to identify precisely in the absence of the perfect insect, but it was probably one of the *Pieridæ*, like that which does so much damage in Mauritius. Two remedies were suggested—one to pull up the canes and burn them, the other to strip off the lower leaves, and so destroy the eggs of the insect which are deposited in the axil of the leaf between it and the stem.

Habenaria radiata.—This charming terrestrial Orchid from Japan, with a spike of white flowers with fringed segments, received a Botanical Certificate.

Plants Shown.—*Lilium medeoloides* (?), *Bryophyllum calycinum* fol. var., *Iberis amara*, Cabbage leaves with pitchers, fasciated *Ash*, and, lastly, an instructive series of dried flowers of *Oncidium Gardneri* and *O. curtum*, showing every grade of transition between the two.

FLORAL COMMITTEE.—Dr. Denny in the chair. For an off day there was a greater number of good new things shown on this occasion than might have been anticipated. From the garden at Chiswick, came examples of *Gomphrena globosa compacta nana*, a fine dwarf strain of a pretty and useful plant, introduced by M. Benary, of Erfurt; a well-flowered group of *Decorative* and *Ivy-leaved Pelargoniums*, principally seedlings of M. Lemoine; and a capital group of Chiswick raised *Begonias*. Mr. Spyers, gr. to Sir Trevor Lawrence, M.P., received a Cultural Commendation for a very robust specimen of the noble *Grammatophyllum Ellisii*, with a large cylindrical arching spike composed of about forty brown and yellow flowers. Mr. Spyers also showed, from the same collection, a plant with six flowers of the singular and always attractive *Nanodes Medusæ*; also a plant with seven spikes of the white-flowered *Ionopsis paniculata*; and a well-flowered small specimen of the pretty pale violet-flowered *Utricularia Endresii*. Messrs. W. Cutbush & Son contributed a neat display of small plants of some four dozen varieties—green and variegated—of *Ivies*; and Messrs. James Veitch & Sons a choice group of *Begonias*. Mr. C. J. Salter, gr. to J. Southgate, Esq., Selborne, Streatham, contributed a basket of plants of *Phalænopsis grandiflora*, with nine glorious spikes of flowers; also flowering specimens of *Oncidium Forbesii*, *curtum*, and *prætextum*, for which he received a vote of thanks. Messrs. Charles Lee & Son showed a compact, free-blooming, blue and white-flowered *Lobelia*, named *Union Jack*; and Messrs. William Paul & Son, of Waltham, showed some new home-raised seedling *Roses*, one of which gained the coveted mark of distinction. Mr. G. F. Wilson exhibited flowers of *Lilium californicum*, and two varieties of *L. pardalinum*; also of a seedling, parentage unknown, with flat, star-shaped, coppery-orange flowers. A stand of some thirty-two varieties of *Verbena*, bright, fresh, and excellent in quality, came as usual from Mr. Cannell; and Messrs. Heath & Son, Exotic Nursery, Cheltenham, showed plants of various size of a seedling *Croton* named *Heathii elegans*, a narrow-leaved variety, with the young stem and leaf-pedicles of a bright orange-yellow, the leaves pale green, and finishing off with age of a dark bronze tint. The same firm also showed a flowering specimen of *Epidendrum elatum*. Mr. James, Castle Nursery, Lower Norwood, showed some cut flowers of several closely allied *Oncidiums*, and asked the question, "Where does *Gardneri* begin and *curtum* end?" without, we are afraid, eliciting any definite reply. A flowering plant of the dark coloured *Oncidium Edwardi* came from H. J. Buchan, Esq., Southampton, and Mr. B. S. Williams had *Cattleya virginialis* with one fine flower.

NEW PLANTS CERTIFICATED.—First-class Certificates were awarded to Messrs. James Veitch & Sons for five remarkably handsome varieties of the Japanese *Iris Kämpferi*, i.e., *Carnation*, a flower 6 inches in diameter, lilac, with rosy-purple venation, and a golden blotch at the base of the broad flat petals; *Striata superba*, about an inch less in diameter than the last, pink, with violet venation, and a dark centre, and golden blotches at the base of the petals; *Imperial Wonder*, in size as large as *Carnation*, violet ground shaded with bluish-purple, and freckled with irregularly shaped spots; *Kosoburo San*, and *Delicata*, about 5 inches in diameter, a white ground, shading off to light blue at the edges. Also to the same firm for *Cypripedium Morganianum* x, a handsome hybrid between *C. Stoneanum* and *C.*

ROYAL HORTICULTURAL SOCIETY.—The fête to be held in the Society's garden on Wednesday evening promises to be of a most entertaining character.

Veitchii; for *Begonia rosea grandiflora*, a tuberous rooted variety with large rosy-pink flowers; an enlarged form of the Chiswick raised *Nellie May*; and for another tuberous rooted variety named *Countess of Kingston*, deep, deep crimson. To Mr. Turner, Slough, for *Rose*, H.P., Mrs. Harry Turner, a deep, full and finely shaped bright blood-crimson flower, raised by Mr. Laxton; and for *Picotee Clara Benson*, a beautiful, smooth, broad white-petalled, red, wire-edged flower, raised by the grandson of a famous raiser, the late Mr. Wilmer. To Messrs. William Paul & Son, Waltham Cross, for *Rose*, H.P., *Pride of Waltham*, a seedling from *Juno* and *Madlle. Eugenie Verdier*, which has the well rounded petal and form of *Juno*, added to great substance and fullness, the colour rose with bluish edges; a most promising flower. To Messrs. Osborn & Son, and Messrs. Wm. Cutbush & Son, for *Hedera maderensis variegata*, a bold and distinct white variegated Ivy. To Mr. R. Lewis, gr., St. Austins, South Norwood, for *Coleus Sowter*, a seedling of the now familiar bright crimson type with the teeth of the leaves of a rich golden yellow, but not nearly so distinct and good as a variety named Mrs. Baxter, raised by Mr. King, which was passed over. To Mr. King, gr. to G. Simpson, Esq., Wray Park, Reigate, for *Begonia Mary Steele*, a tuberous-rooted variety of the *Pearcei* strain, with smooth and beautifully round, pure lemon-yellow flower. To Mr. H. Coppin, the Rose Nursery, Shirley, Croydon, for tuberous *Begonia* Mrs. H. Coppin, with flowers $2\frac{1}{2}$ inches in diameter, very smooth, and canary-yellow in colour; a strong growing variety, with very bold foliage. To *Begonia A. Hemsley*, one of the fine seedlings raised at Chiswick; a dwarf compact habited plant, with bright rosy-magenta flowers, very freely produced. Certified as a Decorative variety. And to Mr. William Bull for *Lilium canadense splendens*, a remarkably fine and distinct form, with deep blood-red flowers, heavily dotted with black spots.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. The largest contribution to this meeting consisted of a collection of vegetables, good in variety and fair in quality, shown by Mr. Hinds, gr. to Lord Wimborne, Canford Manor; and to which was awarded a Cultural Commendation. A similar award was also made to Mr. Whittaker, gr. to Lord Crewe, Crewe Hall, for a handsome dish of Lord Napier Nectarines, each being of good size and well coloured. An excellent dish each of *Grosse Mignonne* Peaches and *Elruge Nectarines*, came from Mr. Lyon, gr. to Sir E. H. Scott, Sundridge Court, Kent, and received a vote of thanks. Mr. Ward, gr. to Lord Radnor, sent the Longford Favourite Melon, a thick, green-fleshed variety; and Hyde's Hybrid, a scarlet-fleshed sort, was shown by Mr. Hyde, Manor Farm, Farnborough; but both failed to get an award. Messrs. G. Bunyard & Co., Maidstone, received a vote of thanks for fruit-bearing branches, heavily cropped, of Baldwin's Black, Knight's Early Red, and Ruby Castle Red Currants.

Alexandra Palace Rose Show: July 10.—The flying showers which visited most of the places from which the best Roses came to metropolitan shows, on the 9th inst. had the effect of somewhat reducing the dimensions of the show organised by Mr. Willing for the attraction of visitors to the Alexandra Palace, and which promised early in the week to be the best show of the season. The Fates, however, were against the management, though after all there was not much to complain of, as regards the display; and it was thoroughly enjoyed by the greatest number of visitors that we have seen at any horticultural show held here—a result that must have been gratifying to the new lessee, as well as to his officials, whose arrangements worked without friction, and gave satisfaction to all.

For Mr. Turner and the Cheshunt growers the season has been a most unfortunate one, neither of them having had what is technically termed a good cut, while the shows were on; the best of the "cut backs" being over, and the maidens not in it. As a result, too, of the heavy rains, there was a marked absence of the better sorts of light-coloured flowers, *La France* and "The Baroness" being especially scarce. There were five competitors in the class for seventy-two singles, and the Cranston Nursery and Seed Company again secured the highest honours with a clean, bright, and very effective set of blooms; Messrs. Paul & Son, Cheshunt, coming in 2d with a fine fresh lot, but not so bright as the Hereford blooms; Messrs. Keynes & Co., Salisbury, 3d; and Mr. Piper, of Uckfield, 4th. The best blooms selected from the whole of the stands were A. K. Williams, Countess of Oxford, Etienne Levet, Antoine Ducher, Madame C. Wood, Captain Christy, Général Jacqueminot, Queen Eleanor not (often seen so good), François Michelon, Constantin Tretiakoff, Louis Van Houtte, Marquise de Castellane, Fisher Holmes, Madame Furtado, Marie Van Houtte, Dr. André, Madame Marie Finger, Niphotos, Duchess of Bedford, Mrs. Baker,

and President Willermoz. In the next class, which was for forty-eight trebles, the competition for the 1st prize between the Cranston Co. and Messrs. Paul & Son was exceedingly close, but was ultimately decided in favour of the latter firm; Mr. Turner being 3d, and Messrs. Keynes & Co. 4th. Mr. Piper also competed here, and the class altogether was a very good one. Mr. Turner was in his best form with twenty-four trebles, and took the 1st prize in that class, beating the Cranston Co., Mr. Piper, and Messrs. Paul & Son, who took the other prizes in the order named. The Cranston Co., however, had their turn in the next class for twenty-four singles, a capital class, in which Mr. Turner and Mr. Prince, of Oxford, secured equal 2d honours, Messrs. E. F. Francis & Co., of Hertford, coming in 3d, and Mr. John House, of Peterborough, 4th. The class for a dozen Teas or Noisettes was not a good one, but the best came from Mr. Prince, Messrs. Paul & Son, the Cranston Co., and Messrs. Keynes, and the prizes went in that order.

As in the premier class for nurserymen so in that for amateurs, the Hereford Roses were again in the ascendant; and another 1st prize for forty-eight singles was added to the score of successes achieved by the Chairman of the Cranston Company, Mr. Jowitt, as well as the 1st for thirty-six singles, which was won by the same exhibitor. In the class for forty-eight there were only three competitors, Mr. Jowitt, Mr. J. Hollingworth, Turkey Mills, Maidstone, and Mr. J. Davies, Wilton, who took the prizes in the order named. Mr. Jowitt had no difficulty in winning the 1st prize, but he was not in such fine form as at the Crystal Palace. In the thirty-six class Mr. Hollingworth got no nearer than 4th, being beaten by Mr. Davis, of Aynhoe, Banbury, and Mr. Davies, of Wilton, who followed in the order named after Mr. Jowitt. Messrs. Davis and Davies took the 1st and 2d prizes, and Mr. Hollingworth the 3d in the class for two dozen trebles, which was rather weak—a point that was fully made up for in the twenty-four singles, in which there were nine competitors, who put up a fine lot of blooms. The 1st prize here was won by Mr. A. G. Soames, of Bourne, Lincolnshire, with a very superior lot of blooms, backed up by much better foliage than is usually seen in amateurs' stands. The 2d prize went to Mr. G. P. Hawtrej, Slough; while Mr. Wakeley, of Rainham, and Mr. Sharp, of Horsham, were placed equal 3d, and Mr. Harrington, of Romford, 4th. The awards in the class for twelve blooms, in which there were a dozen competitors, were taken, in the order mentioned, by Mr. J. H. Pemberton, Havering-atte-Bower, Romford; Mr. A. G. Soames, and the Rev. Allan Cheales; while the best of a poor lot of twelve Teas and Noisettes came from Mr. Hawtrej.

The open class for a dozen new Roses of 1878-79-80 brought out five competitors, and Messrs. Paul & Son and Mr. Turner were placed equal 1st, Messrs. Keynes & Co. 2d, and Mr. Piper 3d. The sorts best represented were A. K. Williams, M. Alphonse Lavallée, *Souvenir d'Auguste Rivière*, Constantin Tretiakoff, *Comtesse de Choiseuil*, Claude Bernard, Duke of Teck, Charles Darwin, Marquis of Salisbury, Madame Amélie Baltet, Paul Jamain, Dr. Baillon, Countess of Rosebery, Mdle. Marie Verdier, and Mrs. Harry Turner. For six trusses of any new Rose of the same three years Messrs. Paul & Son, of Cheshunt, were 1st, with A. K. Williams, and Mr. Turner 2d, with Charles Darwin. For eighteen English-raised Roses in commerce Mr. Turner came in 1st, showing amongst others fine blooms of Princess Beatrice, May Quennell, Harrison Weir, Star of Waltham, Duke of Teck, The Shah, John Hopper, John Bright, and Cheshunt Hybrid; Messrs. Paul & Son being a good 2d, and Mr. Piper 3d; and in another class for twelve in or out of commerce Messrs. Paul & Son came in 1st, Mr. Piper 2d, and Mr. Turner 3d. The classes for specially named varieties brought but little of any merit, but included a superb stand of Marie Baumann, from Mr. Prince, which was a long way ahead of anything else.

A novel feature, introduced here for the first time, was a special supplementary display of some 12,000 blooms, staged by Messrs. William Paul & Son, of Waltham Cross, who also undertook to keep this feature of the show going all this week by relays of fresh blooms, numbering some 10,000 in addition.

Newcastle-on-Tyne Botanical and Horticultural: July 7 and 8.—The summer show of this Society was held on the above dates in the usual place, Leazes Park. The exhibition in all except Roses was greatly in advance of any the Society has before had, especially in the classes for large plants, both flowering and fine-foliated, which were not only present in large numbers, but in beautiful condition. The display of fruit was quite in keeping with that of plants as to quantity, and taken as a whole was good, there being much less of an inferior description than is generally met with where so much is shown.

In the groups of plants arranged for effect, Mr. Yule, gr. to H. Pease, Esq., Piermont, Darlington, came in 1st, showing a well-arranged lot, the plants nicely balanced

with enough flowering subjects combined with the variegated foliage to give sufficient colour; the group consisted of tall growing Palms, *Cordylus australis*, coloured leaved *Dracenas*, *Crotons*, *Pandanus Veitchii*, *Yuccas*, small *Ixoras* and *Coleus*, with Ferns, *Lycopodiums*, *Panicum variegatum*, and other trailing plants. Mr. W. R. Armstrong, nurseryman, Newcastle, was 2d, with a nice group tastefully put together, the only fault being that there were in it a few formally trained specimens. Mr. Noble, gr. to T. Fry, Esq., M.P., Darlington, was 3d, with a meritorious lot of suitable plants, but arranged a little too thinly on the ground.

Stove and greenhouse flowering plants were, as we have said, present in large numbers and very fine order, the display collectively being better than we have seen elsewhere this season. In the open class for eight Mr. Cypher, Cheltenham, took the lead with a fine collection, amongst which was a grand *Ixora Williamsii*, 5 feet through, covered with large trusses of bloom; 1. *regina*, a little smaller; *Allamanda nobilis*, flowered splendidly; *Erica tricolor impressa*, quite 5 feet across; and *Anthurium Scherzerianum*, bearing some forty large fresh blooms. Mr. Tudgey, gr. to T. F. G. Williams, Esq., Worcester, was 2d, staging an excellent group, in which *Erica Paxtoni*, *E. ferruginea major*, *Dipladenia amabilis*, *D. profusa*, and *Allamanda Hendersoni*, were all fine; Mr. Noble 3d. Six stove and greenhouse plants.—1st, Mr. Letts, gr. to Earl Zetland, Upleatham, *Marthe-by-the-Sea*, with a well-managed half-dozen, the best of which were *Erica ferruginea major*, *E. Shannoni*, *Turnbulli*; *Dracophyllum gracile*, and *Ixora coccinea*, large and well flowered. Mr. Tudgey, who was 2d, had a well bloomed lot, containing *Dipladenia amabilis* with very large flowers; *Anthurium Scherzerianum* and *A. Scherzerianum album*, bearing some two dozen blooms; 3d, Mr. Noble, his most noteworthy examples being *Allamanda Wardleanum* and *Lapageria rosea*—the latter one of the best flowered specimens we have seen grown in a pot. Three stove and greenhouse plants.—1st, Mr. E. Adams. Mr. Tudgey had 1st for three Heaths, showing medium-sized nicely flowered examples.

Fine-foliage plants were in great force, the specimens large, and in the best possible condition. With eight Mr. Cypher was 1st, a very good lot, in which *Cordylus indivisa*, *Cycas intermedia*, *Thrinax elegans*, *Latania borbonica*, and *Croton majesticus*, were in every way excellent. 2d, Mr. N. Black, South End, Darlington, his best examples being *Encephalartos villosus*, *Croton Mooreanus*, and the handsome Palm, *Astrocaryum mexicanum*. Six fine-foliage plants.—Here Mr. Letts occupied the post of honour with a faultless exhibit, containing a couple of *Crotons*, majestic and *Johannis*, beautifully coloured, and *Encephalartos Vroomii*, a grand specimen about 10 feet through; this species is not surpassed by any other fine-leaved subject in cultivation when in such condition as the plant under notice. Mr. Tudgey was 2d, with a group only little inferior to that which took 1st. He had the two distinct Palms, *Pritchardia pacifica* and *Geonoma gracilis*, and an unusually fine *Cycas revoluta*.

Ferns, both tender and hardy, were splendidly shown. With six exotic species Mr. Letts was easily 1st, having amongst others beautiful specimens of *Cyathea dealbata*, *Dicksonia antarctica*, and *Gleichenia rupestris glaucescens*. Mr. Noble was 2d, with smaller but clean, healthy plants. For six hardy sorts, in a close competition, Mr. J. Rodwell, York, took 1st, with large, well managed examples; Mr. W. R. Robinson, York, 2d.

Pelargoniums, both Show and Fancy varieties, were praiseworthy for so late in the season. Nine Show varieties.—1st, Mr. May, Bedale, showing in his usual style large profusely bloomed plants of *Regalia*, *Reflection*, *Gipsy*, *Red Gauntlet*, *Pericles*, *Triomphe de St. Mande*, *Emperor*, *Mermerus*, and *Ruth*. Messrs. Lazenby & Sons, York, were 2d, with a very good group, in which *Trojan*, *King Charles*, *Countess*, and *Marion* were the best. Six Show varieties.—1st, Mr. Sanderson, gr. to W. H. Parker, Esq., with medium-sized plants, full of flower and clothed with healthy foliage; Mr. E. Adams 2d, his lot also being well bloomed. Six Fancies.—1st, Mr. May, having well-flowered plants; 2d, Messrs. Lazenby. Six Zonals.—With these Mr. Spoor took the lead, showing very large well-flowered specimens, not so stiffly trained as we often see them. Mr. Rodwell, who had smaller but nicely bloomed plants, was 2d.

Fuchsias were forthcoming in quantity. With three Mr. E. J. Deighton, New Gateshead, took 1st, Mr. Sanderson 2d. Bedding plants, twelve pans.—1st, Mr. J. Rodwell; 2d, Messrs. Lazenby. Twelve alpine plants.—With these Mr. J. Rodwell was 1st. Dinner-table plants.—1st, Mr. Noble in one class, and Mr. Tudgey in another.

Messrs. Veitch, of Chelsea, and Mr. B. S. Williams, of Holloway, both contributed very fine groups of new and rare plants. Messrs. Veitch's collection consisted of *Orchids*, *Nepenthes*, *Sarracenia*, *Anthuriums*, *Begonias*, the singular *Ataccia cristata* in flower, Ferns, Palms, &c. Mr. Williams had *Orchids*, *Crotons*, *Nepenthes*, Palms, Ferns, *Begonias*, and a good plant of the elegant *Casuarina sumatrana*, from Messrs. J. Robson & Son, nurserymen, Hexham, came a quantity of Conifers in pots.

Roses were limited in number, and mostly of medium quality; for forty-eight single blooms the Cranston Nursery Company, Hereford, came in 1st, their best flowers being *Sénéateur Vaise*, *Etienne Levet*, *Hippolyte Jamin*, *Madlle. Eugenie Verdier*, *Alfred Colomb*, *Madame Lacharme*, Countess of Oxford, *Baroness Rothschild*, and *Madame Charles Wood*. In the open classes for twelve Tea Roses, and for twelve yellow Roses, Messrs. R. Mack & Son, nurserymen, Catterick Bridge, were 1st, with very nice flowers. Twelve Roses, single blooms of any one variety.—1st, The Cranston Nursery Co., with *Baroness Rothschild*. Messrs. Cran-

ston's Challenge Cup for thirty-six Roses, distinct varieties, was won by Mr. Jowitt, Old Weir, Hereford, with a good stand, in which Charles Lefebvre, Edouard Morren, Exposition de Brie, Emilie Hausberg, Princess Mary of Cambridge, and Marie Rady, were very fine; 2d, Mr. E. R. Whitwell, Barton Hall. Mr. Jowitt was 1st for twenty-four Roses, and also for twelve. With twelve Tea Roses, Mr. Whitwell took 1st.

The table decorations and other arrangements of cut flowers were one of the principal features of the exhibition; there were over forty bouquets shown. For a table to seat eight persons the competition was close; Mr. M. Thompson, gr. to Lindsay Wood, Esq., was 1st, with an arrangement consisting of three centrepieces, small specimen glasses filled with flowers, and several dishes of fruit; 2d, Mr. Cypher, showing a light and elegant combination; Mr. Methven, gr. to T. Lange, Esq., Heathfield, was a very good 3d. In the open class for a single centrepiece Mr. Cypher occupied the post of honour, Mr. Rymer, Sunderland, being 2d. The 1st prize in the corresponding class for amateurs went to Mr. Whiting, gr. to E. J. Walker, Esq.; 2d, Mr. Rymer, all tastefully arranged. Mr. Cypher had 1st for a bride's bouquet in the open class; Mr. Pattinson, nurseryman, Carlisle, 2d. Several exhibitors in this class made the mistake of using some flowers that were not white. For an ordinary bouquet in the amateur's division Mrs. Crament, Sunderland, had 1st.

Cut flowers in bunches were in great force, both hardy and exotic. Twelve varieties stove and greenhouse.—1st, Mr. Yule, with beautiful bunches of Stephanotis, Ixoras, Dipladenias, Bougainvilleas, Odontoglossum vexillarium, and Anthurium Scherzerianum, &c.; Mr. Black 2d. Twenty-four bunches of hardy flowers.—1st, Mr. Yule, having a nice collection, the best of which were *Morina longifolia*, *Alströméria aurea*, *Campanula trachelium*, &c.

Fruit was plentifully shown, and was of very good quality. With six dishes Mr. Clayton, gr. to J. Fielden, Esq., Grimston Park, was well 1st, showing Black Hamburgh and Muscat of Alexandria Grapes, a Queen Pine, Royal George Peaches, President Strawberries, and an Eastnor Castle Melon, all good; Mr. Mann, gr. to Mrs. R. D. Hornsby, Grantham, was 2d, his best dishes being Stanwick Nectarines, Galand Peaches, and a Queen Pine. Mr. Edmonds, gr. to the Duke of St. Albans, Nottingham, was placed 3d, with, amongst others, very good and finely-coloured Royal George Peaches and Elruge Nectarines, a Golden Drop Melon, and Black Hamburgh Grapes. For four dishes Mr. Letts was a good 1st, having Black Hamburgh Grapes, good bunches, as black as jet, and well covered with bloom; Buckland Sweetwater, a fine Melon, and Peaches; Mr. Clark, gr. to the Marquis of Ripon, was 2d, with Golden Champion and Black Hamburgh Grapes, Blankney Hall Melon, and Stirling Castle Peaches. There were eight exhibitors in this class. The class for four bunches of Grapes, not less than two varieties, brought out seven competitors, Mr. Letts coming in 1st with very good Black Hamburgh, Buckland Sweetwater, and Foster's Seedling. Mr. Jowsey, gr. to G. G. Brown, Esq., who was 2d, had Black Hamburgh, Foster's Seedling, and Muscat of Alexandria; Mr. Lawson, gr. to the Rev. R. H. Williamson, 3d. Two bunches black Grapes.—1st, Mr. Hutchinson, gr. to J. J. Hunter, Esq., with nice bunches of Madresfield Court, very large in berry and beautifully covered with bloom, but a little wanting in colour; Mr. Lawson 2d, small but excellently finished Black Hamburghs. Two bunches white Grapes.—1st, Messrs. J. Mavin & Sons, Whitby, with small but very highly coloured Muscat of Alexandria; 2d, Mr. Clayton. Mr. Clements, Chesterfield, was 1st for a good Queen Pine, and Mr. Ollerhead, Wimbledon House, 2d. Peaches, single dish.—1st, Mr. Edmonds, very fine Chancellor; Mr. Russell, gr. to Dr. Murray, 2d. Nectarines, single dish.—1st, Mr. Clayton; 2d, Mr. Edmonds. Melon.—1st, Mr. Yule, showing Tilley's Seedling; Mr. Grice, gr. to the Misses Surtees, 2d. Strawberries.—1st, Mr. Clark, very fine examples of with Dr. Hogg. Figs.—1st, Mr. Clark.

Ealing, Acton, and Hanwell Horticultural.

This large suburban Society, which has reached its sixteenth year, held its annual summer exhibition on July 7, in the fine central park-like grounds attached to the residences of the Right Hon. S. H. Walpole, M.P., President of the Society, and the Misses Percival, daughters of the late Mr. Spencer Percival, whose assassination by Bellingham in the lobby of the House of Commons, so many years since, is one of those political events of which the present generation knows little. Probably the most central and suitable place in the entire locality for the holding of an exhibition, it is the first time the Society has been privileged to use it, and it is to be hoped that it may not be the last. The too common lot of flower-shows this season—a wet morning—made things uncomfortable, and during the early part of the day kept away visitors, but when the sun broke out in the afternoon the grounds soon became peopled, and the tents literally crowded. In its floral aspects the show was one of the best the Society has yet held. In the plant section there was the same need of flowering plants that exists now in nearly all summer shows, and the fine collections of plants that used to come from Ealing Park were wanting. The cottagers' classes were all well filled, and their exhibits a marvellous display. The only class open to the kingdom is the one for forty-eight cut Roses in three's, the prizes being good. This class resulted in one of the finest displays of cut Roses seen in any suburban show this season. Mr. Charles Turner, of Slough, with a fine lot of bright fresh flowers, came 1st; Messrs. Paul & Son, Chesham, 2d; and Messrs. John Keynes & Son, Salisbury, 3d. Mr. Piper, of Uckfield, also competed, and Messrs. Charles Lee & Sons also put up a fine lot of flowers, but not

in competition. In the various classes for Roses about 1000 flowers were staged. The following were some of the best blooms in the leading stands:—Pierre Notting, Penelope Mayo, Mons. E. Y. Teas, Marie Baumann, Chas. Darwin, Etienne Levett, Louis Van Houtte, Harrison Weir, Mrs. Harry Turner, a good rich crimson flower; Louisa Wood, and Prince Arthur. Of lighter kinds, Niphotos, Baronne de Rothschild, La France, Maréchal Niel, Boule de Neige, Catherine Mermet, and Mille. Marie Cointet, were all good, and found many admirers. The chief exhibitors of trade groups not in competition were the Messrs. Lee, who sent from Hammersmith a really fine group of decorative plants, including Palms, Ferns, Dracenas, Ericas, Crotons, Coleus, Roses, and some remarkably fine Hydrangeas; they also sent up from Isleworth a fine lot of flowering Begonias, whilst the cut Roses came from the Ealing nursery. Messrs. Fromow & Sons, of Turnham Green, sent very handsome groups of hardy ornamental Coniferæ, and the usual house decorative plants. In the former, which attracted much notice, plants ranging from 12 inches to 6 feet were used, and included Retinosporas, Thuias, Cryptomerias, Cupressus, &c., intermingled with variegated Acers. Mr. Petridge, of Brentford, staged a pleasing collection of his well-coloured gold and silver Tricolor Pelargoniums, and Mr. R. Dean had fine Sweet Williams, Enothera Fraseri, Mauve Beauty Stock, Lobelia Heckfield Beauty, and new Pot Marigold Meteor. From the gardens at Gunnersbury Mr. Roberts kindly sent a charming group of flowering and foliage plants. In the large tent Mr. Hudson, gr. to Mr. H. J. Atkinson, of Gunnersbury, was a prominent exhibitor, taking the 1st prize for a decorative group of great beauty, and most admirably arranged. Mr. Bunn, gr. to Mr. E. M. Nelson, Hanger Hill, was 2d with an arrangement that was very pleasing without being formal; and Mr. Elliot, gr. to Mr. J. Moore, Ealing, was 3d with a bold arrangement in which some fine heads of Hydrangeas told well. In smaller groups the 1st prize was taken by Mr. G. Weedon, florist, of Ealing, in whose collection was a brilliantly coloured Coleus of the Verschaffeltii type, named Sunset, that was very effective.

In foliage plants Mr. Hudson was 1st, as also with Ferns, having the fine specimens that made such a good figure at Richmond. In the latter class a collection shown by Mr. McThunn, gr. to Mr. T. Nye, of Ealing, deserved special notice, being fresh, clean grown, and showing high cultivation. Fuchsias were a very good feature, and generally fairly well grown. Mr. McThunn had the best four—all handsome well bloomed pyramids, consisting of Charming, Delicata, Try-me-oh, and Elegance. Mr. Bunn had the best single specimen—a good pyramid of Mrs. Marshall. In the cut flower tent were found also a quantity of elegant table decorations, some charming bunches of grasses, Sweet Williams, Antirrhinums, Pelargoniums, stove and greenhouse flowers, and many other things, all very attractive. A special prize for the best twelve Roses, set in a decorative box of moss, was taken by Mr. Hepper, gr. to Mr. Ledward, of Acton, who had a carpet of *Selaginella denticulata*, with a drooping margin of *Isolepis gracilis*. Mr. Hudson was very strong in Grapes, having really superb Black Hamburghs and Foster's Seedling; also with a grand bunch of the former he was 1st in the single bunch class. He was also 1st with six dishes of fruit, in which there were very excellent Grapes, black and white; Queen Pine, Reed's scarlet-flesh Melon, Sir C. Napier Strawberries, and Lord Napier Nectarines. Mr. Hepper was 2d, with good black Grapes, Melon, Cherries, and two kinds of Strawberries. Where, besides open classes, there are others for amateurs, single-handed gardeners and cottagers all well competed, it is obvious that but a cursory glance at the show can be given here. The Ealing cottagers well maintained their high reputation as gardeners, and all their exhibits, in about 330 distinct entries, were excellent. In many classes there are eight prizes to award, and where the exhibits are good the judging becomes anything but play.

Ipswich and East of England Horticultural.

—This Society held its summer *fête* in the picturesque and well situated grounds of Christchurch Park, on July 6, but, as usual, the same fatality attended it that has attached for years past, as, although the day was altered as well as the month, with a view probably to change the luck and cheat the weather, rain fell again, although not to the same extent as the patrons of the show have been accustomed to, which is something to be thankful for and a little more encouraging for the future. The wet, however, did not damp the ardour of the hon. secretary, the Rev. H. A. Berners, who laboured assiduously, and being an enthusiastic rosarian and most zealous in horticultural matters, it is easy to foresee that, with such a captain at the helm, the Society has a bright future before it. The exhibition, on the whole, was a particularly good one, especially as regards fruit and Roses, the collection of the former contributed by Mr. Allan, gr. to Lord Suffield, being probably the best ever staged at Ipswich, but as that from Mr. Blair, gr. to Sir G. Broke Middleton, contained three fine Pine-apples, in addition to a most meritorious lot, the judges were compelled to place that 1st. As Pines are so rarely grown now it would be well to exclude them from a general collection, and limit the number of dishes, which would place exhibitors on an equal footing, and be in every way far more satisfactory for all parties.

Grapes were in strong force and made a fine show, the best Black Hamburghs, for the Mayor's special prize, being carried off by Mr. Mill, gr. to Lord Rendlesham, and the 2d by Mr. J. Lane, gr. to Sir E. Kerrison, the latter being 1st for white, with some large berried Muscats.

The season has evidently suited Strawberries, as the entries were not only numerous, but the fruit was remarkably fine, both in size and quality, British Queens, as usual, taking the lead for flavour, and such large sorts as James Veitch for weight.

Owing to several of the principal exhibitors of plants having withdrawn from showing, this class was but poorly represented, the principal prizes being taken by the Messrs. Gilbert, of St. Margaret's Nursery, without opposition. It needs only to mention Mr. B. R. Cant's name in connection with Roses as proof that they were of the finest form and excellence that could be produced, his forty-eight, shown for Sir G. B. Middleton's special prize, taking 1st honours, and Mr. F. Cant's 2d. The Rev. H. A. Berners was 1st in the twenty-fours against nine other competitors, but the classes for Teas and Noisettes were poorly represented, which no doubt was owing to the winter having injured a great many of the plants, and the season having since been cold and bad for the blooms.

The stands for table decorations were remarkably good, the one from Mr. Palmer, gr. to Captain Powell, of Drinkstone, however, quite outdistanced competition, both in the exquisite taste displayed in its arrangement, and the choice Orchids used in making it up; and the same may be said of the ball-room bouquet contributed by the same gentleman, which, with the epergne before alluded to, attracted a large share of attention. *J. S.*

The Wolverhampton Horticultural Exhibition: July 5 and 6.

—A run from Birmingham to Wolverhampton gives to a stranger a novel experience of the Black Country, especially from Dudley to Wolverhampton. Tettenhall, one of the outskirts of Wolverhampton, so rich is it in vegetation and with its charming villa residences that the Black Country, though close to it, in no way appears to affect it. Lieutenant-Colonel Thorneycroft's mansion, standing on an eminence, overlooks the town and its surroundings, and the exhibition was held in the pleasure grounds attached to the mansion. In the open classes for stove and greenhouse plants Mr. Bucknall, gr. to H. Lovatt, Esq., took the leading honours, a good *Vanda insignis* being amongst his collection. Mr. T. Beach, an amateur, also exhibited a capital group, and Mr. Wm. Collins, gr. to Lieutenant-Colonel Gough, also exhibited very successfully. Mr. Collins took 1st prize for six Zonal Pelargoniums, exceedingly creditable plants, not too large but trained in a natural form and well done; whilst the six and three double Zonal Pelargoniums, for which first prizes were awarded to Mr. John Spencer, gr. to Moses Bayliss, Esq., were unusually good and when staged in such good form are telling plants in an exhibition. The best doubles in the tents were Madame Thibaut, Gillion, Waldon Sisley, Waddington, C. H. Wagner, Lucien Lemoine, and Emperor of Russia. A few well grown Tricolor and Bronze Pelargoniums were also exhibited. Mr. Bucknall took the leading prizes for Ferns, Mr. Spencer being a good 2d; all the lots were exceptionally good.

Coleuses are nicely grown here, chiefly of a flat form but good useful plants, clean and well done, the most effective being Firefly, Garnet, Glow, Harlequin, and Crown Jewel, which was much admired. Mr. Collins and Mr. Crowe, gr. to A. Staveley Hill, Esq., M.P., divided the honours. Mr. Collins took 1st prizes in both classes for Fuchsias with some well grown plants. Some good *Petunias* were exhibited, and excellent flowering Begonias, Mr. Wm. Clee, gr. to J. Jones, Esq., staging some capital plants. The plants generally throughout the exhibition were placed upon the grass, wood staging being thus avoided, and much taste was displayed in the arrangement, especially in grouping the Ferns and Begonias. Had the Zonal Pelargoniums been placed in groups alternately with the collections in the centre of the main tent instead of the Ferns and Caladiums, the effect would have been more pleasing; still the arrangements of the exhibition were most creditable, and the barriers were simple and neat, consisting of neat stakes about 2 feet high driven into the ground some few feet apart and a white cord run along.

The gardeners and amateurs of the neighbourhood have everything to learn yet in the art of making bouquets and arranging flowers for table decoration, as with the exception of some bouquets sent by Mr. Vertegans, of Birmingham, a worse lot has been rarely seen. Cut Zonal Pelargoniums were fairly good, especially the double varieties, Amy Ferrier and Gillion being especially good.

A tent was devoted to the amateurs for plants, and throughout, but especially in the groups, it was a highly meritorious display. The principal exhibitors were Mr. E. Perry, Mr. T. Beach, Mr. W. A. Green, Mr. T. Kean, and Mr. W. Alpine, all local growers, and great credit is due to all. The schedule intimated that amateurs cannot have a gardener's help, and looking at one or two of the collections staged, in one of which was a good Anthurium Scherzerianum and a fair *Aerides odoratum*, it was somewhat difficult to feel that the schedule had been complied with. However, as the committee allowed the competition, it must be fairly supposed all conformed to the rule, in which case so much greater the credit to the exhibitors. Mr. S. Dean, gr. to Mr. Rupert Kettle, took the 1st prize for a capital collection of vegetables, which included some excellent Tomatoes and fine Mushrooms.

There was a limited supply of fruit, Mr. Cowles taking 1st prize for a good Queen Pine and a good Melon; and Mr. Clee took 1st honours for three classes of Grapes and for a collection of six fruits—a very creditable lot, in which there was a good Queen Pine, a fine Melon, black and white Grapes, and two dishes of Peaches.

In the open class for four stove and greenhouse plants Mr. Bucknall had in the 1st prize lot a good Anthurium Scherzerianum and a fine *Cypripedium barbatum*.

The entire display was of a very pleasing character, good careful culture characterising the whole, and when it is borne in mind that the immediate district is not a good one for plant growing, visitors to the exhibition were agreeably surprised at its general excellence.

Mr. Shaw, of the Fern Nursery, Wolverhampton, exhibited one of his small "multiplex saddle" boilers, which can be used for heating small conservatories by gas or oil lamps. This was out-of-doors, with a gas-jet affixed to it; and although boiler and pipes were in the open air the pipes were hot, and both boiler and plan of operation may be regarded as a desideratum in the amateur's garden.

Romford and Essex Horticultural.—The annual show of this Society was held in the grounds of R. G. Price, Esq., Romford. The exhibition was quite up to the average of former years, but the enjoyment of the visitors was somewhat marred by thunderstorms. Stove and greenhouse plants were not quite so numerous as in former years, only three exhibitors showing in the two classes. For eight specimens in flower, Mr. J. Douglas, gr. to F. Whitbourn, Esq., Ilford, gained the 1st prize—he had *Bougainvillea glabra*, well flowered; *Anthurium Scherzerianum*, and *Clerodendron Balfourianum*. For four specimens Mr. Ford, gr. to Octavius E. Coope, Esq., gained the 1st prize. The last named exhibitor also gained a 1st prize for foliage plants with very good specimens—*Croton majesticus* had very highly coloured foliage. Mr. Douglas exhibited Ferns, *Caladiums*, *Orchids*, and *Lycopods*, gaining 1st prizes in each case. Mr. Meadmore, nurseryman, Romford, exhibited several groups of Zonal and Variegated *Pelargoniums*, in each case gaining 1st prizes. For stage and Fancy *Pelargoniums* Mr. Bones, gr. to David McIntosh, Esq., Havering, gained 1st prizes, but in none of these cases is it needful to give lists of the plants exhibited.

Cut flowers, including Roses, formed a very interesting feature. The Roses were very good indeed. The collection of twenty-four varieties which gained the 1st prize for Mr. W. Harrington, gr. to E. Mitchell, Esq., Corbets Tey, were the best in the exhibition. Mr. Meadmore gained the 1st prize for forty-eight distinct varieties, and the Rev. J. H. Pemberton gained the highest position in a good class for twelve. Messrs. Saltmarsh, of Chelmsford, were exhibitors and prize-takers in several classes; they had a very well arranged basket of plants: for this and stands of herbaceous plants and Zonal *Pelargoniums* they gained 1st prizes. Mr. Douglas had the best stage *Pelargoniums*, stove and greenhouse flowers, and Pansies.

Fruit was very good, especially the Grapes and Peaches. Mr. Farance, Chadwell Heath, obtained 1st prizes for excellent Peaches and Black Hamburg Grapes. Mr. D. Nairn, gr. to R. G. Price, Esq., was 1st in the class for white Grapes, and Mr. Douglas in that for three distinct varieties; Mr. Bones was 1st for a collection of fruit; Mr. Woodhouse, gr. to C. P. Matthews, Esq., obtained the 1st prize in a good competition for Strawberries, with President, Sir Charles Napier, and British Queen. Vegetables were very good indeed; they are more encouraged at this show than at many country exhibitions, and it is very desirable that it should be so, as gardeners who have little time to attend to the tying and training of stove and greenhouse plants can exhibit examples of their skill from the kitchen garden. Amateurs and cottagers have also ample opportunity to show their skill, and the tent set apart to their productions was attractive with cut Roses, Fuchsias, *Pelargoniums*, *Coleus*, &c., while very good vegetables and fruit was placed on the side stages. Mr. W. Cook, of Upminster, had excellent Turnips, Carrots, Early Bird Kidney and Porter's Excelsior Potatoes. Mr. W. Foulsham had very fine Peas; Mr. Elms, of Collier Row, exhibited six varieties of Potatoes, exceptionally fine, and most excellent Cauliflowers.

Wimbledon: July 7.—The eighth annual exhibition of the Wimbledon Royal Horticultural and Cottage Garden Society was held in the grounds of Belvedere House, and shared the fate of many others during this inclement season, for whilst the display was an exceptionally good one, quite a downpour of rain was experienced up to about 5 P.M. Three large tents were set apart for the various exhibits, a larger one containing the specimen flowering and fine-foliage plants; an intermediate-sized one the fruit, cut flowers, and amateurs' exhibits; whilst the smallest was set apart for cottagers' flowers, &c. Many special prizes were offered and competed for amongst the numerous classes staged. In that for six stove and greenhouse plants, distinct, Sir Thomas Gabriel (J. Bentley, gr.) was 1st, with a neat collection; and for four stove and greenhouse plants Mr. D. Bridger was 1st. Mr. W. Stratton taking the 2d prize. The prizes for six and four exotic Ferns fell to Mr. Nunn and Mr. Callard. Mr. Bridger taking 2d prize in the former class. Fuchsias and Zonal *Pelargoniums* were well shown by Mr. J. Law, Mr. W. Stratton, Mr. Bridger, and Mr. W. Mayes; a fine group of four *Begonias* (flowering), distinct, shown by Mr. J. Bentley, deservedly taking the 1st prize; the same exhibitor also took 1st prize for four *Lycopods*.

In this same tent Mr. George Legg, Worple Nursery, Wimbledon, staged a splendid group of Zonal *Pelargoniums*, grown in small or 48-sized pots, the blooms upon which were immense, especially those upon such good varieties as Charles Schwind, Rebecca, Louis, Gertrude, Mrs. Ward, Captain Holden, Lady Eve Campbell, Lizzie Brooks, which had flowers 2 inches across, &c. At this show Roses were an admirable display. For twenty-four, distinct, the Misses Christy (gr., J. W. Moorman), were awarded 1st prize, and Mr. C. Gibson, 2d; and with twelve Roses and six Roses respectively Messrs.

W. Fanning and S. F. Still, Esq. (J. Curtis, gr.), took the two higher awards after a severe competition. Buttonhole bouquets are generally a great display at the Wimbledon show. They are shown in sixes, and most distastefully, as I think, upon black shields, which gives them a very sombre appearance. In the result of a careful analysis of the merits of the many shown the judges followed the smallest and neatest arranged, awarding the prizes to Mr. Pragnall, Roehampton, 1st; Miss A. Fanning, also of Roehampton, 2d; and Miss Clark, 3d. Sir Trevor Lawrence, Bart., offered special prizes for the best six plants suitable for table decoration, which brought forth a large competition. The collection generally consisted, however, of undue numbers of *Dracenas*. Mr. S. Howard (J. Callard, gr.), was 1st; Mr. R. S. Dean (J. Law, gr.) being 2d. Lady Peek's special prizes for a collection of cut blooms of herbaceous flowers also brought a goodly response, boxes of exceptional merit having been staged: Messrs. Fanning, Boylett and Bridger were the prize winners in the order in which their names appear. An exceptionally rich prize had been collected "amongst a few friends," consisting of an electro vase on stand under glass shade, price about 4 guineas, for only six Roses, cut blooms, distinct, the fortunate winner being Dr. Brookless. Black Grapes were well shown by Mr. Gibson. The collections of vegetables of Messrs. J. Starr (1st prize for twelve varieties), and D. Bridger (1st prize for six varieties), were beyond average merit.

In the purely amateur classes many well-grown subjects were displayed. For twenty-four Roses, distinct, Mr. W. Scott won 1st prize, his blooms being very excellent. A very pretty display of wild flowers and of grasses was also made, the premium awards going to V. Ogden and L. Appleby respectively. Amongst miscellaneous subjects Messrs. T. Jackson & Son, Kingston, staged a large bank of plants, which besides the general class of decorative plants contained fine specimens of *Cypripedium barbatum*, *Erica Bothwelliana*, &c. We were pleased to observe that during the evening the weather cleared up somewhat, when a fairly large company assembled, adding a very acceptable sum to the previously somewhat impoverished exchequer of the Society. W. E.

Edinburgh Botanical: July 8.—The Society met in the class room, Royal Botanic Garden, Mr. Gorrie, President, in the chair, when the following communications were read:—

I. Further Notes on New Zealand Plants, cultivated at Rait Lodge, near Trinity, which withstood the winter, 1879-80. By the President.

II. The Flowering Plants of New Zealand and their relation to the Insect Fauna. By George M. Thomson, F.L.S., Dunedin, New Zealand. Communicated by Professor Balfour.

Mr. Thomson had been led by personal observation to discredit the opinions promulgated by eminent writers that New Zealand lacks brilliantly coloured or sweet-scented flowers, and is consequently poor in insect life. In the first place our knowledge of the New Zealand insect fauna is still very imperfect. Mr. Wallace gives the number of indigenous species of butterflies as eleven; Mr. Butler, of the British Museum, as fifteen; while Mr. Fereday, of Christchurch, a local entomologist, who is intimately acquainted with the Lepidoptera, enumerates eighteen species. The same authority makes mention of several hundred species of hawk moths, instead of two described by Mr. Wallace. They may be seen rising from the grass on summer evenings in myriads at all elevations, from sea-level to an altitude of 6000 feet. Many flowers are exclusively fertilised by them, and probably all of them visit flowers for their nectar. Mr. Wallace makes 300 species of New Zealand Coleoptera belonging to 150 genera; but according to Captain Brown, another local observer, there are 1300 species already described, playing a most important part in flower fertilisation. On the other hand, the Hymenoptera, Neuroptera, Orthoptera, and Homoptera do not appear to visit flowers in New Zealand. The Diptera, though not mentioned by Mr. Wallace, are considered by Professor Hutton to be better represented than any other order, and of these the Stratiomyidae and the Synphidae are both found almost exclusively on flowers. The author had confined his observations to 252 species of flowering plants principally in the vicinity of Dunedin, and of these ninety-nine were observed to secrete honey; but flowers which had been recorded as not containing honey were found on a subsequent bright, warm day to do so; so, too, scentless flowers in dull days had been found to become perceptibly fragrant in bright weather. Other flowers, again, only emitted their fragrance at certain hours of the day. The author had recorded only thirty-four species of fragrant flowers, or less than 25 per cent. The largest and most prominent flowers are destitute of scent, whereas many inconspicuous flowers are overpoweringly fragrant, and are most frequently visited by Diptera. Of the 262 species of plants examined, the author is certain that 110 are absolutely incapable of self-fertilisation; of these 63 are entomophilous, and 47 are anemophilous; whilst of the remaining 152 species, 96 are more or less dependent on insects. These proportions may fairly be applied to the whole colony, where the Diptera appear to take the place occupied by other insect orders in plant fertilisation in other quarters of the globe.

In the subsequent discussion Isaac Anderson-Henry, Esq., suggested that the reason of their failure here to cultivate many New Zealand plants, otherwise compatible with our soil and seasons, might be the lack of their corresponding insects specially necessary for their fertilisation.

With reference to Mr. Thomson's observations of insects visiting certain plants just as the day was sun-

shiny or not, Mr. Taylor called attention to Mr. Gaston Bonier's observations made to the Botanical Society of France. He had noted how the Hymenoptera actively visit certain plants in Norway which they desert in the latitude of Paris. The species so distinguished were *Hieracium pilosella*, L.; *Campanula rotundifolia*, L.; *Geum urbanum*, L.; *Potentilla Tormentilla*, Nestl. Bonier argued that the production of nectar in these plants in the North was owing to the larger amount of sunshine they experienced, caused by the greater length of the day. But in another paper he questioned if there was a necessary connection betwixt the visit of an insect and the fertilisation of a corresponding flower.

III. Dr. Dyce Duckworth sent a fine specimen of the fungus *Geaster fornicatus* to the botanical museum, which had been obtained at his house in Surrey.

IV. Sir Robert Christison, Bart., made some supplementary observations to his papers on the exact measurement of trees, and which he promised to lay subsequently more at length before the Society. This season had been favourable to the growth of certain trees in the district, especially those of the coniferous order. From observations made since April 30 last, the *Cupressus Lawsoniana* had increased in girth in several specimens over 1 inch to 1½ inch; while three species of Hungary Oak in the Royal Botanic Garden had similarly progressed to the extent of ½ inch to 1 inch. Some interesting details were given of an Oak tree which had been thrown down by one of the sudden floods of last autumn near Cheltenham. At 3 feet from the ground it was 18 feet in girth, while the annual rings, taken by the method of De Candolle pointed to an age of not more than 500 years. In conclusion, Sir Robert exhibited specimens from the woods of Craigiehall, near Edinburgh, showing great devastation to Oaks by insect ravages. This woodman's plague, as subsequent speakers confirmed, was widely prevalent in the Edinburgh district, and had been known in some localities for three years.

V. Report on the effects of last winter on vegetation in different parts of Scotland, and on the progress of open-air vegetation at the Royal Botanic Garden from the beginning of June. By Mr. John Sadler, Curator.

VI. Miscellaneous communications:—

1. The President exhibited two first and second year's plants of *Raphanus maritimus*, showing that it is at least of biennial duration. It is said by some to last for three years, although it has been questioned if it is really distinct from the strictly annual *Raphanus Raphanistrum*.

In Withering's *Botany* it is stated that the late Dr. Walker, Professor of Natural History at Edinburgh so long ago as 1753, deemed it preferable to Horse Radish for the table, and found that cattle were fond of its herbage. When the young roots are cut into very small pieces and sparingly mixed with green salad, such as Lettuce, Mr. Gorrie obtains a very decided and agreeable Radish flavour. These roots are obtainable in perfection at periods when the common garden Radish is not in season. One of the specimens was fully 4 feet high, and had not had room to spread. The original stock had been brought from the coast of Bute and Wemyss Bay in 1877. One of the specimens in Mr. Gorrie's garden measured on August 24, 1878, 4 feet 2 inches high, while the spread of its lower branches was 8 feet 5 inches in diameter. This plant might profitably be cultivated for cattle feeding on exposed sandy coasts.

2. W. B. Boyd, Esq., of Ormiston House, exhibited a specimen of *Campanula pulchella*, exhibiting the change from a gamopetalous to a polypetalous corolla; a large branch more than a foot long of the white *Pelargonium*, showing on some of the corollas the hose-and-hose modification of structure; a double-headed Dandelion, and three flowers of a *Calceolaria* on one peduncle.

3. Isaac Anderson-Henry, Esq., exhibited and described some New Zealand plants in pots which he had just imported.

4. P. N. Fraser, Esq., exhibited a bottle of seeds which had come in the same ship with Mr. Henry's plants, at the same time presenting a selection to the Royal Botanic Garden. He also showed a purple Foxglove which had been found in his garden at Rockville, one longitudinal row of the corollas being pure white.

5. A fine specimen of the fungus *Polyporus squamosus*, weighing 10½ lb. avoirdupois was exhibited. It had been taken from an old Sycamore tree in the Edinburgh Arboretum.

6. Amongst the plants in pots on the table from the garden were *Campanula garganica alba*, *Dianthus alpinus*, *D. deltoideus*, *D. barbatus*, *Gentiana ornata*, *Gladiolus serotinus*, *Orchis hircina*, *Primula farinosa superba*, *Potentilla alchemilloides*, *Petrocoptis Lagasce* *alba*, *Ranunculus repens* (straw-coloured variety found last year by Professor Dickson), *Spiraea caespitosa*, *Silene quadridentata*, *Saxifraga caroliniana*.

MR. SADLER'S REPORT ON THE TEMPERATURE FOR JUNE.—From the beginning of June till the date of the meeting the thermometer had not fallen so low as the freezing point, although several degrees below it had been indicated at other stations throughout Scotland. On June 5, 9, 10, 11, and 12, the five lowest morning temperatures of the month were registered at the Royal Botanic Garden, and they indicated 37°, 35°, 37°, 30°, and 39°, respectively; whilst the highest day temperatures were on the 2d, 3d, 11th, 15th, and 18th instant, when 68°, 70°, 64°, 73°, and 67° were registered. Bright sunshine, cold easterly and northerly winds, with very little rain, characterised the early part of the month; towards the middle, cold mists and fogs; and at the end, heavy showers of rain, with west and south-west moist warm winds which with bright sunshine greatly stimulated vegetation. The same rainy weather continued at the date of giving in this report, but with a more electrified atmosphere—hence frequent thunderstorms. At that date there were eighty genera in flower on the rock garden, including diverse species

and varieties, while 170 species and varieties of alpine and herbaceous plants had come into flower since June 1. Mr. Sadler, in conclusion, alluded to the great destruction of Beeches by the aphid. Last winter had been peculiarly favourable to the development of such insect pests, as well as of the beard fungus on the human subject, specific instances of which were adduced.

In referring to the subsequent portions of the report detailing instances of destruction to vegetation in diverse localities throughout Scotland, Sir Robert Christison suggested that a record should be kept of the trees which escaped as well as of those suffering through a severe season. In thus following the example of medical observers of the periodicity of diseases, phenologists would add permanent value to their reports.

Scottish Horticultural Association.—The ordinary monthly meeting of this Association was held in 5, St. Andrew Square, Edinburgh, on Tuesday, the 6th inst, the President, Mr. M. Dunna, in the chair. The first paper read was on the "Fruit-producing agency of fibry roots." It was written by Mr. M. Temple, Impney Park, Droitwich, and communicated by the Secretary. He stated several facts gathered from practical experience in most of the counties of England, some in Scotland, and a few in Ireland, on the nature of the roots of fruit trees. In regard to the Apple, he remarked, there were few districts where quantity and quality are found combined, as compared with the number of trees adorning our gardens and orchards. It may appear a singular statement to make, that where fruit trees are seen in the lanes, hedges, and covering a vast area of ground in the English counties, there fruit culture is least understood. We do not find intelligence in this art abounding in the beautiful hills and dales of Worcestershire, Hereford, or Kent, and are therefore led to ask the question, why certain orchards never fail? On examining the roots we find the tree may have been planted in a strong, tenacious and rocky soil, where the roots have struck out into a sweet and wholesome upper stratum of earth, and at each inch of root-growth bunches of fibre are formed, and in the same proportion wood studded with fruit-buds is also formed in great abundance. Fruit-buds which are formed in this way by fibry roots send up sap equally through the tree, all becoming firm and solid in process of formation, hardy in constitution, and are thus able to battle with wind, rain, and even frost, in a manner which buds never can that are formed by gross rapid streams of sap, pumped up by thongs of roots. Calcareous and stony matter packed firmly, but left porous, are the agents used to form fruit-producing fibres. In the gardens of the wealthy the failure of the fruit crop may be traced to the absence of fibry roots. Peaches and Plums, above all other fruit trees, should be induced to make fibry roots, whether by lifting or using calcareous soil. Although fibry roots *versus* succulent roots are known to horticulturists as household words, it has not been the rule to make it the primary agent in producing abundance of first-rate fruits and flowers. An interesting discussion followed the reading of the paper. In the course of some remarks made by Mr. George Johnstone, Glamis Castle Gardens, he stated his entire concurrence in the points advanced and emphasised by Mr. Temple, and, acting on the importance of having fibry roots, he now grew Melons with less depth of soil than he previously did.

Mr. Geo. Robertson, Mordington Gardens, Berwick-on-Tweed, sent a few notes of the effects of the past winter on vegetation. During the first thirteen days of December last he had registered on an average 15° of frost each day, and throughout the fortnight 10 inches of snow fell. Many shrubs were killed and damaged, and vegetables suffered considerably.

Mr. John Downie, West Coates Nursery, sent a communication "On the use of dynamite in the blasting of trees." He said that this comparatively unknown process of clearing away the roots of trees was more effective in its results than gunpowder, while the cost was also much less. When its application became known, he thought it not nearly so dangerous as the use of gunpowder; however, no one should experiment with it without knowing well its full properties.

Carlisle and Border Counties Horticultural.—This Society held its exhibition in the Bithfield, Carlisle, adjoining the Royal Agricultural Society's show. Unfortunately the weather was extremely wet, a repetition of that experienced at a former International Show. The show itself was very fine, but the attendance very poor, which is much to be regretted, for the secretary, assisted by his committee, arranged everything very nicely, and some £400 was offered in prizes, which brought a very spirited competition in some of the classes. The various collections staged by nurserymen were first-rate, and would have made a fine show of themselves. The show was opened by the Mayor of Carlisle, who made a very elaborate speech, as also did Sir Richard Musgrave and Sir Wilfred Lawson, who dealt principally with horticultural matters. For a group of plants arranged for effect Messrs. Ireland & Thomson were 1st, with a very fine collection of new and rare fine-foliage and flowering plants, containing many novelties that would have done justice to any exhibition. This firm has recently shown some superb collections, much to their credit. 2d, Messrs. Little & Ballantyne, who also staged a most creditable group, containing many plants of great merit. 3d, Messrs. Clark Brothers, who also came forward in a surprising manner, as also Mr. R. Pattenson, a young beginner, who did great credit to himself. For twelve stove and greenhouse plants Mr. James Cypher, of Cheltenham, was a very easy 1st, showing in his usual masterly style. His collection contained well flowered plants of *Ixora Williamsii* and *Regina*, the former

a perfect beauty; some good *Ericas* and *Palms*. New and rare plants were not so well represented, the 1st prize falling to Sir Wilfrid Lawson (gr., Mr. Hammond). The competition for Orchids was also poor. For six exotic Ferns Messrs. Clark Bros., Carlisle, were 1st, with a very neat lot; the 2d prize falling to Mr. James Service, Dumfries, who staged a very nice six. The same exhibitor was also credited with the 1st prize for six hardy Ferns, with a small but neat lot of plants. Alpine plants were well represented, 1st by Mr. James Service, 2d by Messrs. Clark Bros., Carlisle, and 3d by Messrs. Little & Ballantyne, Carlisle. In the amateurs' class for ten stove and greenhouse plants Sir Wilfrid Lawson (gr., Mr. Hammond) was 1st, showing some very creditable plants—a fine *Croton Veitchii*, over 6 feet high and 6 feet through, well coloured; a good *Dipladenia*, *Ixora*, and some fine *Ericas*. 2d, Mr. D. Forbes, who staged also some good plants, but which lacked the condition of the former by a good deal. For three specimen *Palms*, Sir Wilfrid Lawson was again 1st, as he was also for *Crotons*; some good Ferns were also staged by the same exhibitors, who again took the first honours. The *Tricolor*, *Bronze*, and *Zonal Pelargoniums* were poor, and call for no special mention.

Amongst cut flowers, the Cranston Nursery Co. were an easy 1st for cut *Roses* in all classes, their flowers being fresh and well staged; the Company also showed several boxes of good blooms, not for competition. With *Pansies* Mr. Paul, of Paisley, was 1st, and he also staged some splendid *Pinks*, similar to those exhibited by him in Edinburgh.

For the collection of eight distinct varieties of fruits, Mr. Findlay, gr. to R. Jardine, Esq., Lockerbie, was a very easy 1st, but on the whole the fruit was very inferior to that shown in Edinburgh last week. A good brace of *Pine-apples* were shown on some very miserable-looking stands. *Grapes* were shown in quantity, but on the whole poorly coloured, small in bunch, and not in A 1 condition. The other fruit was only of ordinary type, and not worthy of mention.

Vegetables were only fairly represented, being a long way behind what one would have expected. Messrs. Clark Bros. showed a new *Cucumber*, a fine-looking sort, resembling *Telegraph*, only a little more spicy. Amateurs' cut flowers were fairly done, as also were their fruit and vegetables. The table decorations brought only two competitors—table, 12 feet by 4 feet 9 inches wide—and both were superb. Mr. Jas. Cypher was 1st, his table being prettily arranged. Grace and beauty adorned all his vases, and his fruit also was very good. Miss Pattenson, Carlisle, was a good 2d, with a table very prettily arranged but lacking the beautiful groundwork which Mr. Cypher had. These young beginners will doubtless make headway, and with a little more training will, at some future time, show to more advantage.

Mr. J. Cypher was also 1st for table *epergne* and bouquet. Mr. Pattenson showed a most beautiful wreath, worthy of a place in any exhibition. Mr. Cowan, Garston, Liverpool, showed some excellent pot Vines from eyes this season. Mr. C. Wilson, Summerhow, Kendal, exhibited his new *Pelargonium*, receiving a First-class Certificate. The same exhibitor also showed a new *Scolopendrium*, a very distinct, erect growing variety, well crested. Mr. B. S. Williams, of Upper Holloway, showed a grand table of plants, occupying the whole of one side of a tent; these were magnificently arranged, every plant seemed to be staged to the best advantage. His collection contained many novelties of recent introduction, some good well-grown *Nepenthes*, several good Orchids, new *Palms*, *Dracenas*, *Crotons*, *Ferns*, &c. He also showed some interesting pans of insectivorous plants, which attracted great attention, and some well-grown *Anzotichilus* such as are seldom now to be met with in the like condition. These were not shown for competition, but elicited the universal admiration of all those interested in horticulture, and received a special award from the judges. It is much to be regretted that, owing to the inclemency of the weather, the finances will be anything but satisfactory.

NOTES FROM NORTHERN QUEENSLAND.

(Concluded from page 46.)

TOBACCO gives high promise of being a successful industry on the Herbert. At present its cultivation is in the hands of only one planter, but this gentleman has gone to the work with a thorough knowledge of the principle and practice of both growth and manufacture. Everything on the plantation and works was highly satisfactory. The area under cultivation is something less than 10 acres, and although the process of stripping the leaves was in full swing, and the plants had been partially leaved, there was an unmistakable look of health about them which told both of favourable climate and good cultivation. The dwellings, sheds, and general surroundings being based upon South American types, there was an exotic air about the entire establishment which was very striking. The manufactured Tobacco emanating from this establishment is finely cut and ready for smoking, and is coming into much favour in the district and is finding a ready market. The most striking difference between the vegetation of this part of the colony and that of the extreme South is in the

size and colouring of the foliage. The noble proportions of the leaves of many of the trees, with their strong texture, their variety of form, different tints, always rich, of green, their bright glossy appearance and massive density of number, present a general effect which is indescribably beautiful. There is also a decided majority of trees with a pendulous habit, and when superadded to all these aids to an aesthetic *tout ensemble*, the further effect of a large admixture of *Palms* and wild *Bananas* is considered, the reader may form some faint idea of the beauty of much of the country. To the traveller, however, and to the planter the beauties of the scrubland are by no means the most prominent feature. The so-called *Cardwell Canes* consist of the root and first few joints of a climbing *Palm*, which although an extremely beautiful feature to look at is an unmitigated and even dangerous nuisance to come in contact with; and as they pervade the scrubs the greatest care is necessary to avoid injury to either the clothes or the skin.

"A curious feature," we are told, "and one not without danger until you understand its peculiarities, of the lagoons and creeks, is what is called the 'floating grass.' This is a tall growing aquatic grass which, while growing in the mud when within reach is quite independent in that regard, and extends its creeping stems into the deepest water, and by the interweaving of these and of the roots emitted from every joint, makes a dense mat of verdure which to the inexperienced eye is mistaken as taking its origin on solid ground. It is possible, however, to traverse these delusions without risk of entanglement, as was practically exemplified to me by a native police officer, one of the most practised bushmen in the colony. The method is to keep going, lifting the feet well, and keep the body as flat as possible consistently with the act of walking. The process involves immersion to about the hips, but it won't do to stop, as the support afforded is not sufficient to sustain the weight of a full-grown man, who would gradually but surely disappear. Horses and cattle are fond of the grass, and in feeding on the margin of the water occasionally fall a prey to the alligator. It is said that the masses of this grass are sometimes so dense, although with 20 feet of water underneath, that horses have been known to cross them. But I could not get this verified, and am disposed to doubt it."

With regard to *Liberian Coffee* it seems Mr. H. A. Wickham has successfully introduced it on his own account, so that between his efforts and those of the Queensland Acclimatisation Society, the new introduction has found a firm footing on the Herbert, where it gives high promise of attaining complete success. The foliage of many other plants was rich and full, and as there were signs of bloom also it was expected that ripe berries would follow during the season. The possible important results which may flow from this introduction attaches peculiar interest to the plant in this part of the country.

Queensland has its own *Banyan* trees, and the traveller from whose papers these notes are taken says he has seen specimens which, if they would not afford shelter for a regiment of soldiers, "would comfortably cover both Houses of Parliament, reporters, audiences, and all." One tree in particular is described as being of enormous extent, the ground beneath being very swampy, and the air filled with countless millions of mosquitos. As far as could be seen in every direction the pillar-like stems of this Fig extended. The soil and climate of Bowen seems to be suitable alike to the cultivation of *Sugar-cane*, *Oranges*, *Potatoes*, *Cabbages*, *Mangos*, *Bananas*, *Tamarinds*, &c. One *Mango* tree is mentioned as being seen which, upon a fair estimate, bore at least 2500 fruits of large size. The dropping-off season had long since passed, and the crop as it stood was what the proprietor would realise upon: from this same tree in the previous year as much as £10 was realised.

Regarding the prospect of the *Cocoa-nut* as a remunerative industry for planters, the author says he has no hesitation in saying that from Mackay northwards, at least, it can be profitably grown. The nuts that have hitherto been planted have been derived from various sources, principally from the South Sea Islands, without regard to quality. The consequence is, that whenever anything like a considerable number are to be seen together, they show distinct variation in the height and girth of the *Palm* itself; but still more so in the size, form, and number of the fruits. The age at which individuals fruit also differs greatly, some reaching the age of

twelve years without bearing, while others had fruited in the fifth year. Some kinds, originally received from Siam, had fruits which varied much in size and form—from that of a small oval "to a large globe, of circumference equal to a helmet-hat." Beyond growing Pine-apples and Bananas with the aid of a great deal of coarse manure, the land is fit for little else than the Cocoa-nut. It is in the fact that this tree will thrive on pure sand, where nothing else will grow, that consists one of its highest recommendations. Upon a deep, loose, sandy soil, however, it does absolutely insist, and wherever the attempt had been made to disregard this condition disappointment invariably followed. Where the soil thus differed I saw instances within hail of each other of a struggle for bare existence, and majestic, well-grown specimens laden with fruit."

The Rockhampton Botanic Gardens are spoken of in very high terms as being eminently practical, and imparting much real useful information. Speaking of the effects of a prolonged drought, the writer says that it brought about a plague of spiders of all sorts and sizes "from the big, bloated, truculent-looking creature, with evidently all the will (if he only had the power) to eat you alive, to the elegant little green spider, of which, as he runs over your shirt-front, you could almost make a pet." The webs, stretched from tree to tree, are described as being of the length and nearly the strength of fishing-lines. Nearly every leaf of every tree was disfigured by a closely-woven nest, either containing, or having contained, hundreds of microscopic spiders, while other species had provided for their young by bringing together two or more leaves as a nursery. Many large shrubs were so completely in possession of the enemy, that no cleansing process could possibly restore them to a slightly condition.

On the subject of street tree planting, Rockhampton seems to have set a notable example of efforts in this direction. The trees used are principally the Burdekin Plum, Poinciana regia, Albizzia Lebbek, Bamboos, and Figs; these are all fast-growing plants.

Mr. Bernays concludes this very interesting narrative with the following remarks:—"The farther you get inland the more does the vegetation differ from that of the coast, until at Emerald any one observant of such matters cannot fail to be struck with the strange aspect of many of the trees. I had no time to examine them closely, but could see for miles, as the train rushed through the country, hundreds of trees of beautiful drooping habit, or with other distinct peculiarities of foliage, and repeated giant specimens of the grotesque Bottle-tree.

Variorum.

THE ALTERNANTHERA AS A LAWN PLANT.—A carpet-like effect may be produced with the Alternanthera on a smooth lawn in the following manner: Cut strips or figures out of the turf, of any shape determined on, from 3 to 4 inches deep, and in width considerably narrower than the width of the ordinary mowing machine. The object of restricting the width of the shallow pits is, that after they are occupied by the proposed plant the hand mower may be forced over the lines or figures without falling into the sunken space and crushing its contents. The plants should be of good size when set in the ground, that the narrow space allotted them may soon be filled up. And in order to maintain a distinct outline the Alternanthera should be planted near the sides of the pit, thus preventing encroachments from the grass, and at the same time admitting of free growth upwards, and inwardly toward its centre. The earth in the pit, if of too close a character, should be removed to a depth of from 6 to 12 inches, and replaced with a more open soil; otherwise, the plants might be liable to injury by water remaining around them after heavy rains. The lawn run all over with tortuous lines but a single plant in width, would furnish an attractive arrangement; or the decoration might be of spots and figures of small size, each figure or spot requiring from one to as many as six or eight plants. In a general way, the Alternanthera varies considerably in colour, and this variation may be made use of to greatly increase effects. With some planning there may be several suitable styles of ornamental treatment. I have some drawings exhibiting the Alternanthera in the pits, and the grass on either side trimmed down by the machine to an equal height. Still another section shows a band of Alternanthera on the lawn, and a second band forming one of a series of ribbons of foliage plants; this latter starting from the grass line and being rounded upwards until it touches the adjoining ribbon. These

suggestions are, of course, for the amateur: the professional gardener will follow his own fancy. *American "Gardeners' Monthly."*

EUCALYPTUS INCRASSATA.—*E. incrassata* is one of the prevailing species among those which widely constitute the dense Mallee-scrub, and plays thus an important part in the natural economy of the desert, aiding to mitigate the excessive heat and the effect of sirocco-like blasts of widely arid regions by its enormous power of evaporation, in which respect Eucalypts generally far surpass most other kinds of trees, the power of their roots for drawing up and absorbing humidity from the soil being also very great. It is well known that *E. incrassata*, *E. microtheca*, and *E. oleosa* will yield water to a parched traveller from their roots. "*Eucalyptographia.*" By Baron Ferd. von Mueller, K.C.M.G., &c., Government Botanist for the Colony of Victoria.

THE CLAPHAM CLUB.—One of the most useful papers read before the London Farmers' Club last year was on "Club-houses for Villages," by Mr. James Howard, High Sheriff of Bedfordshire, and now Member of Parliament for his county. It recited the experience of several of such institutions, and of many laborious and benevolent men interested in their success. We doubt not that the paper has borne good fruit in many districts where members of the Farmers' Club reside, or wherever the paper in question has been read. Anyhow it has borne useful fruit in the locality to which the lecturer himself belongs. The Clapham Club-house, near Bedford, of which we here give plans, has been erected by Mr. James Howard, in accordance with the views he urged upon the Farmers' Club. It acts as a counter-attraction to the public-house, and occupies a pleasant site about the centre of the village. It is so designed that at any time, if necessary, it may easily be converted into two superior cottages without altering the exterior form. It comprises a spacious lobby, fitted up with hat and cloak hooks, and umbrella stand; a lofty, well-ventilated general reading and coffee-room, 26 feet 9 inches by 14 feet, divided as occasion may require into two rooms by folding-doors. There is also a boy's room, 14 feet 3 inches by 12 feet 6 inches. Each room has access to a lavatory, where there is an abundant supply of soap and water and other conveniences. The resident superintendent's department consists of living room, 12 feet 6 inches by 14 feet 3 inches, with cellar amply fitted up for stores, two bedrooms, and the usual offices. Each room in the club has a communication by hatchway with the keeper's room, is heated by Barnard & Bishop's stoves, and lighted with gas made on the premises. The floors are laid with 1½-foot Kimberley's Burnetised wood blocks on concrete, and are very dry, warm, and noiseless. The walls are decorated with maps, proverbs, portraits, &c. A recess is also fitted up with a glazed bookcase. The furniture is suitable, and all the joiners' work is oiled and varnished. On the south side of the building is a verandah facing the bowling green and quail ground. These details are supplied to us by the architects, Messrs. Usher & Anthony, of Bedford. It will be understood on examining the plans that the reading-room, the smoking-room, and the boy's room, are open to the roof at present, and are sufficiently high to admit of floors midway, thus forming bedrooms, if the house should at any time be converted into cottages. We have the following account of the first year's experience:—

Number of honorary members, 17; do. ordinary members, 69. Members are supplied with refreshments, and during quarter ending March 25, 1880, nearly 2200 attendances of members and visitors were registered.

The amount received for refreshments, games, &c.	£	s.	d.
	22	11	5½
The total receipts, including members' honorary and ordinary subscriptions	52	6	11½
The total payments	44	14	4½
Balance of expenditure and receipts	7	12	6½
Estimated stock of refreshments	7	0	0

Amount in favour of club 14 12 6½

In connection with the club there are two Shoe Clubs and a Coal Club.

We add that the rules and byelaws of the Clapham Club are printed by Mr. W. J. Robinson, Silver Street, Bedford. *Agricultural Gazette.*

CURIOUS ADVERTISEMENT.—In turning over the pages of an old book, published in the early years of the present century, I lighted on the following strange advertisement. It is given as from the "*Times* newspaper, 1813," but without day of the month, and reads as follows:—"To Gardeners and Others.—A favourable opportunity now presents itself to gentlemen and gardeners of stocking their grounds with a choice variety of slugs and snails. The proprietor throws himself entirely on the liberality of a discerning public, having taken great pains to bring to perfection a new species of snail, termed the *Limax Brasedacius*, whose voracity is such that it will singly destroy a full-grown Cabbage in the course of a few hours. To be viewed, by cards, at his depository, 5, Drum Lane, Brentford." The writer of the paper in

which this advertisement is quoted considers it was a fair hoax, made public with a view to raise a good-humoured laugh, or for the purpose of testing the gullibility of the public by ascertaining the number of applications for "cards to view" at the address given. T. O. C., in "*Land and Water.*"

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JULY 14, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						HYGROMETRICAL DEDUCTIONS from Glaisher's Tables, 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 48 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure from Mean of 60 years.	Dew Point.	Degree of Humidity. Sat = 100.	Average Direction.		
July	In.	In.	°	°	°	°	°	°				In.
8	29.59	-0.31	69.1	49.1	20.0	56.8	-5.2	52.2	85	WSW		0.11
9	29.62	-0.29	69.4	47.6	19.8	57.8	-4.5	51.4	79	S.W.		0.05
10	29.75	-0.07	68.5	48.5	20.0	56.8	-5.4	52.2	85	WSW		0.02
11	29.91	+0.12	72.2	52.0	20.2	59.3	-3.0	50.9	92	W.		0.19
12	29.99	+0.17	71.0	52.2	18.8	60.5	-1.9	52.5	75	WSW		0.00
13	29.96	+0.14	72.2	51.8	20.4	59.8	-2.7	54.0	84	WSW		0.00
14	29.85	+0.03	77.0	52.2	24.8	61.9	-0.7	56.0	84	S.S.E.		0.08
Mean	29.80	-0.02	71.3	50.8	20.5	59.0	-3.3	53.9	83	WSW		sum 0.45

July 8.—Fine till 0.30 P.M. Heavy clouds and distant thunder at 1 P.M. Frequent showers in afternoon; generally fine after 4 P.M. Shower at 9 P.M.

— 9.—A fine day, partially cloudy. Shower at 9 A.M. Few drops of rain at 2 P.M. Overcast at night.

— 10.—Generally fine, cloudy at times. Slight showers at 2 P.M. and 6 P.M.

— 11.—A dull morning, generally fine afterwards. Rain in early morning, and at 2.30 P.M.

— 12.—A fine day. Warm. Rather cloudy. Overcast at night.

— 13.—A fine warm day. Cloudy at intervals. Shower of rain at 5 P.M.

— 14.—A fine day, partially cloudy. Distant thunder, with occasional rain from noon to 1 P.M. Rain in early morning. Lightning at night.

LONDON: Barometer.—During the week ending Saturday, July 10, in the vicinity of the metropolis the reading of the barometer at the level of the sea increased from 29.70 inches at the beginning of the week to 30.18 inches by the morning of the 5th, decreased to 29.65 inches by the evening of the 7th, and increased to 29.99 inches by the end of the week. The mean reading for the week at sea level was 29.89 inches, being 0.03 inch below that of the preceding week, and 0.10 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 71° on the 5th to 64° on the 7th; the mean value for the week was 67½°. The lowest temperatures of the air observed by night varied from 46½° on the 5th to 53° on the 4th; the mean value for the week was 50°. The mean daily range of temperature in the week was 17½°, the greatest range in the day being 24½° on the 5th, and the least 12°, on the 7th.

The mean daily temperatures of the air were as follows:—4th, 57°; 5th, 57°; 6th, 57°; 7th, 56°; 8th, 56°; 9th, 57°; 10th, 56°; and the respective departures in defect of their averages were 4°; 3°; 4°; 2°; 5°; 1°; 5°; 2°; 4°; 5°; 5°. The mean temperature of the air for the week was 57°; 2, being 4°; 7 below the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 149° on the 9th, 147° on the 10th, and 141° on the 5th and 8th, on the 7th the reading did not rise above 84°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 41½° on the 5th, 44° on the 10th, and 45½° on the 8th; the mean of the seven lowest readings was 46½°. The direction of the wind was S.W., and its strength strong.

The weather during the week was somewhat fine, though generally dull, cool, and showery.

Thunder was heard on the 8th inst.

Rain fell on six days during the week; the amount measured was 0.29 inch.

ENGLAND: Temperature.—During the week ending Saturday, July 10, the highest temperatures of the air observed by day were above 73° at Cambridge, Nottingham, Leeds, and Sunderland, and below 65° at Liverpool and Bradford; the mean value from all stations was 70½°. The lowest temperatures of the air observed by night were below 47° at London, Cambridge, Wolverhampton, and

Hull, and above 50° at Plymouth, Brighton, and Sunderland; the mean from all places was 48°. The extreme range of temperature in the week was above 27° at Cambridge and Nottingham, and below 16° at both Liverpool and Bradford; the mean range of temperature in the week from all stations was 22½°.

The mean of the seven high day temperatures was above 70° at both Nottingham and Leeds, and below 64° at both Liverpool and Bradford; the mean value from all places was 67°. The mean of the seven low night temperatures was below 50° at London and Wolverhampton, and above 53½° at Truro, Plymouth, Brighton, and Sunderland; the general mean from all stations was 52°. The mean daily range of temperature in the week was above 18° at Cambridge and Nottingham; and below 11° at Liverpool and Bradford; the mean daily range of temperature from all places was 15°.

The mean temperature of the air for the week from all stations was 57½°, being 2½° higher than the value for the corresponding week in 1879. The mean temperature was above 59° at Nottingham and Sunderland, and below 50° at Wolverhampton and Liverpool.

Rain.—The heaviest falls of rain were at Bristol, 1.44 inch; Norwich, 1.33 inch; Leicester, 1.29 inch; and Wolverhampton, 1.11 inch; and the least falls at Sheffield, 0.12 inch; Cambridge, 0.22 inch; and London, 0.29 inch; the average fall over the country was 0.73 inch.

The weather during the week was generally showery, with occasional thunder at places, and the sky was cloudy.

SCOTLAND: Temperature.—During the week ending Saturday, July 10, the highest temperatures of the air observed by day varied from 71° at Dundee to 66½° at Aberdeen; the mean value from all places was 69°. The lowest temperatures of the air observed by night varied from 44½° at Aberdeen to 48½° at Greenock; the mean from all stations was 45½°. The mean range of temperature from all places was 23½°.

The mean temperature of the air for the week from all stations was 57½°, being 3½° higher than the value for the corresponding week in 1879. The mean temperature was highest at Glasgow and Dundee, both 58½°, and lowest at Aberdeen, 57°.

Rain.—The heaviest falls of rain were at Edinburgh, 1.46 inch, and Paisley, 1.22 inch; and the least falls were at Dundee, 0.25 inch, and Greenock, 0.50 inch; the average fall over the country was 0.87 inch.

DUBLIN.—The highest temperature of the air was 66½°, the lowest was 48½°, the extreme range 18½°, the mean 57½°, and the fall of rain 0.67 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

CLEARING LAND OF NURSERY STOCK.—What time is allowed to a nurseryman by law to clear his stock, in case of the land being sold, supposing there be no special clause relating to the same in the agreement between landlord and tenant? *Querist.*

LAPAGERIA ALBA AND ROSEA.—I want to plant out *Lapageria rosea* and *alba* out-of-doors, and train up a wall having a south aspect, by the side of Clematis, Tea Roses, and other climbers. Will some of your correspondents kindly furnish me with particulars of any that have withstood the past winter out-of-doors, if any slight covering was used as a protection, and also if they are now showing any signs of blooming? *T. B., Hants.*

Answers to Correspondents.

BOOKS: *W. Howard, Tropical Agriculture*, by P. L. Simmonds (Spon); *The Art of Perfumery*, by G. W. Septimus Piesse (Longmans); and *The Vegetable Kingdom*, by Dr. Lindley (Bradbury, Agnew & Co.).

CUCUMBERS: *J. H.* Yours is doubtless one of the multitudinous forms assumed by the well-known but ill-understood *Cucumber-murrain*. The little mould (*Cladosporium stenosporum*), which occupies the centre of the white spots, is an after-growth, and is not the original cause of the malady, which no one at present knows how to remedy. *M. J. B.*

FUNGUS IN COW-DUNG: *Vitis.* We should not anticipate any serious results from the presence of the fungus you describe. Meanwhile it would be as well to gather up and remove the visible patches, and to give the mulching a dusting of lime, which would probably stop its increase.

GLOXINIA: *J. D. B.* The leaves are studded with brown dead spots, which, in one form or other, are common on plants. It is a moot question whether they arise from ungenial soil or atmospheric condition, or whether each does not commence with the prick of an insect. We do not fancy that the latter is the case, as we know the effect of thrips on leaves of Gloxinia. You had better change the soil, and alter the position of your plants. *M. J. B.*—The same reply

must be made to *Enquirer*, who also sends Gloxinia leaves, and to *Begonia*, who sends those of the tuberous Begonia.

INSECTS: *W. W. R.* Your Rose trees have the surface of the leaves eaten off by the small larvae of a sawfly, *Selandria zethiops* (see *Gard. Chron.* 1848, p. 524). A wash made of lime, soda, and soft-soap will destroy them. *J. O. W.*—*W. S.* Your Melons have been attacked by numbers of a small beetle (*Anthicus antherinus*), which we had never before heard of as injuring growing plants. Fumigation will certainly kill them, but it must be repeated several times, and the plants syringed in the intervening days. *I. O. W.*

NAME OF FRUIT.—The correspondent who sent a Peach to be named, with shoots and leaves, is informed that the variety is Early York. His name has unfortunately been lost.

NAMES OF PLANTS: *M. Stratton.* 1. *Lophospermum scandens*, or one of its varieties; 2. *Francoa ramosa*.—*A. L.* *Polystichum angulare*. Certainly, hardy exotic Ferns can be shown as hardy Ferns if there is no express limitation to British species.—*J. R. I.* *Vitis heterophylla variegata*; 2. *Chrysanthemum frutescens*; 3. *Athyrium Filix-femina*.—*W. S. I.* *Gaultheria Shallon*; 2. *Cattleya crispata*; 3. *Alonsoa incisifolia*.—*G. T. H. I.* *Gymnogramma Mertensii*; 2. *Adiantum cuneatum*; 3. *Nephrolepis tuberosa*; 4. *Pteris cretica albo-lineata*; 5. *Coccoloba platycodon*; 6. *Cyperus alternifolius*; 8. *Adiantum formosum*; 9. *Asplenium Fabianum*; 10. *Tigridia grandiflora*, if a tuberous-rooted plant.—*Querist.* *Konigia maritima variegata*, the variegated Sweet Alyssum of gardens.—*W. Foster.* It appears to be *Jasminum affine*.—*J. E. I.* *Echium vulgare*; 2. *Geranium sanguineum*.—*Y. Z. A. I.* *Galega officinalis*; 2. *Nepeta Mussini*; 3. *Lysimachia vulgare*; 4. *Corydalis lutea*; 5. *Alyssum saxatile compactum*; 6. *Pyrethrum roseum var.*; 7. *Dietamnus albus*.—*Sandon.* *Claytonia sibirica*.—*W. Powell.* Not in flower, but probably *Saxifraga Bucklandii*.—*G. Wall.* 1. *Gaultheria Shallon*; 2. *Campanula rapunculoides*; 3. *Sedum album turgidum*.—*Rev. D. W.* *Lathyrus Nissolia*.—*Subscriber.* *Lastrea quinquangulata*.—*M. J. G. Clifton.* Nothing but the ordinary *Jasminum officinale*. The pink tinge is due to exposure to the sun.—*S. B. I.* *Epidendrum calochelium*; 2. *Epidendrum cochleatum*; 3. probably *Davallia immersa*, but there is no fruit; 4. *Gymnogramma decomposita*. See our number for May 9, 1874, p. 607.—*W. Roberts.* The *Gladiolus* seems to be a hybrid, which we cannot undertake to name.

ROSE LEAVES: *S. J. Syme.* The Rose leaves have been attacked by the larvae of the Rose sawfly, which have eaten off the cuticle and succulent portions, and left only the skeleton. The damage is probably done, but if any of the enemies remain dust the tree with lime and soot.

SMOKE NUISANCE: *S. E. Co.* It is a question for the local surveyor, who will probably rule that you must carry your chimneys higher.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—E. H. Krelage & Son (Haarlem), Wholesale Catalogue of Dutch Flower Roots, Miscellaneous Bulbous and Tuberous-rooted Plants.

COMMUNICATIONS RECEIVED:—F. C.—F. W. B. (many thanks).—T. L. C.—E. W. B.—A. G.—M. J. B.—O.—W. Parkinson.—J. V. & Sons.—H. W. W.—G. D.—H. E.—W. M.—J. G. B.—M. Y.

Markets.

COVENT GARDEN, July 15.

Prices remain with scarcely any alteration, soft fruit being well in this week, and prices good. *James Webber, Wholesale Apple Market.*

FRUIT.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apricots, per box	1 0-1 6	Lemons, per 100	6 0-10 0
Cherries, per ½-sieve	6 0-12 0	Melons, each	3 6-7 0
Cob Nuts, per lb.	1 0-1 6	Oranges, per 100	6 0-12 0
Currants, black,		Peaches, per doz.	6 0-12 0
½-sieve	7 0-8 0	Pine-apples, per lb.	1 6-4 0
Gooseberries, green,		Raspberries, per lb.	0 3-0 5
per ½-sieve	2 3-3 6	Strawberries, per lb.	0 6-1 0
Grapes, per lb.	1 6-5 0		

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue,		Horse Radish, p. bun.	4 0-—
per bundle	1 0-—	Lettuces, Cabbage,	
—English, p. 100	5 0-6 0	per doz.	0 6-1 6
Aubergines, per doz.	3 0-—	Mint, green, bunch.	0 4-—
Beans, French, p. lb.	0 9-—	Mushrooms, p. basket	1 6-2 0
Beet, per doz.	1 6-2 6	Onions, per bushel.	5 0-7 0
Cabbages, per doz.	1 0-2 0	—Spring, per bun.	0 6-—
Carrots, new, bunch	4 0-6 0	Parsley, per lb.	0 9-—
Cauliflowers, doz.	3 0-6 0	Peas, English, per qt.	2 0-—
—English, each	1 0-—	Potatoes (new), per lb.	0 2-0 6
Celery, per bundle	1 6-2 0	Radishes, per bun.	0 2-—
Chile, per 100	3 0-—	Small salad, pun.	0 4-—
Cucumbers, per doz.	8 0-12 0	Sprach, per bushel	2 6-—
Endive, per 2 doz.	1 6-3 0	Tonatos, per dozen	2 0-3 0
Garlic, per lb.	1 0-—	Tunips, new, bunch.	0 4-—
Herbs, per bunch	0 2-0 4	Vegt. Marrows, doz.	4 0-—

New Potatoes:—Jersey Kidneys, 7s. per cwt.; Round, 6s.; home-grown Myatt's, 8s.; Rounds, 6s. to 7s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0-12 0	Fuchsias, per dozen	5 0-12 0
Bedding Plants, various, per doz.	1 6-2 6	Hydrangea, per dozen	12 0-24 0
Begonia, p. doz.	6 0-18 0	Lilium eximium, doz.	12 0-24 0
Bouvardias, per doz.	12 0-24 0	—auratum, p. doz.	30 0-60 0
Calceolarias, per doz.	6 0-12 0	—speciosum, dozen	12 0-30 0
—Herbaceous, doz.	6 0-9 0	Lobelia, per dozen	3 0-6 0
Crassula, per dozen	12 0-18 0	Mignonette, per doz.	5 0-9 0
—large, per pair.	5 0-10 0	Musk, per dozen	2 0-6 0
Cyperus, per dozen	4 0-9 0	Myrtles, per doz.	6 0-12 0
Dracena terminalis	30 0-60 0	Nasturtiums, dozen	3 0-6 0
—viridis, per doz.	12 0-24 0	Palms in variety,	
Erica, various, dozen	12 0-30 0	each	2 6-21 0
Eunymus, various,		Pelargoniums, dozen	9 0-24 0
per dozen	6 0-18 0	—Ivy-leaved, doz.	4 0-12 0
Ferns, in var., doz.	4 0-18 0	—Tricolor	4 0-12 0
Ficus elastica, each	1 6-7 6	—scarlet, per doz.	3 0-9 0
Foliage Plants, various each	2 0-10 6	Rhodanthe, per doz.	6 0-9 0
		Roses, Fairy, p. doz.	6 0-10 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4-0 6	Pansies, 12 bunches	2 0-6 0
Arum Lilies, per dozen	3 0-6 0	Pelargoniums, 12 sprays	0 6-1 0
Bouvardias, per bun.	1 0-4 0	—zonal, 12 sprays	0 3-0 9
Calceolarias, p. bunch	0 1-0 7	Pinks, 12 bunches	3 0-9 0
Carnations, 12 bun.	5 0-10 0	Phlox, 12 bunches	0 6-12 0
Cornflower, per doz.	3 0-6 0	Primula, double, per bunch	1 0-1 6
Eschscholtzia, 12 bun.	3 0-6 0	Roses (indoor), doz.	1 0-9 0
Eucharis, per doz.	4 0-6 0	—outdoor, 12 bun.	4 0-9 0
Feverfew, 12 bun.	4 0-6 0	Spiraea, 12 sprays	0 6-1 0
Forget-me-not, 12 bunches	3 0-9 0	Stephanotis, 12 spr.	3 0-6 0
Gardenias, 12 blms.	4 0-—	Tropaeolum, 12 bun.	3 0-3 0
Heliotrope, 12 sp.	0 6-—	Tuberose, per dozen	2 0-4 0
Mignonette, 12 bun.	2 0-6 0		

SEEDS.

LONDON: July 14.—The usual summer quietude now characterises the market for farm seeds. Just at present the consumptive demand is of course exceedingly meagre, whilst there is a complete absence of speculation. Mustard and Rape seed are unchanged in value. No description of Clover seed meets for the moment with any attention. Blue Peas, Haricot Beans, Hemp and Canary seeds keep steady. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

The supply of home-grown Wheat on sale at Mark Lane on Monday was very moderate, and the few fine parcels changed hands at a slight improvement on the previous Monday's quotations, but inferior produce attracted very little attention. Foreign Wheat was decidedly quieter than on Friday last, but the better sorts were 1s. per quarter dearer than on Monday's night. Barley was in steady request, at fully late rates. Choice malt was firm, and realised full prices; but inferior sorts met with a slow sale. For Indian Corn there was a fair demand, and previous quotations were supported. Beans and Peas were in very moderate supply, and the trade steady on former terms. Flour was in moderate demand, and prices ruled tolerably firm. Trade on Wednesday was moderately firm. In Wheat holders were not anxious sellers. Home-grown Wheat was in limited supply, and the better qualities were fully as dear. In foreign there was very little doing, and no material change was observable in the rates. Barley was quiet, as also was malt. Oats moved off slowly, at prices somewhat below those of last week. Maize was quieter, at the improvement above noted. Beans and Peas were steady on former terms. Flour was in small demand, but rates were fairly supported.—Average prices of corn for the week ending July 10:—Wheat, 43s. 9d.; Barley, 28s. 10d.; Oats, 26s. 8d. For the corresponding period last year:—Wheat, 43s. 4d.; Barley, 24s.; Oats, 21s.

HAY.

Tuesday's Whitechapel Market report states that the supply of fodder was rather short; trade fair, and prices very firm.—Prime meadow hay, 80s. to 107s.; inferior, 30s. to 40s.; prime Clover, 100s. to 135s.; inferior, 60s. to 95s.; and straw, 30s. to 39s. per load.—On Thursday there was a short supply of hay and straw on offer. Notwithstanding the dull trade, prices for best Clover were dearer. Quotations:—Prime Clover, 100s. to 138s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 110s.; inferior, 30s. to 70s.; and straw, 30s. to 39s. per load.—Cumberland Market quotations:—Superior old meadow hay, 105s. to 112s.; inferior, 42s. to 80s.; new hay, 50s. to 84s.; superior old Clover, 120s. to 130s.; inferior, 80s. to 100s.; and straw, 30s. to 40s. per load.

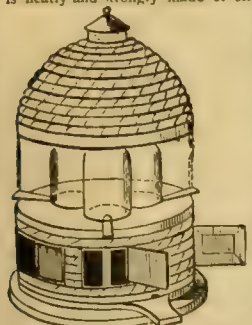
POTATOS.

The Borough and Spitalfields Markets reports state that moderate supplies have been on sale, and the trade has ruled quiet at the subjoined currency:—English kidneys, 7s. to 8s. per cwt.; ditto round, 6s. 6d. to 7s. 6d. per cwt.; Lisbon, new, 7s. per cwt.; Jersey round, 6s. 6d. to 7s. per cwt.; ditto kidneys, 7s. to 8s. per cwt.; Cherbourg round, 6s. 6d. per cwt.; ditto kidneys, 9s. per cwt.; French round, 6s. per cwt.—Last week's imports consisted of 13 tons 650 boxes from Cherbourg, 88 bags Charente, 1823 baskets from Rotterdam, 284 sacks St. Lazaire, 152 boxes Lisbon, 1 box Malta, 100 cases Bordenaux, 20 packages Boulogne, and 2638 bags Jersey.

Government Stock.—On Monday the closing price of Consols for delivery was 98½ to 98¾, and for the account, 98½ to 98¾. The same figures were recorded on Tuesday and Wednesday. On Thursday the final quotations were, for delivery, 98½ to 98¾; for the account, 98½ to 98¾.

Gather Honey from Your Flowers. NEIGHBOUR'S Celebrated BEEHIVES. PHILADELPHIA EXHIBITION, 1876. PARIS EXHIBITION, 1877, 1878.

Three Silver Prize Medals awarded George Neighbour & Sons.
THE IMPROVED COTTAGE BEEHIVE, as originally introduced by G. Neighbour & Sons, working three bell-glasses, is neatly and strongly made of straw; it has three windows in the lower Hive. This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.



Price, complete £1 15 0
Stand for ditto 0 10 6

Also BAR FRAME HIVES of most approved construction, at 7s. 6d., 12s. 6d., to 25s. each, and Philadelphia Frame Hives, complete with Cover and Stand, 42s.

An Italian Alp Queen, with full directions for uniting to Black Stocks, at current prices.

LIGURIAN and ENGLISH BEES.—Stocks and swarms may be obtained as heretofore.

THE APIARY. By ALFRED NEIGHBOUR. 5s., postage 5d. A newly arranged CATALOGUE of other improved Hives, with Drawings and Prices, sent on receipt of two stamps.
GEO. NEIGHBOUR AND SONS, 127, High Holborn, W.C., or 149, Regent Street, London, W.

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½d. per lb.—all colours. Improved Zinc White Paint, 4½d. per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

OIL PAINT NO LONGER NECESSARY.
HILL AND SMITH'S BLACK VARNISH, for Preserving Ironwork, Wood, or Stone. (Registered Trade Mark.)



This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.

"Pierrefield Park, June 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Pierrefield Park, Chepstow.—I am, Sirs, yours respectfully, Wm. Cox."

CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

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GARDEN SEATS. No. 366.



4 ft. 22s. 6d. 5 ft. 24s. 6d. 6 ft. 27s. 6d. 7 ft. 30s. 8 ft. long. 32s. each.
Under 6 ft., with 2 iron supports; 6 ft. and above, with 3 ditto.

FOLDING IRON TABLES.



No. 346.
Japanned Oak.
21-inch, 10s. 6d. each.
25 inch, 12s. 6d. "

CHAIR. No. 350.



Dark Green .. price 7s. 6d.
Ironwork Green, laths
Stained and Varnished 8s. 0d.

Orders can be executed on receipt.

LAWN MOWERS of any make supplied at 15 per Cent. discount for Cash with order.

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Works: 285 & 362, Edgware Road, London, W.

5 per Cent. discount allowed for Cash with order off Garden Seats and Table.

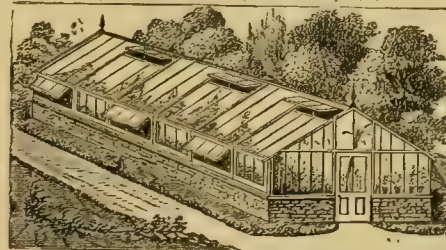


Rustic Garden Furniture in great variety.

Garden Seats, Awnings and Tents, Rustic Tables, Chairs, and Flower Stands, Lawn Mowers, Garden Rollers, Water Barrows, Wheelbarrows, Garden Tools, Summer Houses, Sun Dials, Fancy Wirework, Birdcages, Hammocks, and all kinds of Garden Furniture at lowest marked prices. Catalogues post-free.

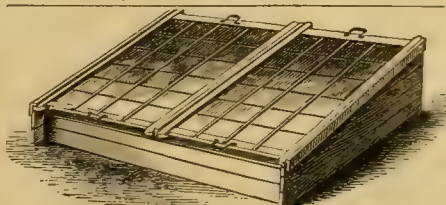
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W. H. LASCELLES will give ESTIMATES, without charge, for all kinds of Horticultural Work, and send Illustrations post-free.

GARDEN BOXES and LIGHTS are kept in Stock, and prices sent on application.



Cucumber Frames.

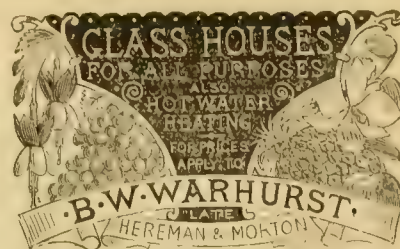
R. HALLIDAY AND CO. desire to draw special attention to their Cucumber Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.

Prices, delivered to any station in England

	£	s.	d.
2-light frame, 8 feet by 6 feet ..	3	10	0
3-light frame, 12 feet by 6 feet ..	5	5	0
6-light frame, 24 feet by 6 feet ..	10	0	0

The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.

R. HALLIDAY AND CO., Hothouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester.



43, Highgate Road London, N.W.

CHEAP HORTICULTURAL BUILDINGS.

VINERIES, ORCHARD-HOUSES, GREENHOUSES, CONSERVATORIES, PORTABLE BOXES, and every description of HORTICULTURAL STRUCTURES, erected in any part of the country, at prices bearing comparison with any House in the Trade, combined with simplicity, durability, and first-class quality of materials.

J. MILLS,

Horticultural and Steam Joinery Works, Broadwall, Stamford Street, Blackfriars, London, S.E.

REDUCED PRICES.

STEVENS'

TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



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SILVESTER & SAINSBURY, CASTLE HILL FOUNDRY, NEWCASTLE, STAFFORDSHIRE.



"EUREKA" FUMIGATORS

are the best and cheapest for all purposes. May be had from all Seedsmen, &c., 2s., 2s. 6d., 4s., 5s., 6s., 8s., 10s., 12s., 14s., 16s., 18s., 20s., 22s., 24s., 26s., 28s., 30s., 32s., 34s., 36s., 38s., 40s., 42s., 44s., 46s., 48s., 50s., 52s., 54s., 56s., 58s., 60s., 62s., 64s., 66s., 68s., 70s., 72s., 74s., 76s., 78s., 80s., 82s., 84s., 86s., 88s., 90s., 92s., 94s., 96s., 98s., 100s. per pound. SEED DRILLS, CAP GLASSES, SYRINGES, &c. LISTS free. SYERS, Bowdon, Cheshire.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for HOT-WATER PIPES and CONNECTIONS. 4-inch Pipes, 1s. 8d. per yard. Other sizes equally low.

SILVESTER & SAINSBURY, Castle Hill Foundry, Engineering and Boiler Works, Newcastle, Staffordshire.

By Royal Letters Patent.

RITCHIE'S GAS LIGHTING and HEATING APPARATUS.

No Flue required. Specially adapted for Drying Newly-built Houses. Silver Medal awarded in 1878 at Wolverhampton Exhibition. The deleterious and unpleasant vapours arising from the burning of ordinary coal gas are prevented from escaping, and are made to circulate within the Apparatus or Stove in such a way that they become thoroughly condensed, and are carried off in the form of a liquid, in which will be found the sulphur and other poisons which are drawn from and would in the ordinary way be left in and mixed with the surrounding atmosphere; consequently health is not prejudicially affected. Works of Art, Plants, Pictures, Books, Furniture, &c., are not injured, and the atmosphere is rendered uncontaminated and perfectly healthy.

Prices from 50s. to £10 10s.

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Established 150 years.

WINDOW GLASS, SHEET LEAD, PAINTS, &c. THOMAS MILLINGTON AND CO.,

IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

Inches.	15-OZ.	16-OZ.	17-OZ.	18-OZ.	19-OZ.	20-OZ.	21-OZ.	22-OZ.	23-OZ.	24-OZ.	25-OZ.	26-OZ.	27-OZ.	28-OZ.	29-OZ.	30-OZ.	31-OZ.	32-OZ.	33-OZ.	34-OZ.	35-OZ.	36-OZ.	37-OZ.	38-OZ.	39-OZ.	40-OZ.	41-OZ.	42-OZ.	43-OZ.	44-OZ.	45-OZ.	46-OZ.	47-OZ.	48-OZ.	49-OZ.	50-OZ.	51-OZ.	52-OZ.	53-OZ.	54-OZ.	55-OZ.	56-OZ.	57-OZ.	58-OZ.	59-OZ.	60-OZ.	61-OZ.	62-OZ.	63-OZ.	64-OZ.	65-OZ.	66-OZ.	67-OZ.	68-OZ.	69-OZ.	70-OZ.	71-OZ.	72-OZ.	73-OZ.	74-OZ.	75-OZ.	76-OZ.	77-OZ.	78-OZ.	79-OZ.	80-OZ.	81-OZ.	82-OZ.	83-OZ.	84-OZ.	85-OZ.	86-OZ.	87-OZ.	88-OZ.	89-OZ.	90-OZ.	91-OZ.	92-OZ.	93-OZ.	94-OZ.	95-OZ.	96-OZ.	97-OZ.	98-OZ.	99-OZ.	100-OZ.							
15-OZ.	6 x 4 to 74 x 58	95.	105.	115.	125.	135.	145.	155.	165.	175.	185.	195.	205.	215.	225.	235.	245.	255.	265.	275.	285.	295.	305.	315.	325.	335.	345.	355.	365.	375.	385.	395.	405.	415.	425.	435.	445.	455.	465.	475.	485.	495.	505.	515.	525.	535.	545.	555.	565.	575.	585.	595.	605.	615.	625.	635.	645.	655.	665.	675.	685.	695.	705.	715.	725.	735.	745.	755.	765.	775.	785.	795.	805.	815.	825.	835.	845.	855.	865.	875.	885.	895.	905.	915.	925.	935.	945.	955.	965.	975.	985.	995.	1005.

15-OZ., for Cutting up, 34s. 4d., 42s. 6d., 50s. 6d., 58s. 6d., 66s. 6d., 74s. 6d., 82s. 6d., 90s. 6d., 98s. 6d., 106s. 6d., 114s. 6d., 122s. 6d., 130s. 6d., 138s. 6d., 146s. 6d., 154s. 6d., 162s. 6d., 170s. 6d., 178s. 6d., 186s. 6d., 194s. 6d., 202s. 6d., 210s. 6d., 218s. 6d., 226s. 6d., 234s. 6d., 242s. 6d., 250s. 6d., 258s. 6d., 266s. 6d., 274s. 6d., 282s. 6d., 290s. 6d., 298s. 6d., 306s. 6d., 314s. 6d., 322s. 6d., 330s. 6d., 338s. 6d., 346s. 6d., 354s. 6d., 362s. 6d., 370s. 6d., 378s. 6d., 386s. 6d., 394s. 6d., 402s. 6d., 410s. 6d., 418s. 6d., 426s. 6d., 434s. 6d., 442s. 6d., 450s. 6d., 458s. 6d., 466s. 6d., 474s. 6d., 482s. 6d., 490s. 6d., 498s. 6d., 506s. 6d., 514s. 6d., 522s. 6d., 530s. 6d., 538s. 6d., 546s. 6d., 554s. 6d., 562s. 6d., 570s. 6d., 578s. 6d., 586s. 6d., 594s. 6d., 602s. 6d., 610s. 6d., 618s. 6d., 626s. 6d., 634s. 6d., 642s. 6d., 650s. 6d., 658s. 6d., 666s. 6d., 674s. 6d., 682s. 6d., 690s. 6d., 698s. 6d., 706s. 6d., 714s. 6d., 722s. 6d., 730s. 6d., 738s. 6d., 746s. 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Established 1841.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—
1879.—October 11. 1879.—Dec. 13. 1880.—April 3.
.. 25. 1880.—Jan. 10. 24. May 8, 29.
Nov. .. 8. Feb. 7, 21. June 15, 29.
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ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
NOTICE!—NATIONAL CARNATION and PICOTEE SOCIETY'S SHOW, also Annual Exhibition of the BRITISH BEE-KEEPERS' ASSOCIATION. COMMITTEES' MEETINGS.—Fruit and Floral at 11 A.M., Scientific at 2 o'clock. Ordinary Meeting for Election of Fellows at 3 P.M. Band of the Honourable Artillery Company at 4 o'clock, on TUESDAY NEXT, July 27. Admission, 1s.

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May be viewed the morning of Sale, and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Co. to offer for **SALE** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, July 29, at half-past 12 o'clock precisely, a splendid importation of *SOPHRONITES GRANDIFLORA*, *ONCIDIUM FORBESII*, *LÆLIA CINNABARINA*, *ONCIDIUM DASYTYLE*, *PROMENÆA CITRINA*, *BURLINGTONIA FRAGRANS*, *SOPHRONITES VIOLACEA*, *S. CERNUA*, *STANHOPEA GRANDIFLORA*, *DENDROBIUM DALHOUSIANUM*, *D. FORMOSUM*, *D. FIMBRIATUM OCULATUM*, *HUNTLEYA VELATA*, *ODONTOGLOSSUM CORONARIUM*; also several collections of **ESTABLISHED ORCHIDS**, comprising fine plants of *Odontoglossum vexillarium*, *Phalaenopsis Schilleriana*, *P. Luddemanniana*, *P. grandiflora*, *Vanda coccinea*, *Cypripedium Boxallii*, *Odontoglossum Andersonianum*, and many other choice sorts, many in flower; an importation of *BRASSAVOLA*s and *EPIDENDRUM*s, many good plants of *COCOS WEDDELLIANA*, &c.

May be viewed the morning of Sale, and Catalogues had.

Importation from Brazil.

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Co. to offer for **SALE** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, July 29, at half-past 12 o'clock precisely, a splendid importation of *SOPHRONITES GRANDIFLORA*, *ONCIDIUM FORBESII*, *LÆLIA CINNABARINA*, *ONCIDIUM DASYTYLE*, *PROMENÆA CITRINA*, *BURLINGTONIA FRAGRANS*, *SOPHRONITES VIOLACEA*, *S. CERNUA*, *STANHOPEA GRANDIFLORA*, *DENDROBIUM DALHOUSIANUM*, *D. FORMOSUM*, *D. FIMBRIATUM OCULATUM*, *HUNTLEYA VELATA*, *ODONTOGLOSSUM CORONARIUM*, &c.

May be viewed the morning of Sale, and Catalogues had.

The Magnificent Collection of Established Orchids of the Right Hon. Lord Londesborough.

MR. J. C. STEVENS has received instructions from the Right Hon. Lord Londesborough, to **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **TUESDAY**, August 17, and following days, at half-past 12 o'clock precisely each day, his grand **COLLECTION OF ORCHIDS**. Amongst other fine things will be found three splendid plants of *Cattleya exoniensis*, *Cattleya labiata*, autumn flowering variety; *Angraecum sesquipedale*, &c.

Further particulars in next advertisement.

May be viewed the morning of Sale, and Catalogues had.

London Road, Clapton, Middlesex, E.

To NURSEYMAN and BUILDERS.

MR. RICHARD J. COLLIER has received instructions to **SELL** by **AUCTION**, on the Premises, Downs Nursery, London Road, Clapton, E., on **WEDNESDAY**, July 28, at 2 o'clock precisely, four large **GREENHOUSES**, fitted throughout with improved Heating Apparatus; also a large quantity of **BUILDING MATERIALS**, consisting of New and Old Quaternary, Struts, Rafters, Sashes and Frames, Old Doors, Stoves, and 4000 Pantries.

May be viewed prior to Sale, and Catalogues obtained on the Premises, and of the Auctioneer, Mr. RICHARD J. COLLIER, Milner's Buildings, 28, Finsbury Pavement, E.C.

Preston, Lancashire.

By order of the official Liquidator, and for unreserved competition, in order to wind up the Estate.

The PRESTON NURSERY and PLEASURE GARDENS COMPANY (Limited).—In Liquidation.

MESSESS. JABEZ B. JONES and SON have been instructed to Catalogue and offer for unreserved **SALE** by **AUCTION**, on **TUESDAY**, **WEDNESDAY**, **THURSDAY** and **FRIDAY**, August 10, 11, 12 and 13, commencing each day at 11 o'clock, the whole of the extensive **COLLECTION OF STOVE and GREENHOUSE PLANTS**, British and Exotic Ferns, Orchids, and other Contents of the Houses; together with the *HORSES*, *CARIS*, *VANS*, and modern **IMPLEMENTS and TOOLS**, and other Effects, at the above Nurseries. The collection includes some of the finest Specimen and Exhibition Plants in the North of England, amongst which may be named a magnificent *Cycas revoluta*, 6 feet across, with 50 new fronds; *Cycas revoluta*, 7 feet across; *Phormium tenax variegata*, 6 feet by 7 feet; splendid pair of *Alseodaphne capensis*, 3 feet 3 inches trunks; fine *Dicksonia fibrosa*, 2 feet 6 inches trunk; *Areca Verschoffii*, 8 feet high; *Cycas circinalis*, 10 feet across; *Davallion glaucum* and *acrostichum*, 6 feet across; *Plectocoma Andersoni*, 12 feet across; pair of *Cyathea dealbata*, 3 feet trunks and splendid heads; *Seaforthia elegans*, 10 feet high; pair of *Gleichenia flabellata*, 5 feet through; *Gleichenia semivestita*, 3 feet 6 inches by 3 feet 6 inches; pair *Dicksonia antarctica*, 4 feet stems; pair *Dicksonia squarrosa*, 5 feet stems; *Alseodaphne australis*, 5 feet 6 inches stem; *Cibotium regale*, 16 feet across; *Cibotium*, 12 feet across; *Cyathea dealbata*, with 8 feet trunk; *Dicksonia squarrosa*, 14 feet trunk, &c.; specimen *Lappageria*, *Alaundaria*, *Steehanotis*, *Bougainvillea*, *Dipadenias*, *Gardenias*, *Droseras*, *Ixoras*, &c.; specimen *Camellias*, up to 8 feet in height; specimen *Azaleas*, up to 6 feet high; magnificent specimen *Ericas*, including *E. Austriana*, *E. Lindleyana*, *E. ampullacea*, *E. oblonga*, *E. eximia*; fine *Pleurocoma proliera*, *P. Barnesi*, 5 feet through, &c.; Orchids in great variety; specimen Ferns, including *Adiantum Farleyense*, *A. cardiocladia*, *Davallia Mooreana*, *Thamnopteris australasica*, &c.; together with the usual assortment of Plants to be found in extensive establishments of this character.

May be viewed at any time prior to the day of Sale, and Catalogues may be had from Mr. TROUGHTON, Seedsman, Preston, the Agent to the Liquidator; from Mr. TITUS THORP, Lune Street, Preston, Chartered Accountant, the Liquidator; at the Nurseries, Ribblesdale, Preston; or from Messrs. JABEZ B. JONES and SON, Auctioneers, Preston.

High Field House, near Nottingham.

To COLLECTORS OF FERNS.

In consequence of having gone to reside in Monmouthshire, E. J. Lowe, Esq., has instructed

MR. J. M. POTT to **SELL** by **AUCTION**, on the above Premises, on **AUGUST 19**, his valuable and well-known **COLLECTION OF BRITISH FERNS** and other **PLANTS**.

Full particulars in a future Advertisement.

TO BE DISPOSED OF, a MARKER GARDEN, at Reading, of 4 acres, well cultivated; about 600 Fruit Trees, Raspberry Canes, &c.; six Asparagus beds, ½ acre Potatoes, and all other Vegetables and Winter Greens planted. Rent, with Cottage and Shed, £25 per annum. Price for Crops, Tools, &c., Pony, Van, and Harness, £160, or at valuation to a quick Customer, as Proprietor is going abroad.

Mr. RICHARD T. HOUGHTON, Agent, Friar Street, Reading.

To Florists and Others.

TO BE DISPOSED OF, Three Newly-erected Span-roofed HOUSES, heated with Hot Water; also Two Ranges of **PITS**, in all 3000 feet of Glass. Good **COTTAGE**, with 1 acre of **GROUND**. 17 years' lease. For price and particulars, A. ROFE, Crowborough, Sussex.

In Liquidation.—Re T. Hawkins.

FOR SALE, with Possession, on very advantageous terms, the renowned **HAVEN GREEN NURSERY**, Ealing, comprising brick-built Dwelling-house and 8 Acres of Land. Held on lease for an unexpired term of fifteen years at the moderate rental of £60 per annum. Price for the extensive ranges of Greenhouses (heated by thousands of feet of Hot water Piping, and containing about 21,000 feet super of Glass and Woodwork) may be had on application to Messrs. FOREMAN, SON and CO., Accountants, 37, Gresham Street, E.C.; or to Messrs. PROTHEROE and MORRIS, Horticultural Auctioneers, 98, Gracechurch Street, E.C.

Guildford (4845).

TO BE SOLD, a Bargain, a Valuable **NURSERY BUSINESS**—14 Acres of Land, Glass Erections, House and Stabling. Eighteen years' Lease. Incoming about £400. Apply to PROTHEROE and MORRIS, 98, Gracechurch Street, London, E.C.

FOR IMMEDIATE SALE, a particularly well built Span-roof **GREENHOUSE**, in three compartments (80 feet long by 28 feet over), containing about 3000 feet super of glass, with brickwork, paving, excellent slate staging, and 510 feet of 4-inch piping; also a Lean-to House adjoining (44 feet 6 inches long by 12 feet), with 160 feet of Piping. Must be cleared within a week. Situate at Leyton, Essex. No reasonable offer refused. Apply to PROTHEROE and MORRIS, 98, Gracechurch Street, E.C.

TO BE LET or SOLD, a NURSERY, Forest Hill Road. For particulars, apply at FRIERN NURSERY, Peckham Rye, S.E.

Putney, S.W.—5 miles from West End.
TO FLORISTS, FRUIT GROWERS and MARKET GARDENERS.

TO BE LET on LEASE, for 21 years, or **FREEDHOLD SOLD**, Dwelling Houses, Conservatories, Stabling for 5 horses, extensive Cowhouse, Piggeries, large Coachhouse, &c., and 3 acres of Walled Fruit Garden; also 3 acres of Meadow with deep soil (gravel subsoil), suitable for fruit. Good water. No houses near. To be Let or Sold by Tender. Apply to SAINSBURY, GILBERT and CO., Land Agents, 9, Old Jewry Chambers, Cheapside, London, E.C.

TO BE LET, at Edmonton, a Three-roomed **COTTAGE**, with Four Greenhouses, 50 feet long, suitable for a Jobbing Gardener. J. HILL, Brook Cottage, Edmonton.

PROTHEROE and MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

NEW ROSES in Pots.—Tea and Noisette ROSES in Pots.—CLEMATIS in Pots.
INFALLIBLE MILDEW COMPOSITION.
Special **LISTS**, with full particulars, now ready, gratis and post-free.

EWING and CO., EATON, NORWICH.

YOUNG PALMS, in store pots, per 100:—*Areca alba*, 30s.; *Areca monostachya*, 30s.; *Corypha australis*, 12s.; *Lantania borbonica*, 10s.; *Psychospermum Alexandrie*, 40s.; *Phoenix reclinata* and *tenuis*, 9s.; *Seaforthia elegans*, 10s.
J. VAN DER SWAELMEN, Lily Nursery, Ghent, Belgium.

Primulas—Primulas—Primulas.

Eleventh Year of Distribution.

WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free. Extra strong plants, in 60-pots, 2s. 6d. per dozen, or in **EXCHANGE** for **MAIDENHAIR** and other **FERNS**. The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

East Lothian Intermediate Stocks.

THOMAS METHVEN and SONS now offer their Choice Strains of these splendid **STOCKS** for present sowing—Scarlet, Purple, White, Snow-white, Wall-leaved, and Cowe's New Crimson—in packets, 1s., 2s. 6d. and 5s. each colour.
15, Princes Street, Edinburgh.

EXTRA LARGE PEACHES.—Grosse Mignonne, Early Beatrice, Walburtin Admirable Peaches and Advance (earliest) Nectarine. The above are splendid trees, in good health, covering a trellis 48 feet by 6 feet entirely, and are bearing full crops this season. These trees would be valuable to Gardeners erecting New Peach-houses or Walls, or replacing in existing structures. They are 27 inches from the ground. For price, &c., apply to **GEORGE BUNYARD and CO.**, Nurseries, Maidstone. (The house being required for other purposes.)

TUBEROUS BEGONIAS.—Mixed Seedlings, for autumn blooming, 2s. 6d. per dozen: B. Froebeli, 3s. 6d. per dozen. Cuttings of choice varieties of Begonias, including Doubles, 3s. 6d. per dozen. Mixed Seed, 1s. per packet. *GLOXINIA ELEGANTISSIMA PUNCTATA*, 6d. and 2s. 6d. per dozen. *GUM ATRISAN-GUINEUM*, flore-pleno, 3s. 6d. per dozen. Post-free, from T. H. HARE, Bulb and Fern Grower, Sittingbourne, Kent.

THE BEST of the NEW GERANIUMS of 1879, in cuttings, very cheap. Denny's, Catlin's, Postans', and Pearson's Singles, and Lemoine's Doubles, thirty of the very best for 10s.; the same in plants for 1s.; fifty older varieties, but all new recently, for 10s.; same in cuttings for 4s.; all post-free. **CATALOGUES** on application.
RICHARD PARNETT, Nurseryman, Chislehurst, Sussex.

Brassavola Digbyana.

HEATH AND SON have a fine lot of established plants of the above to offer.

5s., 7s. 6s., and 10s. 6d. each.
FLOWERING PLANTS, 21s. each.
Exotic Nurseries, Cheltenham.

For Present Planting.

Please note Prices. Good strong healthy Plants, from selected seed stock, viz:—

CABBAGE.—Enfield, Nonpareil, York, Wheeler's and Sutton's Imperial, Thousand-Head, and Drumhead Savoy, Little Pixie Savoy, &c.
KALE.—Thousand-Head and C. taevar.
BRUSSELS SPROUTS.—Scripps's Giant and Matchless. All the above plants, at 2s. per 1000, 17s. per 10,000, 9s. 3d. per 50,000.
Packages included. On rail. Samples on application.
N.B. 1000 of above Plants assorted to purchaser's choice, 2s. 6d.
CAULIFLOWER PLANTS, 4s. per 1000.
EDWARD LEIGH, Nurcote Farm, near Guildford.

GREENHOUSE and STOVE PLANTS.

TUBEROUS BEGONIAS, **HERBACEOUS PLANTS**, **SEEDLING PRIMULAS**, **CINERARIAS**, and **CALCEOLARIAS** for potting.
COLLECTIONS of GREENHOUSE or STOVE PLANTS, in good named varieties, for exhibition or house decoration, at 6s., 5s., 12s., and 18s. per dozen, according to size and quality of collection; varieties omitted which purchasers possess.

CROTONS, in good leading kinds, 6s. and 9s. per dozen.
TUBEROUS BEGONIAS, several thousands of named sorts now on sale, all from last year's bulbs, at 4s., 6s., 9s., 12s., and 18s. per dozen.

PRIMULAS and CINERARIAS, from as fine a strain as any in cultivation, 12s. post-free, 1s. 6d., 2s. 6d., 3s., 5s. 6d. **CALCEOLARIAS**, 2s. per dozen, 12s. per 100.

All these are now in cold frames, and strong plants, ready for potting into 60's.

HERBACEOUS PLANTS—If these are planted now almost a season is gained in growth, and the plants are much stronger and better prepared for the winter than is the case when planted in autumn.
Our collection comprises almost all worth growing for Garden decoration, and selections can be made for any situations at 3s., 4s., or 6s. per dozen, of twelve varieties, 2s., 3s., or 5s. per 100.
FUCHSIAS, **HELIOTROPES**, **LANTANAS**, **SALVIAS**, **COLEUS**, **TROPEOLUMS**, twelve fine varieties of any of these, all named, and including many novelties, 2s. and 2s. 6d. per dozen, 12s. and 12s. per 100.
WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

TRIPOLE ONION SEED.

GRIPAT ROCCA.—A fine large variety, 6d. per ounce. **LARGE LATE FLAT RED**, extra.—Grown from prize bulbs, 1s. per ounce.
LARGE LATE FLAT WHITE, extra.—Grown from prize bulbs, 1s. per ounce.

Also all other kinds of Seeds for Autumn sowing. **CATALOGUES** with over 500 illustrations, post-free on application to **BIDDLES and CO.**, The Penny Packet Seed Company, Loughborough.

NEW DOUBLE TROPEOLUM, nanum

fl.-pl.—This is the finest novelty in soft-wooded plants introduced this year, and surpasses any other double variety previously in cultivation. The best idea of its merits will probably be given by a brief description of a plant now in our nursery. Age of plant from cutting, about 5 months; length of shoot, 3½ ft.; size of flower, 2 to 2½ ins. in diameter; number of flowers and buds on the plant, 127; colour very dark orange-red. The petals wither on the calyx, but do not fall. Plants, to flower this autumn, post-free, 1s. 6d. each 12s. per dozen.

TROPEOLUM, fl.-pl., distinct from above, colour light orange-red, 6d. each.

TROPEOLUM, Dr. Mules, one of the best dark single varieties for climbing, indoors or out, 6d. each.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

JULES DE COCK, NURSERYMAN,

Ghent, Belgium, offers:—
PALMS, seedlings, in store pots, per 100:—*Areca alba*, 60s.; *A. madagascariensis*, 60s.; *A. rubra*, 30s.; *Chromolaena excelsa* and *humilis*, 8s.; *Corypha australis*, 12s.; *Lantania borbonica*, 10s.; *Pandanus utilis*, 20s.; *Phoenix reclinata*, 10s.; *P. tenuis*, 10s.; *Psychospermum Alexandrie*, 40s.; *Seaforthia elegans*, 20s.
FERNS, in small pots, per 100:—*Adiantum cuneatum*, 3s.; *A. gracillima*, 40s.; *Cibotium regale*, 70s.; *Dicksonia antarctica*, 30s.; *Lomaria gibba*, 25s.; *L. zamocoides*, 40s.; *Nephrodium racemosa*, 30s.; *Pteris argyrea*, 25s.; *P. serrulata cristata*, 30s.; *Dracaena indivisa*, 15 to 20 inches high, 1s. each.

THOMAS RIVERS and SON have now a large and fine Stock of **FRUITING ORANGE TREES** to offer, of various sizes. Sorts:—

St. Michael's	Sustain
Tangerine	Long Orange
Melrose Blood	Butelha
White Orange	

Prices on application.
The Nurseries, Sawbridgeworth, Herts.

Lilium cordifolium (see "Gard. Chron." p. 76).
J. VAN DER SWAELMEN has much pleasure in offering the above glorious **ROSE LILY**, at 25s. per 100, one-year seedling bulbs, from his own collected seed.
Lily Nursery, Ghent, Belgium.

SEEDLING PLANTS

OF

CHOICE FLORISTS' FLOWERS.

Free and Safe
by Post.Free and Safe
by Post.

All carefully transplanted and in fine healthy condition, from our own superb strains.

	s. d.	s. d.
AURICULAS per 100	10 6	per doz. 1 6
CALCEOLARIAS	10 6	1 6
CINERARIAS	10 6	1 6
CARNATIONS, very fine	10 6	1 6
PANSIES Show and Fancy	7 6	1 0
.. superb Blotched	10 6	1 6
PICOTEES, very choice	10 6	1 6
PRIMULAS, choicest red fringed	10 6	1 6
.. white	10 6	1 6
.. mixed	10 6	1 6
SWEET WILLIAMS, very choice	5 0	1 0

Not less than fifty will be supplied at the rate per 100.

DANIELS BROS.,

THE ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.WEBB'S
SEEDSFOR PRESENT SOWING,
POST-FREE.

CABBAGE.

	Per ounce — s. d.
EARLY NONPAREIL	0 6
EARLY RAINHAM	0 8
ENFIELD MARKET	0 8
LITTLE PIXIE	0 9
RED DUTCH	6d. per packet 1 0



WEBB'S EMPEROR CABBAGE.

A very superior early variety, 6d. per pkt., 1s. per oz.

ONION.

	Per ounce — s. d.
WEBB'S WHITE ITALIAN TRIPOLI	6d. per pkt. 1 0
GIANT RUCCA	6d. 1 0
LARGE FLAT RED TRIPOLI	6d. 1 0
WHITE LISBON	6d. 0 6
WHITE SPANISH	6d. per pkt. 1 0
TREBONS	6d. and 1s. per pkt.

Five per Cent. Discount for Cash.

THE QUEEN'S SEEDSMEN,

WORDSLEY, STOURBRIDGE.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES,

KING'S ACRE, HEREFORD.

(Established 1785.)

MANY ACRES OF

ROSES NOW IN FULL BLOOM.

Intending Purchasers should visit these Nurseries before purchasing Roses for the coming planting season. 500,000 to select from.

Catalogues free.

Cranston's Nursery and Seed Co.

(LIMITED).

Rose Blooms for Decoration supplied, and forwarded by the morning and evening trains.

Cheap



Orchids.

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application. Victoria and Paradise Nurseries, Upper Holloway, London, N.

BULBS, DIELYTRAS, SPIRÆAS,
At Lowest Prices.

Wholesale Lists free on application.

A. M. C. JONGKINDT CONINCK,
TOTTENHAM NURSERIES,
Dedensvaart, near Zwolle, Netherlands.



To Plant Now.

H. CANNELL begs to announce that he has the following, just now ready for planting:—

SWEET WILLIAM	1s. for 2 doz.
GOLDEN TOM THUMB WALLFLOWER	1s. "
HARBINGER	1s. "
SISLEY'S new Dark	1s. "
DOUBLE GERMAN	1s. "
FOXGLOVE	1s. per doz.

All from seed of H. C.'s own selecting and saving, and are therefore the best, and much superior to those usually seen.

See numerous Reports of the Press.



Primulas and Cinerarias.

H. CANNELL has now large quantities of the above, in splendid condition, for potting and shifting on. Free by post. PRIMULAS, 1s. 6d. per dozen; in thumbs, 2s. 6d. CINERARIAS, 1s. 6d. per dozen; in small pots, 2s. 6d. All from seed of own saving and fertilising, and therefore superior to those usually grown.

Special prices for large quantities.

THE HOME FOR FLOWERS,
SWANLEY, KENT.

CROTON HEATHII ELEGANS.

The most distinct narrow-leaved variety yet sent out.

First-class Certificate, Haverfordwest.
First-class Certificate, Cardiff.

Described in *Gardeners' Chronicle*, July 17:—
"Narrow-leaved variety, with the young stem and leaf pedicels of a bright orange-yellow; the leaves pale green, and finishing off with age to a dark bronze tint."

Small Plants, 10s. 6d. each.

Larger Plants, 15s., 21s., and 42s. each.

HEATH & SON,
EXOTIC NURSERIES, CHELTENHAM.

CABBAGE PLANTS (Fulham) for Sale, also ROSETTE PLANTS, 5s. per 1000, less by taking a large quantity.—Apply,
H. THORNTON AND CO. (late A. Dancer), Fulham, S.W.

GARDEN REQUISITES.

COCOANUT FIBRE REFUSE,

3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4 bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 3s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 25s.; 12 for 40s., or 3s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

20, Castle Street, Endell Street, Long Acre, London, W.C.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 6s. 6d. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.
Fresh SPHAGNUM, 10s. 6d. per bag.
WALKER AND CO., Farnborough Station, Hants.

COCOANUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1s.; 30 bags (bags included), 20s.; truck free to rail, 25s.

T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

COCOANUT FIBRE REFUSE at

Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilmarnock; and all the Principal Nurserymen and Seedsmen in England. In 4 bushel bags at 1s.; bags included; 30 bags, bags included, 20s.; or truckload of about 250 bushels, 25s. (truckload free on to rail)—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOANUT FIBRE REFUSE,

as supplied to all the Royal Gardens of Europe, useful at all seasons, invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c., Destroys all Slugs and insects. Bags (about 4-bushel), per bag 1s., 15 bags 12s., 30 bags 20s. (all bags included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truckload (about 250 bushels), free on rail, 25s. Terms cash with order.

CHUBB, ROUND AND CO.,

Fibre Works, Westferry Road, Milwall, London, E.

Weeds Eradicated from Lawns.

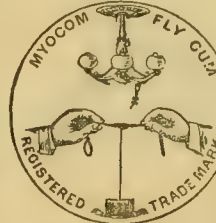
WATSON'S LAWN SAND both destroys the grass. Testimonials and instructions on application. 36s. per cwt.; 56 lb. kegs, 19s.; 28 lb. tins, 10s.
Proprietor, W. D. BARBOUR, 3, Park Row, Leeds.

FIBRE REFUSE, for Gardens, Potting, &c. 4 bushels for 1s., bag included. Orders by post punctually attended to.—G. HARDING, 23, Stepney Green, E.

GISHURST COMPOUND.—

Used by many of the leading Gardeners since 1850, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seed-men in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

MYOCOM FLY GUM.—This singular substance has been tested with great success, last season, in London, in ridding Rooms, Hospital Wards, and Fruit Houses of the pest of



FLIES. It is invaluable for eastward bound vessels and to the inhabitants of all hot climates.

Retail Price, 1s. per Box, or post-free, 1s. 2d.
A liberal discount to the Trade, and on all Shipping Orders.

Sole Wholesale by
THOS. CHRISTY & CO.,
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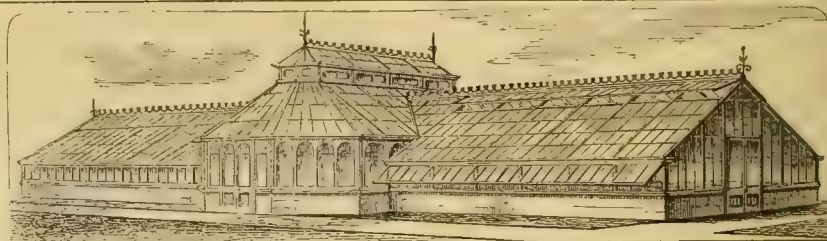
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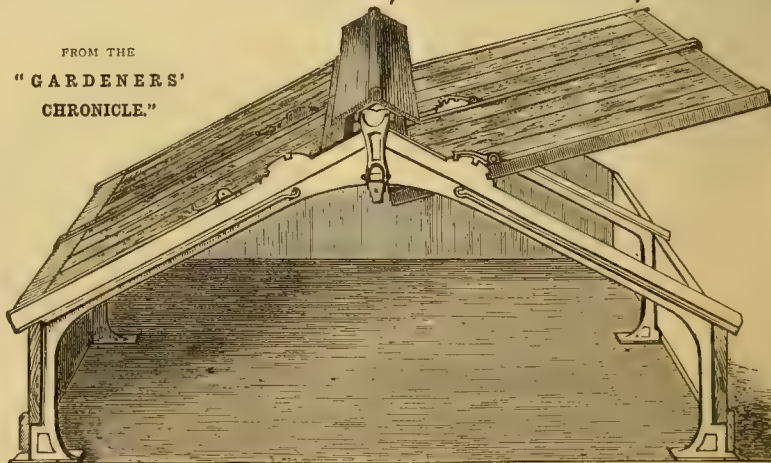
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THE

Gardeners' Chronicle.

SATURDAY, JULY 24, 1880.

STUDLEY PARK AND FOUNTAINS ABBEY.

FOUNTAINS ABBEY is the grandest of the ecclesiastical ruins yet remaining within the limits of Great Britain, and Studley Park is one of the noblest in Yorkshire. The largest county in England is well off for country seats, such as Stourton, Aske Hall, Harewood, and a host of lesser places like Ribston Hall, Kirby Hall, and Thornton Park; but if the parks of Yorkshire were subjected to a competitive examination Studley would run the rest hard for the first prize—I think, in fact, it might win such a prize by virtue, not of the house, but of the beautiful park and grounds. Passing the main entrance at a mile from Ripon, I struck into the footpath leading through the hamlet of Studley Royal into the park. An Oak with a huge excrescence stands outside the wall, and a haymaker, observing my interest in the phenomenon, pointed out another tree of the same kind some distance within the park. The abnormal growth of these two trees would produce "pollard Oak" enough for a dining-table worth 100 guineas.

The trees of Studley are its pride. Eight hundred acres of such green grass as that of this moist July, stretched over such a surface as here belongs to the Marquis of Ripon, and enlivened by deer and cattle would please the eye, even without the trees—with them it is charming. The haymaker with his heavy beer-bottle not quite full, for he had poured some of the liquor into a pouch within, where, in the case of labouring men, it is light to carry, smiling kindly, with his Yorkshire tongue unloosed, enlightened me as to the neighbourhood of the gardens, and told me where to find Mr. Clark. "Yon's his house," he said: everything in Yorkshire more than a yard distant, is referred to as being "yon." I reached "yon house" in five minutes. Mr. Clark was among the forcing houses near his door, and came out with a Melon in his hands. He does not send fruit to India? I thought. No, but the Viceroy has left representatives in London, and a Viceroy the less makes but little difference to the family consumption. It was packing day, and Mr. Clark's time, like my own, was absolutely limited.

How admirable are discipline and self-control! You could not tell the state of things from Mr. Clark's greeting. He told me he was tied for time, and then showed me through some forcing, Orchid, and other houses, and took me some distance across the park to point out some objects of interest and put me in the path to the Abbey. We struck the noble avenue of the approach-road at about its centre. It forms a fine vista through Limes and Elms, having at one end the cathedral of Ripon and at the other the modern spire of the costly parish church of Studley, whose foundation-stone was laid by the Marchioness of

Ripon nine years ago. On the slopes near the avenue there are some Chestnut trees 16½ feet round at 4 feet from the ground, whose size of bole and ornament of tufted foliage Mr. Clark wished to show me, and also a grand specimen of the Wych Elm, standing near the carriage-drive, where all who pass that way, with a taste for Nature's own adornment, must admire its massive trunk and its lofty spray of branches. There are about a dozen great branches in the head, not spreading like the English Elm but rising upwards, the Wych Elm being a tree of lofty port, bearing large leaves. There is not much level ground in Studley Park. The magnesian limestone lying below must have been much disturbed by centrifugal perturbation before it settled and cooled down quietly and began to acquire the covering of buff coloured soil which forms the roothold for the timber. All is hill and dale, green side and glade, in this delightful and well planted park. We descended to the avenue, crossed it, and then again ascended to a point where we parted, and descending again in opposite directions had immediately a ridge between us. A lake lay in the hollow before me, and on its margin stands the lodge that admits to the grounds of Fountains Abbey.

Pleasure grounds that were formed in 1720 might be expected to be formal, and the guide book having noticed some classic statues standing here, two temples and a tower, with sheets of water named the Moon and Crescent Ponds, I put up my umbrella as a shelter and a screen. The grounds seemed pretty, however, so far as I could see them. A well-kept road has on the left that ever excellent protection, a Yew tree. Close clipped Laurels cover the steep ground on the right, and Spruce Firs with heavy drooping branches spring from the close shaven grass on the margin of the road. A stream runs through the midst of the grounds. Down went the umbrella, and presently, at an opening cut in the Yew hedge, the ponds and spreading lawns burst upon me. They fill the hollow of the little valley—Neptune is in the water, and Bacchus stands on shore. It is a very pretty scene; steep leafy ridges enclose it, and specimen trees upon the lawn refine it. The artificialities are subdued. A beautiful Hemlock Spruce here, planted in 1720, is 7 feet round and 60 feet high, and the biggest of the Norway Spruces, of the same date, measures 12 feet at 5 feet high, and has a bole 132 feet high to the topmost twig, well feathered to the ground. The Abbey was built higher up the valley. Following the drive, flanked by a natural wall of sandstone and magnesian limestone, the ruins stand before you.

My personal acquaintance with the ruins of Fountains Abbey is confined to one hour's sojourn among them, sitting part of the time on the headstone of an abbot for the purpose of following the example of the haymaker, with the substitution of milk for beer. The abbots lie thick round about the chapter-house, and their gravestones are scattered over the turf with half obliterated inscriptions:—"Hic jacit Joe," or it may be "Joh," short for Johannes—"Abbas de Fontibus, qui obiit," &c.; "H. requiescit Tom," as near as I can read. But no matter whether they were christened Tom, Toby, or Tobias, here they lie mingling with the earth; and there, in the stream which watered their meadows, and turned their mill, and fed their stew ponds, I saw some pretty trout with spotted wriggling tails descended from fish which were broiled there in the kitchen with the huge chimney. That enormous cooking place has an opening as great as a churchman's appetite—15 feet by 6 feet, as I measured it. Where are the descendants of the abbots? Where rest the bones of the stout monk who fought with Robin Hood in "yon" glade? Who can tell? Yet some things still are left of surpassing beauty and interest, and among them may

be enumerated the tower of the church, 36 feet higher than the Spruce, and exquisitely beautiful. Three of the original Yew trees remain, coeval in antiquity with those which sheltered the virtuous monks who set up the first buildings here in 1132. Shocked with the laxity of the Benedictine Abbey of St. Mary in York, they resolved on leading stricter lives in this little valley of the Skell, then a wilderness of trees and brushwood and the haunt of robbers, and they built here a chapel and a hut. A fine Cupressus sempervirens stands close to an ancient Yew, and, perfectly uninjured by the late severe winter, shows in what a sheltered site the monks set up their rest, for in other parts of Yorkshire Cupressus sempervirens has been almost destroyed.

The great cloister of "Domus conversorum" is the most perfect portion of the buildings now remaining. The vast church has lost its roof and the tracery of its windows. The walls and columns of this magnificent building stand in melancholy grandeur all dismantled, a perfect example of that saddest spectacle, a ruined church. The "Domus conversorum" is still tolerably perfect. Its low vaulted roof and the fewness of its windows must have rendered it the most cheerless place for gossip that can be imagined. Yet here the shorn, secluded monks waddled up and down in conversation, and here their rheumatism and sciatica overtook them. Beyond the abbey buildings and across the stream, on higher ground, are the foundations of the stables, barns, kilns, tan-house, dovecotes, and forge of the establishment. Not far distant there is still a smithy and the sawmill of the estate. Immediately beyond is Fountains Hall, built in the reign of James I., from materials supplied by the ancient house of the abbots. *H. E.*

New Garden Plants.

PAPHINIA RUGOSA, *Rchb. f.*

Finally this has flowered at Burford Lodge, in Sir Trevor Lawrence's collection of Orchids. The flower is very large, if we consider the tiny narrow little bulb. The sepals and petals are pale ochre, with yellow tips, and bear numerous brown-purple spots. The lip is dark purple, with white appendices, and yellow-brown border and tips of lateral falcate laciniae. The column green, yellow at the tip. It is an elegant flower, though no beauty for the majority of the public. It is not every one's gift to understand the delightful charm of light tints. This having been obtained as *Paphinia rugosa* Sanderiana, we must suggest that the white-lipped variety of this name, that had alone been seen in flower by Mr. Chesterton, should go under the genuine typical plant with the dark purple lip, and with far more numerous spots on sepals and petals. *H. G. Rchb. f.*

HABENARIA RADIATA, *Mig.*

A terrestrial Orchid, whose general appearance may be compared to that of the fimbriate-lipped North American *Platantheras*, but with a typical *Habenaria* flower, boasting the stigmatic shanks. The three triangular acute sepals are light green, as is the exterior part of the spur. All other organs, excepting the very light whitish-green rostellum, are pure white. The middle partition of the lip is very narrow, triangular, the side partitions are broad obtriangular, with a nicely fimbriated margin, that gives a most elegant effect. It was a great pleasure for me to see alive a plant I had known from my childhood through Thunberg's rather rough figure. It would appear to be a rare plant, since Messrs. Franchet and Savatier quote the island of Kioussou, near Nangasaki, relying on Thunberg's saying it may grow in the island of Nippon. Dr. Savatier had it from gardens. I only obtained specimens from Messrs. Rein and Maries. There was no specimen at Leyden, April 9, 1877. I think I saw some specimens at Munich coming from Siebold. Messrs. Veitch kindly sent me a specimen that had been introduced by Mr. Maries lately. *H. G. Rchb. f.*

SEA AIR.—What a colour the Lobelias have by the sea! Never have we seen such a tinge of cobalt-blue in a flower as in a little garden facing the sea at Dover. The *Euonymus*, too, is as green and fresh as ever, as if there were no such thing as frost at Dover.

HUTTON HALL.

IN many gardens the old-fashioned ill-adapted houses that often in times past had to do duty for the growth of the best and most difficult to manage of hard-wooded subjects, have been swept away to make room for structures more in keeping with the requirements of plants generally. But it cannot be said that the selection of the different kinds of decorative plants that are met with in the generality of places now-a-days, has kept pace with the improved character of the houses. On the contrary, it is anything but an uncommon occurrence to see whole ranges of plant-houses, in which no expense has been spared to make them as complete as possible, wherein the plants collectively are of the most meagre and commonplace description, representing little beyond Zonal Pelargoniums, tuberous-rooted Begonias and Fuchsias, with a few others of a like character to precede and succeed them in the spring and autumn, thus reducing to a minimum the interest that would be attached to a collection of plants were the selection sufficiently varied.

Recently we had an opportunity of looking through the extensive and well built ranges at Hutton Hall, Guisborough, and were most pleased to see the beautiful lot of thriving young Cape Heaths grown; they fill the greater part of a moderate sized house, and include a good selection of the best early spring, summer, and autumn flowering kinds, full of health and vigour, just of a size to make them most useful for conservatory decoration whilst in bloom. So used, they afford variety in form and colour, and give a character to other things with which they are associated that no quantity of soft weedy growing subjects can supply. Some of the most conspicuous amongst them were Erica Webbiana, Shannoni, Aitoniana superba, tricolor rubra, tricolor Wilsoni, tricolor superba, Juliana rubra, obbata, ampullacea Barnesii, Turnbulli, insignis, Massoni major, Lindleyana, venosa, Mar-nockiana, Eweriana, æmula, Devoniana, Victoria, Fairriana, pulverulenta, cerinthoides, ventricosa grandiflora, ventricosa magnifica, ventricosa superba, ventricosa minor, &c.

There is a long span-roofed corridor which runs across one end and joins the numerous span-roofed plant and fruit houses in a way by which the whole are connected, and can be entered in succession without going out-of-doors. Independent of the advantages and convenience of this arrangement, the plants grown in the corridor itself are of a most interesting description, in addition to the quantities of cut flowers they furnish from one end of the year to the other. Those to which I particularly allude are planted out in a border which runs continuously on the opposite side of the corridor to that on which it is connected with the houses already spoken of. Foremost amongst them is the beautiful *Mackaya bella*, a Natal plant that is still scarce, and likely to be so, on account of its seeming to require an intermediate temperature, that is, warmth between the heat of an ordinary stove and that of a greenhouse, and for which description of plants in even many large establishments there is no provision made. It is evident from the treatment detailed by Mr. Green and one or two others who have succeeded in flowering it, that it needs to be treated somewhat differently to most things. The plant here is turned out in the border and trained to the wall, which is carried up to the eave of the roof on this side of the corridor; it covers a space 10 feet by 20, and is thriving well. I understand it blooms every spring. Near it is *Toxicophlæa spectabilis*, like all the other plants in this border, trained to the wall; its white sweet-scented flowers are distinct and pretty, and the foliage is handsome. *Bougainvillea glabra* is here in all its glory, covering a length of 32 feet by some 15 in height of wall and roof. So strong and floriferous is the plant that a wheelbarrow load of flowers might be cut without much altering its appearance. A *Lasiandra*, raised from imported seed, occupies a considerable space, and is bearing scores of long panicles of violet-purple flowers that contrast beautifully with the mauve tint of the *Bougainvillea*. This *Lasiandra* keeps on blooming from June to December. *Habrothamnus elegans* has room to extend itself in a way that enables it to produce almost continuously unusually large bunches of flowers. Tea Roses, such as Madame de St. Joseph, Marie Ducher, Gloire de Dijon, and Maréchal Niel, with various other plants that succeed with a night temperature through the

winter of from 46° to 50°, occupy the rest of this corridor. Hyacinthus candicans grown in pots for conservatory decoration is very effective as here managed, its tall spikes of white pendulous flowers borne on stems not unlike in appearance a stout well-managed Tuberose come in during the latter part of summer when flowers are scarce. Mr. McIndoe has been more successful with Duke of Buccleuch Grape than most cultivators, and this year it is equally promising; it is grafted on the Black Hamburgh high enough to allow of the stock making half-a-dozen side shoots below the graft, and to the agency of these shoots in assisting to draw off the sap Mr. McIndoe to some extent attributes his success. The crop this season so far looks all that could be desired. With the unusual amount of moisture last summer some of the berries showed signs of cracking; the shoots were then immediately cut half through, which prevented the mischief extending further.

In a house occupied by a select lot of Orchids, collectively doing well, there are a number of *Aerides* and *Vandas* of the *suavis* and *tricolor* sections, that show by their stout, short leaves, and the way they retain them down to the pots, that the treatment they receive, by being kept well up to the roof, suits them. Plants of a good many things grown from imported pieces within the last two years have made unusual progress. There are several fine specimens of *Nepenthes Rafflesiana* in excellent condition, forming pitchers freely at every leaf, which they never do unless where they are treated in a manner that pleases them, though they may keep on growing, and produce strong healthy foliage without pitchers. A specimen of *Utricularia montana*, 2 feet in diameter, grown in the same house, is a fitting companion to the *Nepenthes*. This is one of the best stove flowering basket plants in cultivation when well managed, its elegant drooping racemes of white Orchid-like flowers being always effective.

The beautiful valley in which this place is situated is surrounded by hills, which, at first sight, lead to the supposition that it is more than ordinarily sheltered. This is by no means the case, as a little observation on the form that many of the evergreen trees assume discloses, for the winds overtop the hills, and when at all fresh sweep across the valley with a force that threatens to tear everything that affords resistance up by the roots. Yet a position of this kind is not wholly without its advantages, for the stout compact examples of *Araucaria*, *Wellingtonia*, and other things of a like character, which in many localities are nearly or wholly destroyed, have here suffered very little. *T. B.*

NEW EPIPHYLLUMS.

In a recent letter from my friend, G. F. Wilson, Esq., of Weybridge Heath, I was so much gratified with his appreciative remarks regarding the *Cereus C. M. Hovey*, as well as with the award of Certificate of Merit to Mr. William Bull, who recently exhibited it, that I venture to give you a brief description of six other varieties named at the same period, about ten or fifteen years ago. Though not possessing the remarkable iridescent colouring of the former they are equally novel, and, in their way, quite as remarkable and distinct as that variety.

These seedlings are all the product of *E. crenatus* fertilised with *E. splendidus* and other very large, showy seedlings, which were produced by Mr. S. Feast, of Baltimore, more than twenty years ago, and also of *Cereus speciosissimus*, and *vice versa*. No record was made of these crosses at the time. All the seedlings but one flowered in the course of three or four years, and among them were the six varieties named below. The one that had not flowered was neglected, and remained in the same pot for some years, making very little growth. You may judge something of my surprise when, one morning as I was looking among the plants, I spied a flower of the most unusual and brilliant hue, the deepened violet of the rainbow. It was on this neglected plant, only 6 inches high, in a 4-inch pot, which had hardly been watered the whole winter. It was a good lesson, for since that time I have always looked after stunted and weak seedlings, which have often proved to be the most novel and beautiful. The first flower was bluer and deeper coloured than any I have seen since, which I attribute to its treatment, viz., remaining in the same small pot three or four years, and wintered in a warm greenhouse, under the shade

of a huge *Bignonia venusta*, which covered the roof, where it had but little sun, and scarcely any water, and I fancy the plants should be well pot-bound, and be kept very dry to bring out the glowing tints. It flowers quite young, is very dwarf in habit, my largest plant, ten years old, not being 2 feet high. It is a double flower, having twenty-seven petals, in three rows, the other kinds only eighteen petals in two rows.

As a novelty in hybridisation I may mention a seedling which first flowered two weeks ago. It was raised from *C. M. Hovey* fertilised with *E. speciosus*. It has the growth and form and size of flower of the male parent, but it has not any of the colours of either. It has a very rich deep orange-scarlet! very pretty, certainly, but lacking in its egg-shaped, half expanded blossoms, as compared with the female parent.

1. *Refulgens*.—Flowers very dark scarlet, the inner petals deeply tinted with dark violet up the base; petals broad, smooth and flat. Flowers 8 inches in diameter, in the style of *E. speciosissimus*. Stems triangular, slightly spiny.

2. *Pink Queen*.—A most distinct and exquisite flower, of a clear, almost transparent, mauve-pink, or a beautiful blending of salmon, pink, and pale violet—a very rare and unusual colour; petals broad and smooth. Flowers 10 inches in diameter, in the style of *E. crenatus*. Stems flat, spineless.

3. *Mauve Beauty*.—Flowers of a similar shade to *Pink Queen*, but much deeper coloured, with a greater admixture of purplish-violet; petals broad and smooth. Flowers 10 inches in diameter. Stems flat, spineless.

4. *Sunset*.—Flowers dark, rich ruby-crimson, the inner petals of the richest violet-purple; petals long, recurved at the ends. Flowers 10 to 12 inches in diameter, in the style of *C. grandiflorus*. Stems flat, spineless; growth tall.

5. *Orange Gem*.—Flowers clear, brilliant glossy orange; petals broad, smooth and flat. Flowers 9 inches in diameter. Stems triangular, with scarcely any spines. Habit very dwarf.

6. *Alice Wilson*.—Probably the most novel of all, as it is the first parti-coloured flower of the class. The flowers are bright orange-scarlet, the inner row of petals pale violet, with a distinct and broad orange stripe through the centre of each. Flowers 9 inches in diameter. Stems, triangular set with very fine short spines. Habit dwarf, and flowering when only 6 inches high.

These are the choice varieties of upwards of a dozen named seedlings saved from quite a number, all of which are very large and splendid flowers, well worthy a place in any collection of these very brilliant and easily cultivated plants, receiving little or no attention the whole winter, flowering all the month of May, and afterwards grown in the open air, with no more care than liberal watering, until they are returned to their winter quarters. Of course, with the same treatment given to the older kinds they may be had in flower at any season, from spring till fall. *C. M. Hovey, Boston, Mass., July 3.*

AN AMATEUR GARDENER'S EXPERIENCES.—II.

A FONDNESS for rural walks when I was a boy remains with me now the days of boyhood are long past, and though my life has been mainly spent in a large town and its immediate suburbs, I have managed to see a good deal of rural England. One reason for the continuance of my liking for rambles in the country is probably the attraction I have always found in our native wild flowers. In my own neighbourhood, where suburban roads filled with houses now exist, there were some forty or more years ago delightful shady lanes, on the banks of which during spring and summer lovely hedgerow flowers were to be found in abundance. Nowadays, one has to go further afield to reach similar lanes, but rapid as is the growth of big towns, there are in all parts of our lovely country pleasant spots within walking distance of the busy haunts of men where the influence of chimneys clustered together in thousands has not yet been banefully felt. In such lanes many years ago I spent numberless happy hours gathering wild flowers. At first I gathered them, as children always do, because of their bright simple beauty; and I have had but few pleasures which I can look back upon with more satisfaction than those which I derived from my attempts to

arrange those flowers so as to display their varied charms to advantage. Those country posies not only delighted myself but those to whom I gave them. A skilfully arranged group of wild flowers and such grasses and foliage as hedges and hedgebanks afford in profusion, is as beautiful as one of costly exotics; while there is a simple, natural charm about it which touches the heart of all whose nature is not wholly sophisticated. I once had the opportunity of showing how attractive well-arranged bunches of wild flowers may be made to a large mixed community. I was staying at a hydropathic establishment, where there were some two hundred patients. It was early summer time, and I spent many hours daily out-of-doors. The flowers of the district were plentiful and varied. One day I chose from among them enough to make a sweetly pretty posy, and placed it in a tall celery glass in front of my place at the dining-table. They were the only flowers on the table. Before the meal was over they had been handed from one guest to another, and their charms warmly acknowledged. The next day I gathered another posy, and two companions did the same. Soon the example was followed by others, and in little more than a week the tables from end to end were brightened with flowers gathered in lane and field, and many among the inmates had their eyes opened for the first time to some of the floral riches of our rural districts.

An interest in the mere beauty of flowers in time led me to take an interest in the higher beauty of their wonderful structure and functions. The study of these has yielded me so much pleasure, and been so profitable to me as an amateur gardener, that I should omit an essential experience if I said nothing on the subject. My estimate of the value of the study to all who desire to be intelligent gardeners is so high that I regard it as of the first importance. The ordinary plan of collecting plants, ascertaining their names, families, &c., drying and mounting them on sheets of paper, is usually and naturally the beginning of a course of botanical study. It too frequently is also the end, which is much to be regretted, for however great may be the interest felt in making a collection of plants, it is of a kind not at all comparable with that excited by a study of their structure and economy. Physiological botany is also an eminently educational study, and I do not hesitate to say that no gardener can be considered fully equipped who does not possess at least a familiar acquaintance with its elementary truths. Any one having such knowledge desiring to become an amateur gardener, though knowing nothing of practical horticulture, will start on his career with much in his favour compared with another his equal in all respects save in this knowledge, because he will at the outset recognise the "reason why" involved in many ordinary gardening operations, the directions for which, as usually stated, convey no ideas to the non-scientific reader other than those which are involved in the mere operations recommended. One consequence of this is that the acts of the latter class are little more than those of machines, and this perhaps explains why they usually make such slow and unsatisfactory progress in gardening. The scientific man, on the other hand, when he begins gardening acts like an intelligent being should, and does nothing without understanding or trying to ascertain why he does it. Gardening operations done by such a man are at once ennobled, and are far more interesting than they ever can be when done mechanically. Holding such views, I am an advocate for the teaching of elementary structural botany in all our schools. It is by no means a difficult subject to teach, and a competent teacher can readily enough make it attractive while he educates and instructs. Even to those whose school days are past I would strongly recommend the study as valuable to them for the reasons already incidentally given, and because it is in itself delightful and mentally invigorating. I have been led into saying this because when I commenced gardening on my own account my knowledge of the structure and habits of plants, and the conditions of their healthy existence, was very limited; and I know that many mistakes I made would have been avoided if my knowledge on these subjects had been greater.

I now reach the period of my life when I was to have my wish for a garden of my own gratified. Having settled to be married, I began to look out for a house with a garden attached, and I was fortunate enough to find one in a pretty village situated in what was then a lovely and diversified country district, within rather less than an hour's walk from my place

of business. My duties there occupied the larger part of every week-day, but the mornings and evenings were my own, and these I set apart chiefly to the cultivation of my garden. I use the word garden with hesitation, for in no sense was the piece of ground attached to my house, when it came into my possession, deserving the name. It perhaps at some former period had been a garden, but at that time it was a piece of ground trodden down so firmly and compactly that hardly a blade of grass was visible on it. The previous occupant had probably devoted it to the children as a play-ground, and they had left their mark on it unmistakably. Its appearance was not encouraging, but I was young and enthusiastic, and was determined to reclaim it. Fortunately, I commenced the work of reclamation properly. However ignorant I was on many points, I was sufficiently aware of the requirements of vegetable life to know that a good depth of tilth is a primary condition of success.

My first step was to roughly break up with a fork the caked surface of the ground. I then commenced to dig it two spades deep, but the labour was very heavy, and as spring was well advanced, I saw that the truest economy would be to get the services of some sturdy navvy or other capable labourer. I soon found the right sort of man, and set him to work to double-dig or trench the ground. This is the best of plans for ground where the soil is not less than 18 inches deep; and as the operation is of great importance, I shall here describe it in detail, for though the practical gardener employs it habitually, the amateur is more frequently contented with a shallower stirring of the soil to one spade's depth only.

Commencing at the end of my garden nearest the house I marked off a space across it 2 feet wide. From this I dug out the soil for two spades' depth, and wheeled it to the other end of the garden. I then marked off another width of 2 feet. The top spit of this I threw into trench No. 1, then the second spit of trench No. 2 on the top of it. Thus trench No. 1 was filled with the soil from trench No. 2; what had been the top soil being placed at the bottom, and the bottom soil of trench No. 2 becoming the top soil of trench No. 1. With both spits as the work proceeded half-rotted manure was well incorporated. About two-thirds of the ground was similarly treated, being first marked off into 2 feet widths—that being the most usually convenient space to deal with—and then the soil dug out of one trench transferred to the open one next preceding it. When two-thirds of the ground was dug I found the soil got shallower, there being scarcely 10 inches depth of it, and below that a gravelly subsoil; I therefore did not double-dig the remainder of the ground, but bastard-trenched it, which is the method best adapted to the cultivation of shallow soils. The last trench dug out before this plan was used I filled half-way up with soil from the far end of the garden; on this I placed the top spit of soil from the first 2 feet space which was to be bastard-trenched. The soil remaining in this second trench was then well loosened with the fork, and manure plentifully incorporated. In stirring this second spit as deeply as I could some of the gravelly stuff got intermingled with it, which was not of any particular moment; but, what was of importance, I had the whole of this undersoil loosened and enriched with manure, and thus provided room for the roots of plants to penetrate downwards, and afforded a free passage for rain when it fell. Nor must it be forgotten that this loosening of the undersoil permitted the free access of air, which is of the utmost value in the processes of cultivation, by causing the disintegration of the particles of soil and manure and the conversion of the slowly changeable substances into the conditions which render them fit and available for plant food. The bastard-trenching was continued over the remaining ground; the top spit of the 2 feet trench No. 3 was placed in trench No. 2, and the soil, &c., at the bottom loosened and enriched, as was done in the preceding trench. Of course the top spits were manured as they were turned over. The breaking up and exposure of all garden soils from time to time is a very necessary and important proceeding, and I shall later on have more to say on the subject, especially in connection with autumn cultivation. *Philanthes*.

THE POTATO DISEASE.—We regret to observe the rapid progress of this disease throughout Kent and in the neighbourhood of Dover.

THE GENUS PINUS.

[THE following synopsis of the species of *Pinus* is reprinted from a paper by Dr. Engelmänn, entitled "Revision of the genus *Pinus*, and Description of *Pinus Elliottii*," published in the *Transactions of the Academy of Science of St. Louis*, iv. 161 (February, 1880).]

I now propose an arrangement of the species of *Pinus* based upon the more essential characters above analysed, and, though I by no means claim it to be a faultless one, I expect that it will deserve the character of a natural one as much as any that can be devised. I find with Endlicher the most valuable character in the fruit scale, or rather, to speak more correctly, I find that the form of the fruit scale in this genus corresponds with a series of other characters which constitute two very natural sections of the genus. My section *Strobis* in a wider sense includes his *Strobis* and *Cembra*, and my *Pinaster*, also enlarged, comprises all his other sections, viz. *Pseudo-Strobis*, *Teda*, *Pinaster*, and *Pinea*. The subsections are distinguished by the position of the ducts within the leaf, whether peripheral, parenchymatous, or internal. Subordinate to this character is the subterminal or lateral position of the female ament and the cone. Only after this may the number of leaves in a sheath be taken into consideration, and perhaps the presence or absence of strengthening cells around the ducts. It will be found that thus not only natural but to some extent even geographical alliances are best preserved. I enumerate only such species or subspecies (these in brackets) which I have been able to examine myself; the list, however, will be found nearly complete. The nomenclature of Parlatoire in DC. *Prod.* xvi. is adopted unless otherwise stated.

Section I.: Strobis.—Apophysis with a marginal unarmed umbo, generally thinner; cones subterminal; leaves in fives, their sheaths loose and deciduous; anthers terminating in a knob, or a few teeth, or in a short incomplete crest; wood softer, lighter, less resinous.

§ 1. **EUSTROBI.**—Ducts peripheral. Northern or mountain species of the Old and New World.

* Wings longer than the seeds; leaves sharply serrulate, denticulate at tip.

† Strengthening cells few, none around ducts.

P. Strobis, *monticola*, *excelsa*, *Peuce*, *parviflora*, *Bonapartei*, *Ayacahuite*.

†† Strengthening cells abundant under the epidermis and surrounding ducts.

P. Lambertiana.

** Wings much shorter than seeds; leaves mostly entire, not denticulate at tip.

P. flexilis (*albicaulis*), *pygmaea*.

§ 2. **CEMBRÆ.**—Ducts parenchymatous; leaves sparingly serrulate, scarcely denticulate at tip. Europe and principally Asia.

P. Cembra, *mandschurica*, *koraiensis*.

Section II.: Pinaster.—Apophysis with a dorsal umbo, mostly armed, generally thicker; leaves 1 to 5 in a bundle, their sheaths usually persistent; anthers mostly terminating in a semi-orbicular or almost orbicular crest; wood generally harder, heavier, and more resinous.

A. Ducts peripheral.

a. Cones subterminal.

§ 3. **INTEGRIFOLIÆ.**—Leaves smooth-edged, their sheaths deciduous; anthers terminating in a knob or a few teeth. Western North America and Mexico.

* Cones short, subglobose, with thick scales, unarmed; seeds large with a minute wing; leaves 1 to 5. *Cembroides*.

P. Parryana, *cembroides*, *edulis*, *monophylla*.

** Cones oval or elongated, scales armed with a deciduous or persistent prickle or an awn, seeds much shorter than the wing, leaves in fives. *Balfouriana*.

P. Balfouriana (*aristata*).

§ 4. **SYLVESTRES.**—Leaves serrulate, their sheaths persistent; anthers crested or (only in *P. sylvestris*) merely knobbed. Europe and Asia, one species in America.

* Leaves in threes; wings much longer than seeds. East India and its islands. *Indica*.

P. khasia, *insularis*, *longifolia*.

** Leaves in twos; strengthening cells abundant, principally around ducts; fructification biennial, cones and seeds small, wings large. *Eusylvestres*. Old World, one species in North-eastern America.

P. sylvestris, *montana*, *resinosa*, *densiflora*, *Masoniana*, ? *Merkusii*.

*** Leaves in twos; strengthening cells under the epidermis and around ducts; fructification triennial, cones and seeds large, wings rudimentary. A single Mediterranean species.

P. Pinea.

b. Cones lateral.

§ 5. **HALEPENSES.**—Old World.

* Leaves in threes, their sheaths deciduous; umbo very prominent; wings shorter than the large seeds. *Gerardiana*. Asia.

P. Gerardiana, *Bungeana*.

** Leaves in twos, their sheaths persistent; cones smoothish; wings much longer than the seeds. *Euhalepenses*. Mediterranean regions.

P. halepensis, *pyrenaica*.

B. Ducts parenchymatous.

a. Cones subterminal.

§ 6. **PONDEROSÆ.**—Mostly American, with three Old World species.

* Leaves in fives, ducts usually free of strengthening cells. *Pseudo-Strobis*. Central America and Mexico to Arizona and California.

P. leiophylla, *tenuifolia*, *filifolia*, *Pseudo-Strobis*, *Montezuma* (*Hartwegii*), *Torreyana*, *arizonica*.

** Leaves in threes, sometimes in fours or fives, their sheaths persistent; strengthening cells under the epidermis, around ducts, and usually also near the fibro-vascular bundles. *Euponderosæ*. North-western America, Mexico, and Canary Islands.

P. Engelmanni, *ponderosa* (*Jeffreyi*), *canariensis*.

*** Leaves in threes, their sheaths deciduous. Mexico and Arizona.

P. Chihuahuana.

**** Leaves in twos, generally with some strengthening cells around ducts. *Laricines*. Europe to Asia and W. America.

P. Laricio (*austriaca*) *Thunbergii*, *contorta* (*Murrayana*).

b. Cones lateral.

§ 7. **TÆDÆ.**—Mostly American, only one Old World species.

* Leaves in threes, ducts mostly without strengthening cells. *Eutædæ*. North America to Mexico.

P. Sabiniana, *Coulteri*, *insignis*, *tuberculata*, *Teda*, *rigida* (*serotina*), *Greggii*, *Teocote*, *patula*.

** Leaves in twos; cones with very stout prickles. *Pungentes*.

† Ducts without strengthening cells. North America.

P. inops (*clausa*), *pungens*, *muricata*.

†† Ducts surrounded by strengthening cells. Southern Europe.

P. Pinaster.

*** Leaves in twos, or in the first often also in threes; cones with weak or deciduous prickles. *Miles*. Eastern North America.

P. mitis, *glabra*, *Banksiana*.

C. Ducts internal.

§ 8. **AUSTRALES.**—Leaves in twos to fives; timber very heavy and resinous. South-eastern North America, West Indies, and one species in Mexico.

* Cones subterminal; leaves in threes to fives. *Euaustrales*.

P. occarpa, *occidentalis*, *australis*.

** Cones lateral or mostly so; leaves in twos to threes. *Elliottii*.

P. Elliottii, *cubensis*, *Wrightii*.

CAMPANULA TURBINATA.—We were much pleased by seeing so fine a display of this well-known Harebell, a few days ago, in the York Nurseries. The plant had taken possession of a narrow horizontal crevice about a yard long, which it completely filled—a position it evidently enjoys, for we never remember seeing a finer example of it anywhere before. The flowers were large and very profuse, forming a complete sheet of colour. The flowers in the typical form are deep blue; stems 9 to 12 inches high.

GARDEN GOSSIP.

BY A LADY.

TWO SWISS PLANTS.—Among the flowers which most frequently attract the attention of Swiss travellers are the yellow Violet (*Viola biflora*), and the alpine Linaria (*Linaria alpina*). They are frequently found growing together, for they like the same situations, and their colours harmonise so well together that we cannot do better than imitate Nature by putting them side by side in our alpine gardens.

In the accompanying drawing (fig. 24) I have tried to represent them growing, as they do with me, from the same hollow in an old stump; only the lack of colour and want of space prevent me from doing justice to the mass of purple flowers, with bright orange spots, with which the front of the old stump

blossoms. At last, on June 13, a single yellow blossom appeared, and with this I had to content myself for that year. Now this year the yellow Violet was out on April 10, and now, on June 3, the yellow blossoms appear to be over, while the tiny green ones which set fruit abound; so it seems as if the wet season of last year retarded the Violet till after the proper time for the yellow flowers, while the fruit-bearing ones appeared as usual, only as it blossoms much later in many parts of Switzerland than it does in England, this interpretation falls to the ground. Perhaps the absence of sun was the true cause. I was told by a friend that the Dog Violet behaved in much the same way last year, the coloured blossoms being but few, while fruit was unusually abundant, but I did not notice this fact myself.

These two plants are very easy to establish by seed; indeed, my garden abounds with self-sown seedlings

FIG. 24.—*VIOLA BIFLORA* AND *LINARIA ALPINA*.

is clothed, and of which but a very small portion is here represented.

This is the first year in which I have succeeded in getting these two flowers to blossom at the same time, although they do so in their native home. Before last year the Violet was always over before the Linaria was out. Last year the Violet was very late in appearing above ground, and as the Linaria blossomed early I made sure of having both out at once, but to my great disappointment I waited in vain for the bright yellow blossoms of the Violet to appear; the leaves were unusually large and coarse, and on searching among them for the chance of hidden flowers, I found to my surprise that fruit was already set, although no blossoms had shown themselves.

Generally the petalless blossoms which set fruit are rather later than the yellow flowers: they may be seen in the drawing lower down on the flowering stems, the sketch having been made from late

of both. The Linaria is usually called a biennial, but I find it does not always die after the second year, and the oldest plants are the earliest in coming into blossom. The seedlings do not flower till late in the autumn, so it is easy to keep up a succession for about six months. A. B.

THE POPULARITY OF THE "HORSE GOWAN."
—The *St. Andrew's Citizen and Fife News* says:—"A striking example of the diversity of tastes is seen in the favour with which the 'horse gowan' (great white Ox-eye, *Chrysanthemum Leucanthemum*), is now regarded by our gay visitors, who carry home bunches of it to mix with and in many cases to supersede the tender exotics of the garden and greenhouse. Unlike most valued things it can be got in great quantity for the gathering, the white fields of it being at present a distinct feature in the rural landscape.

THE NECTAR-CUPS OF THE
MARGRAVIACEÆ.

I REGRET that anything I stated, or omitted to state, in my communication (*ante*, p. 11) on the nectar-cups of the *Margraviaceæ*, could be regarded as bearing unfavourably or unfairly on the labours of any writer on the subject whose writings I had consulted, and whose views I attempted to set forth. My wish and intention were to narrate the facts as I found them, and to apportion fairly the merit of discovery. I also thought it good to point out what, in my opinion, was wrong, as well as what was right, in the writings and drawings of the authors I consulted. For myself I claimed nothing beyond the authorship of a sketch of the history of our knowledge of the nature and function of these singular appendages, which, for the sake of convenience, I followed other writers in calling nectar-cups. Notwithstanding my solicitude to render unto every one his due, Professor Doctor Wittmack thinks he has cause to complain, and adds (see *ante*, p. 78) to the quotation I made from his work in order to show that I misrepresented him. My impression from a study of his work was, that he had only by degrees become acquainted with the natural position of the nectar-cups, and remained uncertain even to the end of his investigations in respect of some of them. In this way I found an explanation and excuse for the apparent contradictions in his text and drawings.

On looking into the matter again, I think my impression was a reasonable one, even on reading to the end of the quotation he makes from his own work. But I do not seek to justify my assumption, because Professor Doctor Wittmack states that it was a false one. Furthermore, he utterly repudiates my explanation of the probable cause of the drawings in the *Flora Brasiliensis* being the reverse of the natural position, and declares that he was cognisant from the outset of the natural position of the nectar-cups; and being in possession of this knowledge, he thought it right to have them represented upside down. With regard to the sentence I quoted, standing alone, it most distinctly states that the opening of the nectar-cup is usually directed downwards, yet the honey does not flow out. It is likewise true that the succeeding two or three sentences qualify the one I quoted to the extent of saying that the large nectar-cups of the *Noranteas*, as well as the equitant cups of *Souroubea guianensis*, bend over as they fill with honey, so that the orifice is eventually uppermost; further, that the whole inflorescence of the *Margravia* is pendulous. I frankly admit having overlooked these qualifications of the statement I quoted, though with them in my mind I am still in a difficulty. Either the mouth of the cup is directed downward in the majority of the *Marantaceæ*, and the honey does not flow out, or something else takes place. Of course, if Dr. Wittmack means that in all cases the position of the cup changes as it fills with honey, it would, to say the least, be superfluous to state that the honey does not flow from the cups at the time they are empty. On the other hand, if he means that the cups usually remain with the mouth downwards, I was not wrong in attributing this view to him, as regards a portion of the family.

For my own part, as I have stated before, I think it possible that in some instances this may be the position, and the honey may be of such a consistence as not to flow out, yet I do not think it probable. However, as I have unwillingly and unwittingly misrepresented Dr. Wittmack's views, I offer him my apology. At the same time I cannot permit his arguments in support of the practice of representing objects upside down to pass unanswered. Of course as far as the *Flora Brasiliensis* was concerned, that was for Dr. Wittmack and the editor to settle, though outsiders might criticise the result; but I do not see that the practice can be defended by any of the reasons advanced by Dr. Wittmack. I am aware that it is convenient and expedient to represent the analyses of flowers with the organic bases of their parts directed downward, and it is almost universally done; but in any other case it is misleading. As to the morphological nature of flowers being rendered difficult of comprehension by being represented in their natural position, Dr. Wittmack would surely not attempt to maintain such an evident fallacy. In the first place, nobody would think of determining the morphological nature of the flowers of the *Margraviaceæ*, for instance, from the figures in the *Flora Brasiliensis*, though here the

organic bases of the flowering branch and the flowers coincide in their direction—at least in the genus *Marcgravia* itself. Dr. Wittmack even states that it is usual in systematic works to place the organic base at the bottom of the plate. I demur to that entirely. This would not, for example, facilitate the comprehension of the morphological nature of the *Fuchsias* and scores of other things. As a further illustration, he says, “even in pomology nobody draws an Apple in its pendulous direction.” True, this is usually so, but then the direction of the Apple is rather an upward than a downward one. Who would draw a Pear with the eye upwards? Finally, Dr. Wittmack argues that he was not called upon to represent the inflorescence in a natural direction, because the generic description supplies the information. *W. B. Hemsley.*

THE CULTIVATION OF LILIES.

IF I were about to recommence the cultivation of Lilies I should build a house or frame on purpose for them, arranged as nearly as possible in the following manner:—A span-roofed pit should be made in a sheltered situation, with the ends facing north and south, sunk about 3 feet in the ground, and having an entrance at one end, with a narrow path down the centre. The lights should be made either to slide down and take off, like the lights of a frame, or so hinged that the pit could be completely thrown open when desired. I think this important, because the complete exposure of the plants to spring and summer rains when not too violent is of more benefit to them than any amount of syringing or watering, and by lifting or drawing off the lights, and replacing them with some shading material in hot, sunny weather, we avoid the burning and drying up of the soil which is so difficult to prevent under a fixed glass roof.

No heating apparatus would be necessary, as the slight frost which might penetrate the house in very severe weather would not injure the plants when in a dormant condition. The brick sides of the pit would be about 1 foot or 18 inches above the ground-level, and might have ventilators of pierced zinc to break the draught. The beds would be built up with brick to about ground-level, and the height of the ridge from the earth should not be less than 7 feet, or more if it be desired to grow many plants of *Lilium auratum*. The beds would be composed of a drainage of 9 or 10 inches of broken bricks, stone, or tiles, covered by some sods of good soil laid over them, and filled in with about 2 feet of a compost consisting of about half light loam, one quarter coarse sand, and one quarter loose fibrous peat, well broken up and mixed together. A part of the beds might have a mixture without peat, and another part should be composed of half peat and a quarter leaf-mould; but care must be taken that any leaf-mould used for Lilies is thoroughly rotten and free from fungoid growth. Decayed cocoa-nut fibre has been found an admirable substitute for leaf-mould, and may even be used instead of peat, though I should prefer the latter when of good quality. A good sprinkling of broken crocks, small stones, or clean coarse gravel may be mixed with advantage through the whole mass of soil; and a mixture of broken charcoal is also advantageous, as until the roots of the plants have occupied the soil there is always a risk of its becoming sour; and I believe that charcoal will not only prevent this, but also enrich the soil. If the house could be planted with bulbs already well rooted and established in pots I should prefer it, as among a number of purchased bulbs there will always be many failures, and there is some danger of their decay affecting the soil. If, however, the entire stock of plants was purchased, I would not plant them out till they had begun to make root, as it frequently happens that bulbs which have been lifted and severely checked lie dormant for several months, and when in this state they are likely to rot if kept at all wet.

In a part of the house a bed should be kept for plunging plants in pots, so that newly imported bulbs might be kept in small pots until they had made a good start. However large a bulb may be, and whatever depth of soil it may require when established, it is always a good policy to start it in a small pot, and either shift it to a larger one or plant it out when well rooted. It is also unwise to put more than one newly imported bulb in the same pot, or to plant a number together, where a good effect is desired, until their season of flowering has been ascertained. It

frequently occurs that in a batch of imported bulbs of *L. auratum* and others, some will begin to flower in June and July, and others not before September, October, or even November; and the beauty of a pot or clump is somewhat marred when withered stems are mixed with those in flower. When our Lily-house has been once established it will be necessary to keep a most careful look-out for aphides, which, if once allowed to get strong, will hide themselves in the young leaves, and do much damage unseen. A frequent and regular fumigation in spring and summer is essential to keep them in check, and if this is done regularly the cultivator may be at ease, as neither thrips, mealy-bug, nor red-spider is to be feared in an unheated house. The lights should be thrown off whenever the weather is warm and pleasant, and whenever there is a nice mild rain. If none falls, a thorough good soaking of soft water should be given occasionally to all plants which are well rooted and growing freely, and more moderate supplies to the rest. A good syringing when the house is shut up in the evening during the spring and summer months is also of great advantage.

During hot sunny weather the lights should be removed, and replaced by a shading of tiffany or some similar material; and care must be taken on no occasion to burn the plants by keeping the lights on without shade, for though some of them will stand a great deal of direct sunshine without apparent injury, yet serious results often ensue. From a “*Monograph of the Genus Lilium*,” by H. J. Elwes, F.L.S., F.Z.S.

MR. WEATHERELL'S NURSERY.

THIS large establishment, situate at Finchley, almost wholly consists of glass erections, and, like the numerous others in the neighbourhood of London engaged in the growth of plants and cut flowers for market, the business is confined to the growth of a limited number of specialities rather than to the thousand and one kinds of plants that go to make up the stock-in-trade of the general nurseryman. There are one or more kinds of largely cultivated decorative plants that Mr. Weatherell may be said to have made his own, inasmuch as his name has been closely associated with improved varieties of them. I allude particularly to the berry-bearing *Solanums* that have now for years been so much in demand, not alone for marketing, but equally so in most private gardens, large or small, and this deservedly, for it would be difficult to point to any plant that has so many good properties or is more generally useful for decoration in the winter months, at which time its brightly coloured berries, which it retains fresh for so long a time, associate agreeably either with flowering plants or with fine-leaved things. The ever popular *Cineraria* has also received Mr. Weatherell's attention. The well-known strain to which his name has so long been attached is still held by market growers, who fully understand the taste and requirements of the public who buy their plants, as not surpassed for general usefulness. *Pelargoniums* of all kinds, but more particularly what are known as decorative varieties, have for many years been one of the leading features in Mr. Weatherell's practice; the broad, bushy style of plant in very small pots, so smothered with flowers that the stout, healthy leaves are almost hidden, have long been characteristic of the Finchley *Pelargoniums*. Some of the best varieties that have become established favourites have been raised by Mr. Weatherell, as instance the distinct, deep-coloured Captain Raikes, one of the most effective out of the almost innumerable seedling varieties that have been raised.

CAMELLIAS.

These flowers are also grown here in such quantities, that any one seeing them when the plants are in full bloom, and not acquainted with the immense demand in London for this and other favourite flowers, would not credit the possibility of their ever being got through. The first house occupied by these large specimens is 110 feet in length and 26 feet wide, all the old Double White, except one plant of the red imbricata, which kind it may be mentioned is almost the only red variety that is cared for in the market. The public who buy flowers are supremely indifferent to the ideas and fancies of the raisers of new varieties, as also to the gardeners' notions of them. Difference unless accompanied by distinction, and that distinc-

tion a manifest improvement, carries no weight with the mass of purchasers. Pure white, with bright red, and a limited quantity of decided blue, a like proportion of pink, and clear yellow, are the colours and shades in flowers requisite for their becoming popular, added to the very important property of ability to stand well, without which quality a flower is of no use in the market. The plants in this house are very large, running from 12 to 16 or 18 feet through, and from 10 to 12 feet in height. Three other houses, similar in width, but each somewhat shorter, are occupied with similar plants, mostly of the kind named *alba plena*; *fimbriata*, white, is also a favourite, and, as often met with, not a very good grower, but the Finchley plants of this variety are splendid examples, differing little from the Old White. It may here be mentioned that many of the plants comprised the stock of Mr. Press, of Hornsey, the noted *Camellia* grower, and were purchased by Mr. Weatherell at the time they were dispersed. They are now planted out in a way in which I have not either seen or heard of any others being treated, consequently a few details may be interesting, and possibly of use, to those who may happen to be in a like situation. The soil here immediately below the surface stratum is pure yellow clay, lying as close, compact, and impervious to the passage of water as anything in its way could possibly be. Holes from 4 to 5 feet square, according to the size of the plants, were dug in the floors of the houses; drains were then cut running from end to end of each house, right through the holes which the plants were to occupy. These were laid with pipes, and about 3 inches of ballast was put over the pipes in the bottom of the holes, which were then filled with a mixture of peat and loam, got from Epping Forest, which material obtained from this source Mr. Weatherell finds to answer better for *Camellias* than any other he has ever been able to get. In this the plants were turned out, ramming the soil quite solid and keeping the top of each ball 3 or 4 inches below the surrounding portion of the floor, which facilitates watering and insures the roots from getting dry, which they are always liable to when they are not kept lower than the surface of the surrounding ground. The impervious nature of the clay prevents the roots entering it, thus confining them to the excavated spaces as effectually as if they were walled round; the confinement of the roots to a limited space in this way will be a great advantage when a portion of the plants have to be moved so as to give more head-room, which they will very soon need, as the whole ball of earth in which the roots are confined can be moved without any disturbance and consequent shock. Nothing could surpass the healthy vigour of the plants collectively, which are clothed with a dense mass of large foliage as clean and bright as that of a healthy Laurel. The time of making their growth and setting the buds is so arranged as to give a succession of flowers from September up to the beginning of June. Through a considerable portion of the season from 200 to 300 dozen flowers per week are sold.

AZALEA FLOWERS

Are likewise grown in quantity corresponding with the *Camellias*; the varieties are mostly the Old White and Fielder's White. Many of the plants are from 8 to 10 feet through, grown in pots 22 inches in diameter, which, looked at comparatively with the immense bushes the limited quantity of soil they hold has to support, would by many be thought insufficient to keep them in a thriving condition. Yet they could not be more vigorous than they are, the season's growth made in many cases being from 8 to 10 inches in length. In fact, unless the growth was uniformly stout and long, they would be of little use, as a considerable portion of every shoot has to be cut with the flowers. The strength is kept up by regular liquid feeding through the growing season. These Finchley plants, with their extremely limited root-space and healthy vigour, afford the truest evidence of the non-necessity for large pots in *Azalea* cultivation. Besides the largest of these plants, which occupy places here and there where there is room amongst the *Camellias*, there is a span-roofed house 160 by 18 feet devoted to them, as well as a smaller house, which is filled with half-a-dozen monster specimens. The time of growth, like that of the *Camellias*, is so regulated that they bloom over a long period, the first beginning to flower in September along with the *Camellias*. Harrison's Musk, a variety that seems destined to supplant the old kind for market, is grown by thousands under the *Azaleas* and other things. *T. Baines.*

(To be continued.)

PLANT PORTRAITS.

ADIANTHUM LUNULATUM, VAR. *CELEBICUM*, *Illustr. Hort.*: no number.

ALBUCA WAKEFIELDII, Baker, *Bot. Mag.*, t. 6429.—Bulbous, with erect racemes of green bell-shaped flowers.

ALLIUM ERDELI, Zuccarini, *Bot. Mag.*, t. 6426.—One of the prettiest of the genus for horticultural purposes; flowers white, in compact umbels; segments sharp-pointed, keeled with green; filaments with a purple seam at the base. Syria. Hort. Kew.

ANOPLANTHUS BIEBERSTEINI, *Gartenflora*, t. 1000.—Heartily congratulations on the occasion of "unsere tausendste abbildung." The plant represented is a highly remarkable Broom-rape (*Orobanchaceae*) from the Caucasus, cultivated by Inspector Poscharsky.

ANTHERICUM MAKOVANUM, *Gartenflora*, t. 1007, without description.

ANTHURUM WALUIEWI, Regel, *Gartenflora*, t. 1004.—Stock ascending, leaf-stalks with prominent angles, laminae coriaceous, cordate, ovate-acute. Allied to *A. magnificum*. Caucasus. Wallis.

ARALIA REGINA, Koch, Lind., *Illustr. Hort.*, t. 337.—Leaves deeply palmately divided into 6—7 linear segments; stem spotted. A plant of uncertain lineage, but very elegant.

ARISEMA GRIFFITHI, Schott, *Bot. Mag.*, t. 6491.—A fine species, with bold roundish leaflets and large hood-like purplish spathes netted with green veins. The barren end of the spadix has at the base above the flowers a disc-like projection, while its free extremity is prolonged into a long thread-like appendage. Eastern Himalaya. Flowered by Mr. Elwes.

ASTERS: 1. *A. Townsendii*, and 2. *A. hispidus*, *Garden*, April 17.—No. 1 is a hardy herbaceous perennial from Colorado, with lanceolate coarsely-toothed leaves and purple flowers, 2 inches in diameter. No. 2 is very similar in habit, but has rosy-pink flowers somewhat smaller than in the preceding. Native of South Africa. Both are valuable additions to our collections of perennials. Kew.

BEGONIA M. CHRÉTIEN, *Illustr. Hort.*, t. 335.—One of the *B. rex* section; ground colour of leaves green, with fine pink spots, disc shaded pink. A very beautiful variety.

CALADIUM IBIS ROSE, and *C. MARJOLIN SCHEFFER*, *Illustr. Hort.*, t. 336.

CAMELLIA MADAME DE STREKALOFF, *Floral Mag.*, t. 354.—Flower imbricate, petals peach-coloured, with a central white stripe. Messrs. W. Paul & Son.

CASSIA ALATA, Linn., *Bot. Mag.*, t. 6425.—Tropical shrub, with large unequally pinnate leaves; flowers yellow, in spikes. Native of tropical America; the specimen figured was introduced, however, from Liberia by Mr. Bull.

CATLEYA WALKERIANA, *Belg. Hort.*, t. xvii.—A dwarf species, with racemes of large rose-pink flowers proceeding from the base of the pseudobulbs.

COLEUS BLUMEI, VAR. *KENTISH FIRE*, *Belg. Hort.*, 1880, t. v.—Disc of leaf rose, bounded by purple and edged with green.

CYANANTHUS LOBATUS, Wall., *Bot. Mag.*, t. 6485.—A beautiful Campanula-like plant, with slender ascending pilose stems, and small, wedge-shaped, obovate, lobed leaves. The flowers are terminal, with an elongated cup-shaped calyx, and a regular salver-shaped five-lobed purple corolla. The ovary is wholly superior—a very unusual thing in the order. Native of the Eastern Himalaya. Kew.

CYCLAMENS, *Floral Mag.*, t. 355.—1, Duke of Connaught; 2, Queen of the Belgians; 3, Mont Blanc; 4, Picturatum; 5, Crimson King.

CYMBIDIUM LOWIANUM, *Floral Mag.*, t. 353.—See *Gard. Chron.*, p. 405, vol. xi.

CYPRIPEDIUM SPICERIANUM, Rchb. f., *Bot. Mag.*, t. 6490.—See *Gard. Chron.* 1880, vol. i., pp. 40, 74, *et ic. xylogr.*, p. 41.

DIEFFENBACHIA BAUSEI, Hort. Chiswick, *Illustr. Hort.*, t. 338.—See *Gard. Chron.* 1871, p. 841.

DOUBLE CINERARIA MR. THOMAS LLOYD, *Floral Mag.*, t. 402.—The best double Cineraria yet exhibited, raised by Mr. R. Greenfield. Flowers rosy-crimson, very double.

DRACENA (CORDYLINA) BAPTISTEI, Hort. Veitch, *Illustr. Hort.*, t. 334.—See *Gard. Chron.* 1874, i., p. 92.

EICHORNIA AZUREA, Kunth, *Bot. Mag.*, t. 6487.—A beautiful and interesting stove aquatic of the Pontederia family, with thick rhizome, large, fleshy, orbicular, acute-stalked leaves, and thick flower-stalks,

with a terminal recurved spathe. The racemes are many-flowered; flowers funnel-shaped, about 1½ inch long, of six obovate-oblong pilosulous violet segments, the inner (according to the figure) the broadest. Tropical South America. Royal Botanic Society.

GENTIANA ALGIDA, Pallas, *Gartenflora*, t. 1006.—Confounded with *G. frigida*. *G. algida* is a native of Turkestan, with lanceolate leaves, and funnel-shaped flowers, striped longitudinally blue and yellow.

GENTIANA KURROO, *Garden*, March 20.—A dwarf tufted West Himalayan species, with lanceolate leaves and long slender flower-stalks, supporting a solitary funnel-shaped flower, 2 inches long, whitish on the outer, rich blue, spotted with white on the inner surface. Mr. W. Bull.

GLADIOLI (new hybrid varieties), *LEMOINEI* and *MARIE LEMOINE*, *Garden*, April 3, 1880.

GOETHEA MAKOVANA, Hook. f., *Bot. Mag.*, t. 6427.—The Pavonia Makovana of Morren, *Belg. Hort.* 1878, 59, t. 3. Hort. Bull.

GRAVESIA GUTTATA VAR. *SUPERBA*, *Illustr. Hort.*, t. 359.—A beautiful variety with cordate ovate acute leaves, greenish-olive thickly spotted with rather large circular pink spots interspersed among which are numerous very minute dots of the same colour.

HEPATICA TRILOBA AND *H. ANGULOSA*, *Belg. Hort.*, t. xvii.—A collection of fine varieties of this favourite old herbaceous plant.

HOHENBERGIA EXSUDANS, E. Morr., *Belg. Hort.*, t. xviii.—A tufted Bromeliad, with oblong, spine-margined, grey-coated leaves; erect flower-stalk, with scattered crimson lanceolate bracts, and dense terminal heads of orange-coloured flowers interspersed with green bracts, and remarkable for the abundant secretion of a waxy material, or rather, as M. Jorissen has proved, a mixture of wax and honey.

HYACINTHS, *Floral Mag.*, t. 356.—1, King of the Reds; 2, Duke of Connaught, deep purple. Messrs. Veitch.

IRIS ALBERTI, Regel, *Gartenflora*, t. 999.—A species from Turkestan, with violet falls and standards, the former streaked and bearded. A. Regel.

IRIS DICHOTOMA, Linn. f., *Bot. Mag.*, t. 6428.—Much branched, flowers small, bright purple, expanding in the evening. Eastern Siberia. Hort. Kew.

IRIS JERSEY BELLE, *Floral Mag.*, t. 403.—A lovely variety of the flat type of Iris, with pure white flowers veined with gold.

IRIS LEVIGATA, VAR. *KÄMPFERI*, *Gartenflora*, t. 1003.

IRIS SIR STAFFORD NORTHCOTE, *Floral Mag.*, t. 390.—One of the flat-flowered forms, magnificent in its colouring of violet and gold. Japan. Messrs. Veitch.

LIETZIA BRASILIENSIS, Regel and Schmidt, *Gartenflora*, t. 1005.—A new Gesneraceous plant, with the habit of a Gesnera; leaves hairy, lanceolate, tapering to both ends; flowers racemose, calyx bell-shaped; corolla tubular, campanulate, with a widely spreading slightly two-lipped limb, green, richly mottled with brown. Brazil. Lietze; introduced by Haage & Schmidt.

LONICERA TOMETELLA, Hook. f. and Thoms., *Bot. Mag.*, t. 6486.—A shrubby species, of no great beauty or interest. Native of Sikkim. Kew.

MASDEVALLIA IGNEA, Rchb. f., *Rev. Hort.*, t. 333; see also *Gard. Chron.* 1871, 1482; *Bot. Mag.* 5962.

MAXILLARIA PORPHYROSTELE, Rchb. f., *Bot. Mag.*, t. 6477.—See *Gard. Chron.* 1873, p. 978. Flowers greenish. Brazil.

NECTARINE STANWICK ELRUGE, *Florist and Pomologist*, t. 490.—One of Mr. Rivers' seedlings; fruit large, deep red-violet; flavour excellent, later than Elruge. Hort. Eastnor.

ONCIDIUM DASYTYLE, Rchb. f., *Bot. Mag.*, t. 6494.—A Brazilian species with pale yellowish flowers, the sepals spotted brown, the lip large and rounded, marked at the base by a large shining brown callus. See *Gard. Chron.* 1873, pp. 293, 432.

ONCIDIUM GARDNERI, Lindl., *Floral Mag.*, t. 401.—A fine species, with circular flowers of a rich golden-yellow barred and blotched with chestnut-brown spots; the same as *O. curtum*.

ONCIDIUM ORNITHORHYNCHUM, VAR. *ALBUM*, *Floral Mag.*, t. 398.—A winter flowering Orchid, with small, paniculate, white, very fragrant flowers. See *Gard. Chron.*, p. 503, 1873.

PASSIFLORA VITIFOLIA, *Garden*, March 13.—The gorgeous red Passion-flower, an old inhabitant of our gardens, lately re-introduced under the name of *Tacsonia Buchananii*.

PEAR COLMAR VAN MONS.—*Rev. Hort.*, Jan. 16.—An excellent cooking Pear, confounded, as it appears, with Colmar des Invalides.

PELARGONIUM MAID OF KENT.—*Floral Mag.*, t. 404.—A fine decorative variety, with whitish petals spotted with rosy-crimson, and with wavy edges, very free flowering. Messrs. Hayes.

PELARGONIUMS, *Florist and Pomologist*, t. 489.—Amethyst, purple; and Illuminator, carmine-scarlet, with clear white centre. C. Turner.

PENTSTEMONS, *Floral Mag.*, t. 389.—1, Lord Macdonald; 2, Miss Dean. Downie & Laird.

PHYTARRHIZA ANCEPS, E. Morr., *Belg. Hort.*, t. xx., xxi.—The Tillandsia, or Vriesia, or Platystachys anceps of former botanists. Very similar to *P. Lindenii* var. *Morreniana*.

PHYTEUMA COMOSUM, Linn., *Bot. Mag.*, t. 6478.—A very remarkable dwarf alpine, with orbicular or lanceolate coarsely toothed leaves; the flowers tufted; corollas violet, flask-shaped, with a long tubular neck, the petals being free at the base but coherent at the tips. (*Campanulaceae*.) Eastern Alps. Introduced by Mr. Maw.

POLYGONUM COMPACTUM, Sieb. and Zucc., *Bot. Mag.*, t. 6476.—A dwarf decumbent form, less ornamental in habit than *sachalinense* or *cuspidatum*, but remarkably floriferous.

POMEGRANATES (varieties), *Rev. Hort.*, April 1, 1880.—A group of very beautiful double Pomegranates.

PRIMULA ROSEA, Royle, *Gartenflora*, t. 994.—Dwarf tufted herbaceous plant with glabrous oblong serrated leaves; flowers like those of a Polyanthus, but of a beautiful rose colour. North-west Himalaya. One of the most desirable of its race.

PRIMULA SIBIRICA VAR. *KASHMIRIANA*, *Bot. Mag.*, t. 6493.—A glabrous species, with tufted, long-stalked, ovate elliptical leaves and stalked umbels of rosy-lilac flowers. It has been cultivated under the erroneous name of *P. elegans*. Northern Europe and Asia.

PRIMULA SINENSIS PURPUREA PUNCTATA.—*Florist*, January.—One of MM. Vilmorin's varieties, grown at Chiswick, and remarkable for its brilliant crimson flowers with a yellow throat, and a circlet of white spots within the edge of each petal.

PYRUS MALUS FLORIBUNDA, *Revue de l'Horticulture Belge*, January.—A lovely hardy spring-flowering shrub.

PYRUS SIEBOLDI, *Rev. Hort.*, March 16.—Fruit regularly top-shaped, stalk long, inserted in a shallow basin, eye slightly depressed; skin russet-brown, with pale spots; flesh white, juicy, with very peculiar flavour.

QUESNELIA ROSEO-MARGINATA, *Rev. Hort.*, Feb. 16.—A Bromeliad with broad strap-shaped leaves closely and finely toothed; flowers in close spikes with oblong-obovate bracts, pink in the centre, white at the edge; perianth purple.

RHODODENDRON PRINCE OF WALES, *Florist*, t. 507.—One of Messrs. Veitch's hybrids of the jasminiflorum type; flowers of a rich crimson-scarlet.

RIBES LACUSTRE, Poir., *Bot. Mag.*, t. 6492.—The Swamp Gooseberry of the United States, of no value as a decorative plant.

ROSE (TEA) COMTESSE RIZA DU PARC, *Journal des Roses*, February.—Vigorous, shoots red, spines few, leaves dark green, paler beneath, eventually purplish; flowers large, full, rose shaded with yellowish rose. Schwarz, Lyons.

ROSE (H.P.) THÉRÈSE LEVET, *Journal des Roses*, January.—A seedling from Jules Margottin, H.P., with large globular clear rose flowers.

SALVIA FARINACEA, Benth., *Gartenflora*, t. 1002.—A beautiful under-shrub, with lanceolate sparsely-toothed leaves, and dense spikes of rather large blue flowers spotted with white. Texas.

SCHLUMBERGERIA ROEZII, E. Morr., *Belg. Hort.*, t. xix.

SCOLOPENDRIUM VULGARE KELWAYI, *Floral Mag.*, t. 400.—A variety with short ramose curved irregularly lobed and densely crested fronds. Messrs. Kelway.

SENECIO SPECIOSUS, DC., *Bot. Mag.*, t. 6488.—A beautiful purple flowered Composite, described by Mr. N. E. Brown in our columns, 1879, p. 615. Royal Botanic Garden, Edinburgh.

SOLANUM BETACEUM, *Rev. Hort.*, April 16, 1880.—A shrubby species, with ovate-acute leaves, remarkable for its berries, which are of an ornamental character, about 2 inches long by 1½ inch wide, ovoid, tapering to both ends, and of a rich orange colour.

SALTBURN GARDENS.

It has become the fashion for seaside watering places to have a garden, and a very commendable fashion it is, especially where a site can be selected sufficiently near, that holds out a reasonable prospect of the shrubs and trees thriving in a way which will make them fair to look upon, and also where the land is of a nature that admits of anything being done to render the garden something beyond a garden in name. Before entering upon the short description of this garden which I propose to give, it may be as well to say a word about Saltburn, which lies in an out-of-the-way corner of the kingdom that comparatively few people reach except those whose business calls them to the locality of the great iron industries of Cleveland, through which the visitor has to pass. Admitting that the estimate formed of any place is often to a great degree influenced by the impression gained in the approach thereto, it must be acknowledged that Saltburn is unfortunate, by reason of the immense works, each covering dozens of acres of ground, where the mighty mounds of brickwork belching forth flame like miniature volcanos are such as to make the ponderous railway engines and long trains of mineral-laden trucks waiting to be relieved of their weighty loads look very little larger than so many children's toys. Although these lie some miles this side Saltburn and its garden, and, so far as I could see, have not in reality the least influence upon it, still the idea with which we associate a seaside retreat I must confess is in no way heightened by the railway ride thereto.

The garden altogether occupies about 20 acres of a deep winding ravine with a considerable stream of water following its course at the bottom, running into the sea a little to the eastward of the place. The ground has afforded natural facilities for the formation of a garden, not present in any other place in the kingdom with which I am acquainted, having considerable open level spaces on the banks of the stream and also in other places at a higher level. These have been taken advantage of to secure breadths of lawn, and croquet and lawn-tennis grounds, with flower gardens in the modern style, as also extensive herbaceous borders, backed with deciduous as well as evergreen, flowering, and other shrubs. From the way in which everything grows the soil appears to be well suited for the cultivation of plants generally. The high wooded slope on the east, and the still higher ridge of ground beyond it effectually shuts out the wind in this direction; the winding disposition of the ravine breaking its force from the North; and the equally tree-clad slope which runs up high to the westward, shuts out the gales that come from this direction, and also affords facilities for growing many alpine and other plants that like partial shade combined with protection. Roses thrive like Willows, growing any way—as standards, dwarfs, or on their own roots, scrambling on the walls or kept trim. Deciduous shrubs, as well as evergreens, are equally at home.

The walks are in many places for long stretches completely shaded with the overhanging trees, so different to the absence of shelter usually met with near the sea; for although the trees do not attain such a size as further inland, yet they are amply large enough to give effect to the scenery, and to answer all the requirements of shade. In places the undergrowth is kept cleared away, and in others it is allowed to grow so as to assume a natural thicket with only what restriction is necessary to keep it within bounds. Any one accustomed to see the stunted character which trees and shrubs usually have near the sea, would scarcely credit the free vigorous growth here within a few hundred yards of the beach, which at each tide is washed by the rolling surf, that on this coast always seems in anger.

Mr. Burns, in whose charge the garden for some years has been, is an enthusiast in hardy plants, and has a good knowledge of them and their wants, which, combined with the advantages the many snug nooks and corners afford, often enables him to succeed well with them. The summer bedding is well done, both such as comes under the head of carpet arrangements, and that of the ordinary description. Pansies and Violas are largely used, doing here, as they are mostly found in the north of the kingdom, better than further south, continuing to flower better through the summer than in the usually drier southern climate. The grounds collectively are well kept, with that happy discrimination which is able to appreciate

the value of the popular garden plants that most people are fond of, and also the more free and less conventional style of gardening, wherein are combined such things as Foxgloves, Willow-herbs, and Meadow Sweet, with Ayrshire Roses, Gorse, Broom, Honey-suckle, and Hardy Ferns, along with the many similar subjects that are common but none the less beautiful, and, kept in their right places, quite as desirable as the plants that need more attention and restriction.

An annual flower show is now held here in the autumn, and I understand is largely attended. In addition to the usual classes for flowering and other plants, fruit and vegetables, and Dahlias, which are so extensively and well cultivated in the north of the kingdom, are one of the principal features. T. B.

LOCKERLEY HALL.

THE picturesque and commodious residence of F. G. Dalgety, Esq., in Hampshire, is situate in the midst of a thinly, though nicely-wooded park, within 3 miles of Tunbridge, and 6 miles north-west of Romsey station, on the Salisbury, Portsmouth, and Southampton line of railway. After a pleasant drive through quaint villages, interesting scenes and flowery lanes, the writer of these notes, which must be necessarily brief in consequence of his short stay at Lockerley, arrived at the principal entrance to the mansion, which is approached between two capacious and pic-

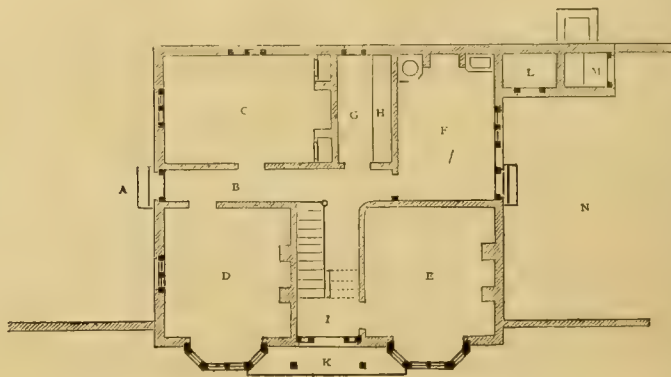


FIG. 25.—PLAN OF GARDENER'S COTTAGE AT LOCKERLEY HALL.

A, Entrance; B, Passage; C, Kitchen; D, Living-room; E, Parlour; F, Scullery; G, Pantry; H, Shelf; I, Hall; K, Porch; L, Coals; M, W.C.; N, Drying-ward.

turesque lodges, one on either side the ornamental gates, which are miniature fac-similes of the Hall. The distance from here to the house is about 1 mile along a winding and well-kept carriage-drive, passing on the way thither an ornamental piece of water on the right, and obtaining occasional glimpses of the Hall, with its tower, and handsome and graceful outline, through the summer-clad trees. The Hall, which is of modern Elizabethan style of architecture, is built of red brick and Bath stone, the corners and cornices of the edifice, with the jambs and mullions of the windows, being built of the latter material, and filled in between with the former, and has been erected by the present proprietor within the last twelve years. The principal front occupies a south-western aspect, with a portico projecting about 20 or 30 feet from the main line of building, having a balcony on top from whence nice views of the park and its surroundings can be obtained. Adjoining the mansion are the stables—model stables—in front of which, facing the park, and in a line with the Hall, is a nice ribbon-border filled out with, amongst other suitable plants, Blue Perfection Viola, which had a very good effect.

The flower-garden, which is situate in the south-eastern front of the Hall, is tastefully laid out. The carpet bedding, which is good, and the designs cleverly and neatly executed, has a very good effect from the terrace, the colours and habits of growth of the individual plants being skilfully arranged, and harmonising to the best possible advantage; whilst in many of the beds are planted suitable erect-growing plants, which break the flatness of the

"carpet" beneath. Ascending a few steps at the east end of the terrace, in company with Mr. J. Budd, the gardener at Lockerley, I came to a miniature flower garden of the Italian style, in which the combined effect of foliage, flower, and different coloured sands was very telling. The lawns and pleasure grounds, in which are growing some nice shrubs and trees, are capitally kept. At the north-east end of the lawn is a level space made for a skating rink, but now used as a tennis court, when the grass on the lawn is too damp for playing that game. Close to this is an artistic summer-house, octagonal in shape.

A short distance west of this point quite a metamorphosis has taken place within the last twelve months. The gardener's old cottage and its surroundings have been swept away—there are scores of others in the country that ought to share the same fate—and in its stead are the soft green sward and graceful shrubs. The removal of the one and the substitution of the other is a great improvement, not only to the grounds but to the place in general. There has also, within the space of time above-mentioned, been a considerable addition made to the glass department, including a Cucumber-house, Pine-stove, plant-stove, greenhouse, Orchid-house, Peach-houses, and glass coping to new wall on either side the gardener's new and handsome cottage. The kitchen gardens have also been considerably enlarged.

Perhaps I may now be permitted to note and describe the individual glass structures in the order

in which I entered them, and to make a few remarks thereupon in passing. No. 1, a Cucumber-house, hip-roofed, is 24 feet long by 11½ wide, and in which, besides the Cucumbers, there was a good crop of Vick's Criterion Tomato growing in pots, as also a nice batch of young plants of Poinsettia pulcherrima. No. 2, a span-roofed Pine-stove, 28 by 13 feet, in which were some nice fruiting plants, principally of Smooth Cayenne. No. 3, plant-stove, span-roofed, is 36 by 22 feet, and has a pit for plunging plants in along the centre, with stages over the pipes at either side and ends of the pathway for standing plants on, of which there was a good and varied collection, including a fine specimen of Musa Cavendishii, and Allamanda Hendersoni splendidly flowered and trained under the roof. No. 4, which is a fac-simile of No. 3, is a greenhouse in which, amongst many other fine and well-grown plants, is a fine specimen and grandly flowered plant of Rhynchospermum jasmminoides, as also several nice plants of Dasylium glaucum. Nos. 5 and 6, which run at right angles with this range, and with which they communicate, are the Fern and Orchid-houses, which measure respectively 28 by 21 feet and 21 by 21 feet. In these houses were some nice and well-grown plants. No. 7 is a range of vineries, two late and one early—75 by 15 feet—in which were some very useful bunches of Grapes, which were finishing nicely. No. 8, forcing-house, 25 by 15 feet. No. 9, same size as preceding one, is a vinery recently planted with American varieties, viz., Catawba, Alvirra, Concord, and Martha. No. 10, late vinery, 34 by 15 feet, in which were growing Black Alicante,

Lady Downe's, and Muscat of Alexandria, all of which promised to finish well. No. 11, early Peach-house, 25 by 15 feet, having one tree of Royal George, and a splendid tree it is in front, and Early York Peach and Elruge Nectarine on the back wall, from which the fruit had been gathered previous to my visit (the 8th inst.). No. 12, late Peach-house, 30 feet by 15 feet, and planted as follows:—Front: Violette Hâtive Nectarine, Elruge Nectarine, and Lord Palmerston Peach. Back wall: Noblesse and Barrington Peaches and Elruge Nectarine. These trees, which were carrying nice crops, were, with those in the preceding house, lifted from the old Peach-house last January and planted in their present position, and with thorough success and satisfactory results, judging from the luxuriant foliage and vigorous growths which they have made and are still making, in connection with the crop of fruit which they are bearing in the late house. No. 13 is a Camellia and Azalea-house, hip-roofed, 46 feet by 15 feet, in which was a good collection of the most approved varieties; most of them being well set with

ponds raised 3 feet above the surface of the walks, around which are placed some flints, in which are planted Sedums in variety) is, as all gardeners' cottages should be, a prominent feature in the gardens. This pictorial and convenient gardener's residence, as also the new houses above referred to, with the new garden walls and glass copings, have been built, fitted up, and heated by the Messrs. Weeks & Co., of Chelsea, London, and in their usual good style. In conclusion, I may remark, that it was evident, judging from what I had seen, that Mr. and Mrs. Dalgety take an interest in their workpeople's comfort and welfare. *H. W. W.*

OPIUM IN PERSIA.

THE following notes on the cultivation of, and trade in Persian opium are from an official, and therefore authentic source. Opium, it seems, is cultivated principally in Yezd and Ispahan, and partly in the districts of Khorasan, Kerman, Faristan, and

opium in Persia did not exceed 2600 cases, and it has since been reduced to some 2000 cases. The crop comes to hand in May and June, and the greater part of the opium find its way to the shipping ports between September and January. The shipping ports are Bushire and Bunder Abbass. The whole produce of Ispahan and Fars is brought to Bushire. The produce of Khorassan and Kerman is taken to the Yezd market, and this, together with that of Yezd itself, are sent partly to Bushire and partly to Bunder Abbass. The opium has hitherto been carried by English steamers running monthly between England and the Persian Gulf. The portion which is intended for China is transhipped at Suez on board the Peninsular and Oriental Company's steamers. This route is selected in order to avoid the duty levied at British Indian ports.

Persian opium, it is said, is not much liked in China, owing to its having a peculiar flavour caused by the mixture of a large quantity of oil during the process of preparation, and owing also to its being sometimes adulterated. It, however, finds a better market in



FIG. 26.—THE GARDENER'S COTTAGE AT LOCKERLEY HALL.

flower-buds. No. 14, a good-sized conservatory adjoining the Hall, the roof of which was draped with the foliage and flowers of *Tacsonia exoniensis*, *Van Volxemii*, and *ignea*, &c. In addition to these houses there were the usual hot-water and cold pits in which were growing Melons, Cucumbers, &c.

The kitchen gardens, which are in three compartments one communicating with the other through wide arches in the brick walls (10 feet high) by which they are enclosed, have also been extended simultaneously with the other improvements. In the centre of the arches, through which a horse and cart can pass, is a white stone with the family monogram inscribed thereon. These (kitchen) gardens are well cropped, and, like the place in general, are in capital condition, cleanliness and neatness pervading the whole place, and reflecting great credit on Mr. Budd, Mr. Dalgety's able gardener, for whom, as above hinted, a new cottage (fig. 26) has been erected at the top of the central walk, leading from the forcing departments, in the north kitchen garden, which for size, convenience, beauty of architecture, and thorough workmanlike finish, is everything that could be desired. This cottage, with its bay windows and verandah facing the chief walks (in the centre of which are miniature

Shustu. That grown in Yezd is considered the finest quality of all, owing to the climate and soil of that place being better adapted to the growth of the drug. But the district of Yezd, notwithstanding the existence of a large cultivable area, is not capable of any considerable extension of the cultivation of opium, owing to the insufficiency of the means, both natural and artificial, of irrigation. Ispahan, however, on the contrary, abounds in streams and rivers, and is capable of great extension of the cultivation of the drug. But the cultivation of Cotton and cereals takes up a large part of those resources, and tends in no small degree to reduce the culture of opium. A few years ago the profits of the opium trade having attracted the attention of the Persians, almost all available or suitable ground in Yezd, Ispahan, and elsewhere, was utilised for its cultivation, to the exclusion of all cereals and other produce. The attempts of the natives to enrich themselves by cultivation and growth of a profitable article of trade, and their neglect to provide for the necessities of life, combined with drought and other circumstances, resulted in the famine of 1871-72. The costly experience then gained has made the Persians more careful and provident, and they are now using a limited space for the cultivation of opium. A few years ago the largest produce of

London, in consequence of its containing on an average a larger quantity of morphia, indeed the preparation for the English market, which has of late been made especially pure, has come much into favour both in Europe and America, yielding, it is said, about 12 per cent. of morphia.

About 100 cases of opium (in cakes) are brought to Persia from Herat, and are taken to the Yezd annual market. From Yezd also a quantity of opium syrup, and in the shape of small sticks or cylinders, is sent for consumption to Herat; a small quantity of stick opium is consumed in Persia itself. No opium whatever is known to be imported into Persia from other places.

Small quantities are said to be grown in Tehran, Tabriz and Kermanshah, but these mostly find their way to Europe *via* Turkey, Smyrna being the port where it is chiefly taken to, and where it is mixed with the local drug and forwarded to the continental markets.

A SCHOOL BOARD ELECTION.—We hear that Mr. A. Dean, of Bedford, was on Saturday last re-elected a member of the Feltham School Board, but at this election was placed at the head of the poll by a considerable majority of votes. At the same time Messrs. E. Baker and E. Barnham, market gardeners, were also elected.

FERTILISATION OF THE YUCCA.

MUCH has been written of late respecting the fertilisation of these plants, and the part played in the process by the agency of a moth (*Pronuba Yuccasella*). Evidence has been given, tending to show, that on this side of the Atlantic the agency of this moth is not essential, as Mr. Riley assumed to be the case in America, where Mr. Meehan also contested the validity of the statements. Mr. Riley, in the current number of the *American Entomologist*, now tells us that a small footless grub, which he discovered in the seed-pods of *Y. aloifolia*, and which he thought might belong to some hymenopterous insect, turns out to be lepidopterous, and to it he gives the name *Bogus Yucca* moth, or *Prodoxus decipiens*. The names may be objected to—first, because *Bogus* is not English, while the more technical appellation offends that canon of nomenclature which forbids the association in one combination of Greek and Latin words. This, however, is not a matter of any great importance. More interesting is the relation of some experiments and observations of Mr. Meehan, who asserted that notwithstanding the presence of the *Yucca* moth, *Yucca filamentosa* never produced fruit unless he himself artificially pollinised it.

There are other points of purely entomological interest to which we need not here refer, further than to say that they turn upon the identity or otherwise of two described insects, and have given rise to a sort of "Comedy of Errors." The interesting point for us is that there are two insects very nearly resembling one another, at least superficially, and that they both frequent *Yuccas*. "Who," says Dr. Riley, studying these two species in all their characters and bearing, "can fail to conclude that, notwithstanding the essential differences that distinguish them, not only specifically but generically, they are derivations from one and the same ancestral form? '*Pronuba*' depending for its existence on the pollination of the flower, is profoundly modified in the female sex, in adaptation to the peculiar function of pollination; '*Prodoxus*,' dwelling in the flesh of the fruit or in the flower stem, and not depending upon the fructification of the plant, is not so modified, but has the ordinary characters of the family in both sexes. In the former the larva quits the capsules and burrows in the ground; it has legs to aid it in its work, while the chrysalis is likewise beautifully modified to adapt it to prying through the ground and mounting to the surface. The latter, on the contrary, never quitting the stem, has no legs in the larva state, and in the chrysalis state is more particularly adapted, by the prominence of the capital projection, to piercing the slight covering of the stem left ungnawed by the larva. The former is very regular in its appearance as a moth at the time of the flowering of *Yucca filamentosa*, a fact which would indicate that it was modified while living upon that species, and had a range co-extensive with it and other species blooming simultaneously. The latter appears earlier, as the food of its larva is earlier ready. Which of the two insects is the oldest in time, or whether the divergence from some archetypal form has been simultaneous, are matters of opinion which those interested in evolution will decide for themselves one way or the other, or according as knowledge increases."

Florists' Flowers.

SEASONABLE NOTES.—*AURICULAS*.—No time should be lost now in repotting the old plants. See that none of the plants are over-potted; 3-inch and 4-inch pots are the kinds mostly used. Some of the very strong growers, such as Robert Trail, Charles J. Perry, Colonel Champneys, Sophie Dumaresque, Marie, &c., may be potted in 4½-inch pots. There may be this in favour of using the pots rather large, that amateurs and others who cannot attend very regularly to the watering of their plants, would find it safer to trust them in these larger pots; but it is quite certain, where watering can be attended to, that the small pots are the best. Use good sweet turfy loam, moderately decayed, a fourth part of rotten manure, as much leaf-mould, and a little sharp sand or powdered charcoal. There are many offsets on the large plants; these must be taken off during the operation of potting. Sow seeds at once; the pods

are all ripe now, or ripening. Continue to pot off the young seedlings raised from seeds sown at this time last year. See that no caterpillars are allowed to feast on the leaves, and slugs must also be searched for at night, as they are now becoming troublesome.

CARNATIONS AND PICOTEES.

As I write (July 19) these are now in full bloom, and they are certainly as good as we have ever had previously. Many of the main or leading buds will be quite past by the 27th, the date of the National Exhibition. The fact that the bloom is at its best on July 20 goes to prove that this season is about right; the difference between this and last year is evident when it is stated that we had to force to get the bloom in by August 6. Layering must now be proceeded with. If the plants are in a house under glass they must be removed into the open air for a few days before commencing. Meantime get the compost ready—loam, leaf-mould, and sand in equal parts; a little of the surface soil must be removed, and this compost must be put in its place: the shoots, or "grass," must then be trimmed, a notch made in the lower part, using a stout peg to hold it in its place. The layers do best in the open ground.

DAHLIAS.

During the last few weeks the plants have made very rapid progress; the heavy rains save watering; the surface dressing of rich manure is washed in by the rains, and it also prevents evaporation. Thin out all the side-growths except three or four; this should be done before they become woody. It is better to be able to pinch them off with the fingers than to use a knife. Place sticks about 3 or 3½ feet out of the ground, at right angles to the main stem. If the plants are 4 or 5 feet apart, in quarters, use four sticks; where they are planted as a back row to borders, two sticks may be enough. Earwigs, slugs, &c., breed rapidly while the warm nights continue. Trap and destroy them in the usual way. The side-stems of scarce varieties may be put in as cuttings, and the plants will form what are called "pot-roots" for next season.

GLADIOLUS.

The early-flowering sections are now passing out of flower; though not so showy as those of the *Gandavensis* type, they flower long before we expect these to expand their blooms, and some of them, such as *G. Colvillii*, *The Bride*, are scarcely surpassed at this season as beautiful white flowers for vases, *epergues*, &c. The early spikes are now showing of the late-flowering section; we have mulched the beds, and will water soon, as we have missed the rains of the last week. Sticks about 3 or 4 feet long must be placed to the plants. See that the young seedling plants are kept growing; if they are in pots, the leaves become yellow if they suffer for want of water.

HOLLYHOCKS.

If seeds are sown now, and carefully attended to, the plants will flower next season. Some persons sow early in the year, but many of the plants start into growth when this is done, and throw up flower-spikes the same season; the flowers of such are usually destroyed in the bud, and the plants seldom do so well the next season as those which did not start in this way. The spikes are now well advanced, and they must be fastened to the sticks tight enough to prevent them rubbing against it in a wind, but not so tight as to injure the stem. Still syringe the leaves underneath, and water at the roots if the weather is dry. Propagate from eyes, as advised at p. 810, vol. xiii.

PANSIES.

The rains have suited these exactly, and all the plants have made strong growths, many of them having scores of flowers open at one time. The plants ought not to be allowed to run away like this if very fine single flowers are wanted. Cuttings may be put in of the small growths thrown up from the base of the plants. The strong flowering shoots are quite useless for this purpose. Sow seeds in the open ground, just covering them with fine soil.

PINKS.

The forcing section now requires attention; our plants were planted out in the open ground many weeks ago—they are now strong plants. Keep them free from weeds, and stir the surface of the soil. We like them to become good large tufts by the end of

September, when they are taken up and potted. With a little forcing each of these plants will produce a dozen or a score of their beautiful sweet-scented flowers, which cannot fail to be greatly admired. The florists' section has not yet passed out of flower, and many small side-growths from the strong pithy "grass" can yet be obtained for cuttings. They strike most freely with a little bottom-heat, but they must be shaded from the sun.

POLYANTHUSES.

These should now be taken up and potted. We use for this purpose a rather stronger compost than is used for *Auriculas*. Place the plants in a frame in a shady place until roots are formed, when they succeed best out in the open air. Before potting the plants, dip the leaves in soapy water strong enough to kill red-spider or greenfly. I do this whether these pests are to be found on the leaves or not. (See p. 810, vol. xiii., for compost, &c.)

RANUNCULUSES.

These very pretty flowers are sure to come to the front rank as florists' flowers again. Those who have grown quantities of them inform me that the old named varieties have done exceedingly well this year. Some persons had a notion that they had either died out or were worn out: it is not so. I should advise trying to cross them with the French strain, to produce a stronger growth and infuse fresh blood into them. Save seeds now, and lift the tubers as the leaves become yellow. They will not all do this about the same time, so it is best to go over the beds two or three times, taking up those only that are ready.

ROSES.

In our light dry soil we are continually pestered at this season with greenfly and mildew. The fly can be killed by dipping the points of the shoots in strong soapy water, the mildew with dry flowers of sulphur. Both can be killed at once by syringing the whole plant with soapy water containing flowers of sulphur. We also use tobacco-powder for the fly. If the bushes are well watered mildew does not attack the leaves so readily. Cut off all the decaying and over-blown flowers, and keep the beds free from weeds and suckers. *J. Douglas, Loxford.*

Garden Operations.

FLOWER GARDEN, ETC.

FLOWER GARDEN.—The heavy thunder-showers of the past week or two have so hardened the soil, that as soon as drier weather sets in it will require to be stirred to prevent a check to growth through the soil cracking. Such an operation also greatly assists in promoting growth, and ought from time to time to be repeated till the plants entirely cover the soil, and render further stirring unnecessary. Continue to peg out the plants till this is accomplished, and afterwards if gone over methodically—say once a week—to remove redundant growth, and bad or seedy flowers, the labour of perfect keeping will seem little in comparison with that required for flower beds that are allowed to get in a semi-wild state before attention is bestowed—not to mention the dissatisfaction of beholding neglected beds, or the pleasure derivable from such as are always kept in neat condition by strict adherence to order and method. Most kinds of bedding plants have this season made satisfactory growth, particularly the flowering section, but drier weather is now necessary to the production of flowers, and this I trust we shall now have, when increased attention as to the removal of dead flowers the moment they fade will be necessary to keep them flowering continually without exhaustion. *Calceolarias* often flower to death: to prevent this remove about one half the spikes as formed, and for the same reason occasionally clip off a portion of the flowering points of *Lobelias*; *Verbenas* and *Petunias* suffer in like manner from over-production of flower, which is preventable by timely removal of all fading ones, thus the plants are able to utilise the vitality that would otherwise go to seed production. Mixed beds and large vases of bedding plants will need attention in regard to keeping the more rampant growers within reasonable limits. *Heliotropes*, *Tropeolums*, seedling *Petunias*, if unrestricted, soon overpower the growth made by *Pelargoniums* and plants of similar habit. Perhaps the best preventive of this would be that it should become a fixed principle in one's mind to regard the predominance of any one plant or colour in bedding arrangements as in bad taste, and that the highest perfection of arrangement has been attained when it is difficult to say what is the prevailing colour or plant in the whole flower-garden arrangement. When

once such an idea becomes fixed, the effort is sure to be made to practically demonstrate the same. Alternantheras and Coleus are, as last year, disappointing, because growth is so slow; encourage the same by mulching with cocoa-fibre, and a sprinkle of guano; the same treatment is appropriate to any other plants that are not doing satisfactorily. Coming from the parterre to the less "dressy" department, attention is needed in regard to supports to sundry plants, such as Dahlias, Sweet Peas, Delphiniums, Potentillas, Lilies, Cloves, &c. Weed and surface-stir as weather permits, and plant out biennials any time where there is space to be filled. Cut dead flowers off Roses, both for neatness sake and the earlier production of a second bloom; continue to bud, put in cuttings, remove suckers, and apply fresh surface mulchings, or artificial manure. Complete the cutting of Box edgings; none should be cut after July, or it is apt to remain rusty throughout the season. Knife-in Portugal and common Laurels; these seem to be making a more profuse growth than usual, and so do Rhododendrons, some of which it may also be desirable to cut back to prevent them injuring other plants near them or of encroaching on walks. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

It is much easier at this season of the year to write a calendar of directions than it is in many cases to carry it out. The pressure of extra work in all departments, and the anxiety to have everything trim is not without its effect—and that effect, I fear, not a beneficial one in not a few instances of hardy fruit growing. To see espaliers denuded of young growths for appearance sake, and Pears and Apples upon walls shaven as if with a hedge knife, is not an uncommon sight, because it imparts a look of external tidiness for the time being; but it is as well to bear in mind now that although the use of the knife may make labour less it has a tendency to make the succeeding year's crop less also, unless it is employed with judgment. Scarcely two trees even of the same variety make growth at the same time alike, and different aspects and situations make the difference still greater. It will, therefore, be apparent that we must sacrifice something in appearance in order not to divest trees of breastwood before that development takes place, which indicates that the propelling power of the roots is on the wane, and that the process of consolidation and maturation has set in. This stage is rendered conspicuous by the wood growing firm at the base, and the fruiting eyes for next year becoming prominent. Early summer pruning in the case of trees that are being extended at their extremities is not so baneful as it is in the case of those having vigorous root-action, and but a restricted space for their branches to travel over. Prune two trees under the conditions mentioned, and it will be found that in the former case those shoots that are travelling perpendicularly will increase rapidly in length and girth when once the area through which the sap flows is circumscribed by removing what is commonly termed the breastwood, while in the latter case there will be a speedy after-growth of young shoots, which is undoubtedly draining the tree of its natural resources unnecessarily. It is this useless expenditure of vital power that we have to guard against, and to be watchful that in shortening back shoots not less than six eyes are left, so that in the event of second growth setting in the eyes at the base will still remain to develop into fruit-buds. The same remarks apply with equal force to bush trees, and while it may be necessary to remove a gross shoot altogether in order to strengthen weakly fruiting wood, or to stop the flow of sap by bending it down or twisting it, the main consideration should be to treat every individual tree according to its state of growth, and to discriminate from the appearance of that growth whether the root and branch power is fairly balanced, without which it is impossible to secure a condition of fertility or even a state of moderate health and equable proportions in any variety or form of fruit tree. With regard to insect pests we have been more fortunate than some people appear to be, a single application of lime having been sufficient to keep the Gooseberry caterpillar in check. I cannot help thinking that the attacks of insects become serious for want of decided action being taken on their first appearance. Nothing is more beneficial for trees at this season than a thorough syringing of clear water a couple of times weekly, and if the roots are well mulched and supplied with a proper amount of moisture the ravages of insects will be easily kept in check. Strawberries that were forced in the early part of the year and planted out in April are now coming into bearing, and the dry weather will affect them injuriously unless they are abundantly supplied with water at the root. It will be best in the first place to soak them with clear water, and in forty-eight hours afterwards drench them thoroughly with liquid manure. Wherever the crops are gathered and the plants can be cleared of weeds and runners, a good surface-dressing should be given at once, and if the soil is at all dry it should

be effectually soaked. No branch of gardening is of a more prospective nature than fruit growing, and the proper time to cherish and feed the roots liberally is after the plant or tree has made its growth and is commencing to furnish itself with stores for yielding its fruit the next season. *W. Hinds, Canford.*

FRUIT HOUSES.

FIGS.—Great perseverance will now be needed in the application of water through the syringe to the foliage of trees that have been several months in bearing, and even then our persistent enemies, red-spider and scale, will gain a lodgment, particularly where the roots have not been liberally supplied with stimulating food. When this is the case, and succession-houses are giving a supply, no time should be lost in throwing open the ventilators by day and night, exposing the foliage to refreshing showers, and by drawing off the lights where movable on all favourable occasions. The invigorating influence of warmthunder-rain, of which we have had lately an excess, will benefit both the roots and the foliage by finding its way through every part of the plunging material, now matted with thick brown fleshy roots, creeping out to the surface in search of food, to enable them to go on forming embryo Figs, and to ripen up others that are more advanced; but the latter should be removed, otherwise they will keep the trees in an excited state when they should be going to rest. The second crop in succession-houses will now be making good progress, and, as I have before stated, will require liberal thinning. Syringe freely twice a-day. Keep the mulching constantly moist for the present, and maintain a brisk growing temperature from solar heat after closing, until the fruit shows signs of ripening, when a drier atmosphere by night will improve the flavour, but no great reduction in the supply by day will be needful. Give steady attention to stopping and tying, and avoid the overcrowding of the young growths, as vigorous shoots, which should be allowed to grow up to the glass, will now require all the warmth and light that can be secured to them. Young trees which have been raised from cuttings or single eyes must be potted without delay, as nothing is gained by forcing a late growth, which cannot be properly matured. Get the early batch of pot-trees intended for forcing for the first time thoroughly ripened up before they are taken into the open air for a season of rest. If the roots have been allowed to run into the mulching material, they should be cut through by degrees, and when the trees are taken out, a warm, dry corner should be selected for plunging them in. *W. Coleman, Eastnor.*

MELONS.

To plants having their roots growing in a somewhat confined space, and which are now swelling off their fruits, give liberal supplies of liquid manure in a weak state, and in doing so, where the fruits are in pits and frames, avoid wetting the fruit as much as possible, as this, in connection with imperfect ventilation, would cause them to crack. Immediately after the application of liquid manure wash the foliage over with clear water through a rose and long-spouted watering-pot. Put a little air on about half-past seven in the morning, and gradually add to it as the power of the sun increases. Shut up at from half-past three to four o'clock—a little earlier or later according to the state of the weather and the situation of the houses—with plenty of atmospheric moisture on bright days. In structures where Melons are approaching maturity increase the ventilation with a corresponding decrease in the atmospheric moisture of the houses, with a little fire-heat at night to finish off the flavouring and colouring of the fruits. In succession-houses, where the fruits have set too thickly, thin them out to four or five (according to the strength of the plants) so soon as it can be ascertained which are going to swell, of the best and most even-shaped fruit, which should be distributed regularly over the plants, thereby causing an equalisation in the flow and concentration of sap at regular, if not equal, distances from the main stem. Place some pieces of wood or slate in a sloping position to prevent the lodgment of water, to keep the fruit off the damp surface, which would disfigure them. Complete the earthing-up of late plantings. *H. W. Ward, Longford Castle.*

CUCUMBERS.

These should be attended to in the way of stopping and thinning of the shoots two or three times a week. The shoots should be kept well thinned out and stopped, by which means the wood will become consolidated and prolific. It is a fact well-known to practical gardeners that Cucumber plants can be kept producing fruit all the year through by judicious cropping, and having the old wood regularly cut out when practicable, and sufficient young laid in to replace it, with occasional top-dressings and frequent and liberal applications of manure-water to the roots; this, with a suitable temperature and a genial atmospheric moisture, can easily be accomplished. Of course, where there is a succession-house, plants raised from seed next month would be preferable for winter work, in-

asmuch as they would be more vigorous growing; but where there is only one house, and it is not desired to have a break in the supply of fruit while a fresh batch of plants are being established, the above recommended might be had recourse to with advantage. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

FERNERY.—The bright weather we are now getting necessitates an increased quantity of air, and with it a proportionate amount of atmospheric and root moisture, as now that the fronds are nearly developed, the evaporation that goes on from their surface is something enormous. To meet this, water must be given freely, and to keep the plants in health and maintain the foliage fresh, heavy syringings should be administered every afternoon. The treatment most Ferns delight in, but with the *Gymnogrammas* and others of the farinose section, care is required in damping them over, as otherwise they are apt to get washed and disfigured. In cases where it is desired to increase any of the *Gleichenias* the present will be found a good time for layering, this being the only way these kinds can be propagated with despatch and safety, as they may be allowed to remain in the pots, where they are pegged till the creeping rhizomes get a good hold, when they may be severed without fear of injury. The tree varieties will require unremitting attention in the way of water, of which they cannot well have too much poured down their stems for the next three months, as these should be kept continually moist, in order to encourage and supply the active feeders, most of which form there.

GREENHOUSE.—It often occurs with Azaleas, after they have attained a little age, that they make such a multiplicity of shoots as to become very much crowded, and when this is the case the majority are so weak that, if they set bloom-buds at all, the flowers that result from them are so small and poor as to be of little value from a decorative point of view; but by thinning the growths the strength of the plants is more concentrated, and, as a natural consequence, the blooms not only come considerably larger, but they at the same time possess more substance of petal—a quality of the first importance, as it renders them less susceptible to change of atmosphere and of great enduring powers when cut. The rigid training to which Azaleas used to be subjected is fortunately going out of fashion, as there were no lines of beauty in the stiff cones of colour, and yet tying cannot well be done without; but beyond laying the foundation, as it were, of the future specimen, by confining the main branches in their proper position, the less stakes are resorted to the better, as however carefully they may be applied the ball cannot be punctured without doing some damage to the roots with which they come in contact when thrusting them in, and not only this but their appearance is most objectionable when seen, as they often are, protruding, like porcupines' quills, far out from the foliage. Pelargoniums of the Show and Fancy class ought now to be sufficiently ripe for cutting down, which should be done at once and the plants stood under cover of cold frames, where they can be protected from heavy rains till they break again and are ready for shaking out and potting. To assist the buds in starting it will be found a great help if they are syringed occasionally, but all the water required for some time will only be what is necessary to keep the soil just moist, in which condition it is favourable for the welfare of the roots. The tops of the shoots make excellent cuttings, which if inserted under the partial shade and shelter of any thin-foliage tree soon root, and will make nice little plants by the autumn. The Fancy kinds, being more tender and delicate, will do best if put in on an old half-spent hotbed, where they can have a light over them, as should the weather set in wet and cold they are apt to rot and go off. The Zonal sorts, so useful for late flowering, should receive their final shift and be plunged in the full sun, the thing with these being to get the growth thoroughly matured, as it is only from shoots in this consolidated, hardened condition that blooms may be expected in quantity. Winter stuff, such as *Chrysanthemums*, *Salvias*, and *Solanums*, planted out or in pots, will now need plentiful supplies of water, for if they flag even to a very slight extent the foliage soon suffers, and especially is this so as regards the *Solanums*, which, if they get dry, soon become attacked with red-spider, and not only so, but the flowers drop without setting, and when this takes place the plants can only be very thinly ornamented with berries. To add size to these weak liquid manure may now be given, and if syringed freely every afternoon that will be a great means of maintaining the leaves healthy and keeping them free from the pest above named. The same attention bestowed on pot Roses will be very refreshing to them also, and an encouragement for the production of good strong shoots, which, well ripened by-and-by, will yield fine blooms at the time of forcing. Besides being plunged the plants should be malched with horse-droppings, the juices from which get gradually washed down to the roots. *J. Sheppard.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	July 27	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. National Carnation and Picotee Society's Show, at South Kensington. West of Scotland Fanny Society's Show, at Glasgow.
THURSDAY,	July 29	Sale of Imported and Established Orchids, at Stevens' Rooms. Liverpool Horticultural Association's Annual Exhibition opens in Sefton Park.
SATURDAY,	July 31	Royal Southampton Horticultural Society's Annual Show opens.

AMONGST all the denunciations of bedding plants, and the plausible panegyrics on hardy perennials, which have of late become fashionable in some quarters, there is one very useful class of decorative subjects which have been in great measure overlooked, notwithstanding that it comprises some of the most beautiful and easily grown of all our garden plants. We allude to the class of **HARDY ORNAMENTAL ANNUALS**—of the variety and beauty of which, by the way, the Messrs. CARTER & Co. have lately given some good illustrations in the exhibitions of annuals they have set up both in the Regent's Park garden and at South Kensington. Their object, indeed, has been rather to show the variety of materials at command than to bring forward examples of superior cultivation, but these latter are by no means difficult of attainment, as many of our readers well know. As an illustration of this we may cite the first plant of *Collinsia bicolor* which we saw, years ago, at the time of its introduction to this country, and which as usually seen now, grows about a foot or so in height, with five or six floral whorls on the stem. The plant in question was a single one, grown in a pot, and well cared for, and under this treatment it grew nearly or quite a yard high, branching freely, both the main stems and the branches forming long spikes of crowded whorls of its pretty flowers, of a size, too, unapproached by the ordinary examples of the flowers. Thus grown it was a very beautiful object, and one not likely to be soon forgotten, and we especially allude to it as an illustration of what may be done with most other annual flowers if only they are carefully tended.

There are several considerations which should specially recommend the class of Hardy Annuals (including some of the half-hardy ones likewise) to the notice of those who desire to impart all the beauty and variety they can in the way of distinct flowers to their gardens and pleasure grounds. In the first place annuals are everybody's flowers, since, for a comparatively small outlay, an abundant variety may be secured by every one who cares to grow them: a few cynical exclusive and supercilious owners of gardens may indeed possibly object to such common and easily obtained flowers, but we have no sympathy with those who hold such views, and may leave them to their own resources. Then annuals are a hardy race that need little or no coddling, at least there are amongst them a large number which need but the plainest and simplest course of treatment. Then, again, they afford a wide choice of colours, some of them furnishing hues of the most brilliant character. Moreover, they can be cleared away at once when the bloom is over, to make way for their successors, since, of course, seed saving in a tidily-kept garden is not to be thought of. And, finally, though the blooming season may be brief as compared with many of the bedding plants, they at least last as long in flower as the average number of bulbs or herbaceous plants, and can be much more easily brought under control so as to furnish a succession of blossom. These are good qualities which we venture to think should secure for them a greater degree of popularity than they seem at the present time to enjoy.

It may, perhaps, be urged, that in the case of public gardens the necessity for a continuous display has led to their rejection, and the same

objection might possibly be taken to their use in private establishments as materials for furnishing formal or geometrical gardens; but even here their introduction might possibly be considered an advantage in the eyes of those who object to the glare of a whole series of beds full of the brightest of blossoms, since it would be comparatively easy to adopt a design which would admit a well-balanced set of the beds being devoted to a succession of annuals, the first crop of which would possibly be nearly coeval with the earliest summer bedders; and the second crop, while confined to the green colour of the growing plants, would tone down the blaze of the full summer blossoming in other parts of the design. In other words, we suggest the adoption of a design within a design, which we hold to be the most perfect of all arrangements for flower gardens, since it admits of arranging the different materials adapted for successive effects in winter, spring, summer, and autumn, in the same parterre; and though the successional pictures produced may be less gorgeous, the element of variety would be constantly coming in to add to the interest of the display. But irrespective of this, there are in all gardens, public and private, isolated or outlying places where annuals would not affect the symmetry of the arrangements, but where the variety they would afford would prove most welcome; and there are also the mixed borders to which they could be freely and very advantageously introduced.

As to the available materials, there are many perfectly hardy annuals of which three crops of flowers might be obtained during the season, by having recourse to sowing the seeds in autumn, in early spring, and later on in the spring months, while a little extra feeding, which may be so easily supplied by means of one or other of the many excellent concentrated fertilisers now in the market (of which CLAY'S, JACKMAN'S, GYDE'S, AMIES, CANNELL'S, STEPHENS', and the *Flor-vitæ*, are familiar examples), would supply all that would be required to support the successive crops, even if they were confined to the same plots, which possibly they need not be in all cases. Of other annual flowers which would not endure the winter, early and late spring sowings may be made with every prospect of success; and if the aid of preparatory pot-culture were here and there called in, the result might as surely be counted on as in the case of ordinary bedding subjects.

We shall quote a few examples in illustration of what has been already advanced, but the extent of the available materials is very much beyond what we shall have space to refer to. To commence with the dwarf-growing mass-flowering sorts—some of which may be sown in autumn in the reserve garden, slightly protected if the winter is severe, and brought into their flowering position with the first open weather of the early months of the year—there are the soft pink stars of *Silene pendula*, the delicate tints of which have charmed many a looker-on at Cliveden; there is the glowing rose-pink of *Saponaria calabrica*, less reliable perhaps than the former; there are the lovely azure cups of *Nemophila insignis*, and many other sorts which present pretty variations in colour; there are the purplish *Collinsia grandiflora*, the paler-hued *C. bicolor*, and the blue and white *C. verna*, the last needing to be sown as soon as the seed ripens to ensure its germination. Then come in the brilliant crimson *Linum grandiflorum*; the simple but charming many-hued Virginian Stock, than which no prettier subject could be chosen; the taller *Leptosiphons androsaceus* and *densiflorus*, with their lavender and rosy-tinted flowers, and the dwarfier kinds, *L. roseus* and *aureus*, whose deep rose and golden-orange flowers are exquisite.

There is, again, the *Tagetes signata pumila*, which when true is dense-growing and lifts its golden-yellow blossoms just clear of its elegant foliage in long succession; there is the lovely *Phlox Drummondii*, of which the colours are numerous and extremely varied, and of which the self crimson variety is one of the richest coloured flowers of the summer garden; there is the elegant dwarf blue and white *Lupinus nanus*, and other handsome kinds of taller growth; and there is the ever fresh and refreshing *Mignonette*, a welcome guest in every flower border, even though it may sometimes seem a little encroaching.

There are other hardy annuals of taller stature, which equally deserve a place in the garden of choice flowers, and which are for the most part equally amenable to treatment which will ensure a good succession of blossoms through a prolonged season. *Delphinium Consolida* is one of these, of branching habit, with flowers of a brilliant blue, and the double-flowered forms of *D. Ajacis* with their Hyacinth-like spikes of various hues, are both distinct and effective. *Centaurea Cyanus*, the Blue Corn-bottle, is another most exquisite flower for the border, and also for cutting. *Malope grandiflora*, with its large malvaceous crimson flowers, is very telling. Several of the Lupines, including *L. luteus* and *Hartwegii*, are bright floriferous plants of very free growth, and from their branching habit of growth, continue for a considerable period in a blooming state. Some of the *Godetias* are good effective annuals, especially *G. Whitneyi* with its rosy-crimson-spotted flowers, and one called *Lady Albemarle*, with flowers of a glowing magenta-crimson. The new form of *Calendula officinalis*, called *Meteor*, is a pretty thing when the flowers come nicely striped, and a good strain of the old double deep orange form of the same plant is very fine indeed. The species of *Calliopsis*, of which it is perhaps not possible to count on more than one crop annually, are, nevertheless, very telling indeed, especially in some of the finer forms of *C. bicolor*, and in the larger-flowered but dwarfier species *C. Drummondii* and *C. coronata*.

Here we must stop, though we have not touched the riches of the half-hardy group, and scarcely the improved garden forms of many familiar species. Of Asters and Stocks alone there is an almost endless series, and the choicer imported seeds may generally be depended on to produce something good. Some, as *Balsams*, *Globe Amaranthus*, and *Coxcombs*, and such things as *Schizanthus* and *Salpiglossis* make admirable pot plants. Still we leave untouched the whole field of perennials which may be treated and flowered as annuals by the aid of a little judiciously applied heat in spring, amongst which we may instance *Antirrhinums*, *Petunias*, *Minuluses*, and the *Dianthus*es of the *Hedde-wigii* and *laciniatus* types, whose flowers are simply gorgeous in their colouring, and which should never be omitted, since they require very little help in spring to be in full bloom in good time during the summer months.

It has often been remarked that in this kingdom, where gardening is pursued to an extent and with success such as has no comparison in other countries, that those who render the best service to the pursuit are left in the cold shade of forgetfulness or indifference. Certainly in our time one of the number of successful gardeners received the honour of knighthood—Sir JOSEPH PAXTON we mean—but he was rewarded, not for anything he accomplished in the way of gardening, but for an original architectural feat in planning and successfully carrying out the first great Exhibition building. Men may devote their lives, as many have done, and successfully, to penetrating and exploring the most distant and little-known regions of the earth in search for plants that ultimately benefit the



country by the uses, from a utilitarian point of view, they are capable of being put to, or of still further adding to the beauty of the landscape or the garden in the open air, or with the help of glass structures; many there have been who have risked health and life—yea, have sacrificed both, in the way we speak of; yet how little has ever been done in acknowledgment of their labours.

There are yet others, and many, whose long and successful labours have been directed into another groove, but still bearing in the same direction—the increased improvement of plants and flowers—and few will question the merits of the work which has been done in this field of gardening. In a consciousness of having done something in the world, if only adding a thing of beauty to those innumerable already existing, the raisers of new plants may be said to have their reward; but, beyond this they have little to be thankful for. Even the Royal Horticultural Society, as ere now has been pointed out in these columns, has taken little notice of either collectors of new species or the raisers of new varieties of plants. It may be said that when the Society, through its committees, has conferred awards upon meritorious productions of all kinds, either species or varieties, all that could be required has been done. To this we entirely demur, inasmuch that, in nineteen cases out of twenty, the individual who may happen to exhibit the new plant is not the one whose untold labours of research, or long and patient work of hand and brain, has been instrumental in bringing the new plant within reach of the gardening world. It is an old saying, that "it is never too late to mend, nor too soon to begin," and we are glad to announce that the Council of the Royal Horticultural Society have now taken up their legitimate position in conferring honour where honour is due, by presenting their Gold Flora Medal to Mr. DOMINY for his successful labours as a raiser of hybrid Orchids, Nephentes, and other plants.

That this distinction is richly deserved by Mr. DOMINY all acquainted with the cultivation of these plants will with one accord agree. We feel no hesitation in saying, that the step thus taken by the representatives of the old Society will have the effect of raising it considerably in the estimation of the gardening community throughout the country, and we have little doubt that it will also be the means of inciting others to strive for honour in this and kindred fields connected with horticulture. It is only since proof has been forthcoming, by the actual production of these seedling Orchids, that the impression has been removed, which was generally held by those best able to judge of the difficulties in the way, that Orchids could not be crossed by the cultivator. Yet not only has the fact now for a good many years been established, but the beauty of some of Mr. DOMINY's seedlings is quite equal to the best of the natural species.

The accompanying is a list of the most important plants raised by Mr. DOMINY:—

<i>Anectochilus Dominianus</i> ×	<i>Cypripedium Harrisianum</i> ×
<i>Aerides hybridum</i> ×	" <i>veixillarium</i> ×
<i>Cattleya Dominiana</i> ×	" <i>Dominianum</i> ×
" <i>alba</i> ×	<i>Calanthe Veitchii</i> ×
" <i>hybrida</i> ×	" <i>Dominiana</i> ×
" <i>devoniensis</i> ×	<i>Dendrobium Dominianum</i> ×
" <i>exoniensis</i> ×	<i>Lælia Veitchiana</i> ×
" <i>Manglesii</i> ×	" <i>Dominiana</i> ×
" <i>Brabantia</i> ×	<i>Phaius irroratus</i> ×
" <i>hybrida maculata</i> ×	<i>Nepenthes Dominiana</i> ×
" <i>Sidiana</i> ×	" <i>hybrida</i> ×
" <i>quinquecolor</i> ×	" <i>maculata</i> ×
" (<i>Lælia</i>) <i>Felix</i> ×	<i>Goodyera Veitchii</i> ×
" <i>Pilcheri</i> ×	<i>Fuchsia Dominiana</i> ×
" <i>alba</i> ×	

Such an array of beautiful varieties, raised from species so difficult to deal with as are most of the above, speak enough of what Mr. DOMINY has achieved without further comment.

SPIRÆA ASTILBOIDES (fig. 27).—The plant of which the figure on p. 113 is an illustration has been introduced from Japan by Mr. BULL, and was exhibited by him both in 1879 and 1880, receiving from the Royal Botanic and the Royal Horticultural Societies respectively the well-merited reward of a Certificate of Merit; for it is in truth a highly meritorious plant. It is a herbaceous perennial, quite

hardy, with the general character of *Spiræa Aruncus*, than which it is considerably dwarfer in stature, and much more graceful in character. The plant grows from 2 to 3 feet high, and bears divided leaves, and spicate panicles of elegant white flowers. MAXIMOWICZ, one of our most reliable authorities on Japanese plants, and also one of the most recent writers on the *Spiræaceæ*, separates from *Spiræa* the well-known *S. Aruncus*, which he adopts as the type of the genus *Aruncus*; and the subject of our present illustration is regarded by him as a second species, *A. astilboides*, or, as we prefer to write for garden purposes, *Spiræa astilboides*, the specific name being evidently given on account of its resemblance to *Astilbe japonica* (formerly *Spiræa* and *Hoteia*), which it slightly exceeds in size, and rivals in the feathery elegance of its inflorescence. Our figure was taken from one of Mr. BULL's plants. *T. M.*

— **OLD SEEDS versus NEW.**—There is an impression, in some quarters at least, that old seeds are preferable to new, especially in the production of double flowers. Desirous of putting this to the test, an experimenter, whose results are given in a recent number of the *Revue Horticole*, undertook a series of experiments with seeds of the *Camellia*-flowered *Balsam* of varying age. The conclusion arrived at is that it is the youngest seeds which give the most satisfactory results.

— **THE MANCHESTER ROYAL BOTANICAL AND HORTICULTURAL SOCIETY.**—We are informed that the Council of this Society has resolved to hold an exhibition of fruits, plants, and vegetables, and autumnal flowers, on an unusually large scale, in the first week in September, 1881, to celebrate the Society's jubilee, the gardens at Old Trafford having been opened to the public in 1831. Further details will, we understand, be made public shortly.

— **NATIONAL CARNATION AND PICOTEE SOCIETY: SOUTHERN SECTION.**—We believe from the present appearance of the flowers that there is every prospect of this young Society having a good show of Carnations and Picotees on Tuesday next at South Kensington. Some of the best leading blooms are over, of the early varieties, but the late sorts will be in fine condition, and some very fine seedlings are expected both of Carnations and Picotees. We should add that the exhibition will be held in the Conservatory.

— **CHRYSANTHEMUM CULTURE.**—In addition to the Cuckoo-spit insect, alluded to in my late note on this subject, I find that the young shoots are attacked by immature earwigs, which secrete themselves in the heart of the tender leaf-buds, eating the most delicate part of the growth, and being rather easily discoverable by the presence of a quantity of minute black powder-like excrement. A sharp pinch on the bud will destroy them. *I. O. W.*

— **THE BUCKLAND YEW.**—We are enabled to say that the Buckland Yew is as well as could be expected. Its appearance is, indeed, calculated to arouse anxiety, as its younger twigs are dying rapidly, and the leaves are falling thickly. Nevertheless, the growing part of the trunk, which is singularly picturesque, seems full of vitality, and the branches may possibly "break" freely another season. The present season, from its wet character, has been favourable so far, while the light friable soil, and the position of the tree in a valley, within a few yards of a busy little river which does its best to supply the world with brown paper and flour, is eminently favourable. The tree, indeed, may be said to grow over an old river-bed, and at no great depth from the surface a boggy subsoil would be reached. The drying east winds some time since punished the tree severely.

— **RESIGNATION OF MR. PETER GRIEVE, OF CULFORD.**—We are sorry to hear that, after continuing at Culford for over thirty years, Mr. PETER GRIEVE has felt it his duty to resign. We understand that his resignation has been accepted with much regret, and in the kindest manner, by the Rev. E. R. BENYON, who has always most highly appreciated Mr. GRIEVE's abilities, and treated him with much kindness and consideration. It is an open secret in the neighbourhood, and a fact that reflects equal credit on master and man, that a cross word has never been exchanged between them. Mr. BEN-

YON also took the liveliest interest in all Mr. GRIEVE's victories among the Golden Tricolors, with which both their names will for ever be so closely identified, and in everything relating to the improvement and advancement of horticulture, to which Mr. GRIEVE has devoted his long and useful life. Mr. GRIEVE carries into his retirement the highest respect of his employer, and the affection and esteem of a very large circle of gardeners and gentlemen who have known him personally by his pen and through his works. His personal friends and neighbours very much hope that he may settle in East Anglia (probably Bury St. Edmunds), and that a yet wider circle may often hear of and from him through the Press, as the spirit of horticulture moves him. Of Mr. PETER GRIEVE it may truly be said that those who knew him best love him most, and few men carry into their retirement more of the love and confidence of their brethren of the craft, and esteem and respect of the public at large. No man has better earned rest and leisure, and we trust he will enjoy it to the full for many years to come. Highly intellectual, hospitable and generous almost to a fault, devoted heart and soul to the "gentle art," Mr. GRIEVE is a noble type of the first-class gardener, who sustains and advances the horticulture of the day in all its highest and noblest achievements.

— **THE SEWAGE OF PARIS.**—A correspondent of the *Times* writes:—"As the city of Paris has tried various chemical and other means of dealing with its sewage, and is now irrigating about 1000 acres of land within five miles of the Tuileries, the following will be of interest to a large section of English readers:—On June 23 last the Conseil Municipal of Paris resolved, among other things, to approve, firstly, the continuation of irrigation in the fields of Gennevilliers, and the carrying of the sewage to the lower north-western part of the peninsula of St. Germain and adjoining farms, and the delivery of the sewage from the conduits to persons on their routes who shall be willing by agricultural, chemical, or other means, to cleanse it at their own expense and risk for the sake of what they may be able to get out of it, subject to rules to be prepared; secondly, to ask the Government, in case the 1500 hectares (3700 acres) might be insufficient for the purification of the sewage without annoyance to the neighbourhood, to take into immediate consideration the extension of the present proposal and the irrigation of other districts in the valley of the Seine."

— **CURIOSITIES OF HORTICULTURAL LITERATURE.**—We used to think that some English catalogues of nursery stock would beat anything ever printed in their orthography of the botanical names of plants, but we were wrong. It is a Dutch catalogue—a wholesale catalogue of "superior productions"—that never will be surpassed in this respect. In this catalogue almost every name is misspelled, and many of them have lost all traces of their identity in the process. What are the genera *Bulphonia*, *Frictonca*, and *Tretetia*?—and what are the significations of such specific names as *emicans*, *beligilatum nigrum*, *bisolia*, *povonia*, &c.? The catalogue containing these extraordinary blunders has been very liberally distributed in this country, and we felt bound to notice it as the most successful example of its kind.

— **PRESENTATION OF FRUIT TO THE LORD MAYOR.**—On Tuesday morning, in conformity with an ancient custom, the Master, Wardens, and Court of the Fruiterers' Company waited upon the Lord Mayor at the Mansion House, and presented him with some of the choicest fruit in season. The gift in olden times consisted of 12 bushels of Apples of various kinds, and of the finest description that could be procured. It was neatly packed in clean white baskets and covered with napkins, and men carrying them proceeded from Farringdon Market in single file to the Mansion House, headed by the Company's beadle. On arriving the Lady MAYORESS used, according to the old record, "to direct the house-keeper to take charge of the fruit, and put a bottle of wine in each basket for the use of the carriers, who were then regaled with a dinner, and, having satisfied themselves, retired, taking with them the fragments for their evening supper." Though the presentation of the gift has continued without break up to the present time, the incidents attending it have been materially curtailed of late years. The company

was represented on Tuesday last by Mr. E. TIDSWELL, the Master; Mr. W. N. FROY and Mr. H. R. WILLIAMS, the Wardens; Mr. Alderman KNIGHT, and other members of the Court, and Mr. EAGLETON, the Clerk, and they were received by the Lord Mayor and the Lady MAYORESS and some members of their family. The fruit, which was tastefully arranged in the saloon, included Pine-apples, Melons, Figs, Strawberries, Muscat and other Grapes, Peaches, Nectarines, Apricots, and Green Gages. The Master, having handed a handsome bouquet to the Lady MAYORESS, made the presentation of the fruit in appropriate terms. The Lord Mayor thanked the Company for their gift, and expressed a hope that so ancient and pleasant a custom might long continue to be observed. He added that he would have much pleasure in carrying out his part of the usage by inviting them to dine with him at the Mansion House after the holidays.

— **MORELLO CHERRIES.**—It may seem in connection with this fruit a somewhat curious method of commenting upon its merits that we should first ask whether the almost universal taste amongst civilised peoples for sweets is a natural or an acquired one. If the former, there is no help for it; but if the latter, then the Morello Cherry is a considerable sufferer in consequence. Of all Cherries, one of the finest and most fleshy, rich in colour, an immense bearer, and the most constant of all in that direction, it gives acidity where others give sugar, and its many other good qualities are largely lost in this one failing. Has it never occurred to any one to utilise the Morello as a breeder, and see how far it was possible to infuse into that rich-looking but acid fruit some of the sweetness of the Bigarreau or the May Duke? Even now, fruit of the Morello that have hung on a north wall late into the autumn are by no means unpleasant, but still the excessive sharpness prevents its being employed for dessert purposes. This year standard trees in market orchards give the very best crops of Cherries or any other standard fruits; but although the comparatively few that are grown meet with a ready sale, yet there is not that demand for all ordinary purposes found when sweet Cherries are in question. Mere elegance and beauty are points not likely to be regarded from the growers' point of view as favourably as those of cropping; but whilst the Morello does crop remarkably well, it further presents as a standard tree considerable beauty whether in bloom or in fruit. Perhaps in the latter case it is the most pleasing, as the more common white tints are now replaced by rich reds and crimson, and the weight of the fruit brings the branches down in pendulous elegance. That the birds do not seem to care for the Morello is a point in its favour—at least, such is the market growers' experience. That they invariably possess a sweet taste seems to indicate that a love for sugar is natural, and doubtless what is exact with birds is in this respect equally exact with regard to the tastes of humanity.

— **BIGNONIA CAPREOLATA.**—This handsome and shrubby climber inhabits the Southern States of North America, from Virginia southward, attaining its greatest development in the warmer parts of its area, where it climbs to the tops of lofty trees, adorning them with its pendent clusters of large, trumpet-shaped, usually orange-red flowers. Although it is hardy in the south and west of Great Britain and Ireland, and sometimes flowers freely in sunny aspects, it is more at home in a conservatory. A very distinct variety, having narrower, longer leaflets, and longer, narrower, dark purple-red flowers, is represented in the last number of the *Botanical Magazine*, t. 6501, under the varietal name of *atrocaerulea*. It has been in cultivation at Kew for some years, and is certainly a very ornamental climber in the conservatory.

— **A NEW SPECIES OF NOTHOCHLENA.**—In the *Bulletin* of the Torrey Botanical Club for May, Mr. G. E. DAVENPORT describes and figures a new Fern from South-Eastern Arizona, under the name of *Nothochlena Grayi*. It is described as one of the loveliest and most elegant of the genus, allied to *N. affinis*, but having a more compound frond and distinct, scaly rachises. Mexico, and the country to the immediate north, is peculiarly rich in species of this genus. We understand there are two or three new species in the collection recently made in San Luis Potosi, by Drs. PARRY and PALMER.

— **FUNGOID DISEASE IN BEANS.**—The constant succession of heavy showers and gleams of bright sunshine are atmospheric conditions which are likely to give growth to unaccustomed fungi, to induce disease, or to cause unusual development of common diseases. We have now before us a disease in Beans, sent by Mr. FISH, which we are far from thinking entirely new, though we have never before seen it in exactly the same condition. The seeds while within the pod are marked with sinuous red-brown spots. Here and there we observe a limpid gum-like exudation, which, if of a fungous nature, must be referred to *Micrococcus*, one of the *Schizomycetes*. Under the microscope this merely presents a cloud of particles so small that ordinary powers of the compound microscope (as, for example, $\frac{1}{2}$) do not reach them. Besides this, each spot presents patches of a snow-white mould, consisting partly of a *Dactylium*, which we cannot distinguish from *D. obovatum*, and in an early stage one of the numerous forms of *Cladosporium*, at present quite colourless, but when exposed to the light assuming the usual tint of the genus. We find the brown spots traversed within with the threads of the two moulds. The disease, at least in the specimens before us, does not extend to the cotyledons, nor do we find it on the pods themselves. In wet seasons it is difficult to get ripe seeds of Beans, and those which have the brown tint, like that of the specimens before us, do not germinate. The substance of these is sometimes a mass of fungous threads. *M. F. B.*

— **ANTHURIUM BAKERI.**—This is a very distinct and pretty Aroid, introduced rather less than ten years ago from Costa Rica, by Mr. W. BULL. It has linear, leathery green leaves with stout midribs; the flower-stem is as long as or longer than the leaves, and the small green spathe is reflexed. The principal beauty of the plant is in the fruiting spadix, which exhibits a lovely combination of pink and bright scarlet, the former being the colour of the fleshy rachis, and the latter that of the fruits, these being about the size of a Pea. Some examples at Kew are now flowering and fruiting in quite a small state.

— **TROGIA BOCKII.**—It is always pleasant when a fine form occurs in a genus which has heretofore consisted of more obscure species. In the genus *Cyclomyces*, for example, a species with the habit of a stipitate *Polyporus*, occurred many years after the stemless species from Mauritius was discovered, confirming the genus. We have now before us a very fine fungus, with the habit of one of the larger species of *Lentinus*, discovered by Herr CARL BOCK in Sumatra, belonging to the hitherto more obscure genus *Trogia*. The genus itself is distinguished by the gills having a decided groove along their edge, thus making an approach to the well-known *Schizophyllum*, where each gill is split through its whole substance, so that the divisions curl over. The species, for which we propose the name of the discoverer, *Trogia Bockii*, occurred in the highlands of Sumatra, at Ayer Mantjoer, on the west coast. Only a single specimen was found. Its characters are as follow:—Pileus $2\frac{1}{2}$ inches across, deeply cup-shaped, black, very obscurely pulverulent, here and there marked with concentric depressions; the margin reflexed; stem 2 inches high, $\frac{1}{2}$ inch thick, springing from an effused black crust, which lines excavations made by insects, and covers the whole of the stem, with the exception of the apex, which is reddish-brown. The gills, rather paler than the pileus, are little more than veins, which are, however, very regular, and are strongly decurrent, the edge being decidedly grooved through its whole length. The interstices are pruinose, like the pileus. *M. F. B.*

— **GRAFTING THE POTATO ON THE BITTER SWEET.**—Some of our readers will remember the experiments of Messrs. MAULE, of Bristol, and Mr. ALEXANDER DEAN, to which we called attention in vol. iv., 1875. A similar experiment has been performed by M. LAMBOTTE, the record of which, together with an illustrative woodcut, will be found in a recent number of the *Revue Horticole*. M. LAMBOTTE tells us that in the spring of the year while picking out some Potatoes for culinary purposes he remarked one sprouting and more fit for planting than for the saucepan. M. LAMBOTTE had at the time close at hand a plant of *Dolanum Dulcamara*, the stem of which he cut to a sloping point which he introduced into a hole

in the Potato as deftly as possible. Some days afterwards the Potato had regained its hardness and speedily sprouted from the eyes, the principal stem measuring more than 60 centimetres. The tuber became green, excessively hard, and developed little shoots bearing smaller tubers and rootlets. In point of fact there was a tuber growing in the same manner as it would in the ground, and only differing from an ordinary tuber in its hard consistence. Things went on in this manner till the end of September, when suddenly the leaves withered and the shoots became pendent and the tuber gradually became soft and decomposed after its ten months' sojourn on the stem of the *Dulcamara*, which continued its growth in the ordinary manner, unaffected by the fate of its quondam associate.

— **HYPERICUM NUMMULARIUM.**—This neat and pretty little Pyrenean St. John's Wort may now be seen in flower on the rockwork at York. Its blossoms are about $\frac{1}{2}$ inch in diameter, and are borne on slender leafy stems 3 to 4 inches high. It appears to thrive when planted in very stony and sandy soil, fully exposed to sunlight, and should, of course, only be planted amongst the dwarf-growing species of alpine, or it is liable to be overgrown.

— **VINES AT CHISWICK.**—The old cordon Peach-house at Chiswick, now converted into a vinery with an inside border, and mainly devoted to the culture of Alicante and Gros Colmar Grapes, shows a number of Vines in the best possible condition. They have made a wonderful growth this season; the foliage is bold and as vigorous as can well be desired. The soil in the border is mainly good loam and a generous supply of bones. The Alnwick Castle Seedling Grape is growing here, and represented by several rods, but in all cases it is a very spare setter, and as such promises to be a disappointing Grape. Against the back wall Mr. BARRON has planted Tomatos, and it is pleasing to note that the fine plants, now in good bearing, show no trace of the disease that has worked so much havoc among the Tomatos during the last year or two.

— **GERANIUM ARGENTEUM.**—On a sunny portion of the rock garden at York this beautiful Crane's-bill is growing and flowering finely. The leaves, which are small, are nearly round and are quite silvery. The flowers are borne on short stems (4 to 6 inches); they are bright rosy-pink, with exquisite pencillings of deep purple. *Geranium cinereum* is very similar to the above, but its leaves are not silvery but green.

— **PRIMULA CAPITATA.**—This beautiful hardy alpine Primrose is certainly the most valuable addition which has been made to this numerous family of plants of late years. It is doubly welcome to our gardens on account of its flowering so long after all the other species of Primroses are over. Evidently there are two distinct varieties of it, one quite superior, in every way, to its brother; this may easily be distinguished, even when not in flower, by its leaves, which are green on both sides; while in the other form they are white on the under surface, and the flowers, too, are of a poor, washed-out, slaty blue; while in the other the heads are large, and the flowers are of a dark, almost black purple, the unopened blossoms being light lavender-purple. In the York Nurseries it now forms one of the most attractive features. Messrs. BACKHOUSE & SON inform us they only propagate from the best type, thinking the other quite unworthy of cultivation.

— **POTATO FERTILISATION.**—There are some varieties of Potatoes that never produce flowers. The true Ashleaf, such as the Lemon Kidney strain, is one. There are others that produce buds but drop them ere they have expanded. International is a good illustration of this feature. Then there are Snowflake and others of the American breed that will now and then open a bloom, but these and the buds fall almost immediately. Early Rose and Beauty of Hebron, with some other Americans, will open blooms freely but never set them, being devoid of pollen. King of Potatoes and many others will do the same thing, yet many of these have an abundance of pollen. Then there are others that self-fertilise most freely. Woodstock Kidney, Grampian, Bedford Prolific, Red Emperor, Blanchard, and others fruit in great quantities. Some in breadths will have bushels of seed berries this

year. It is a remarkable fact that in the case of the kinds that drop their blooms almost directly or before expansion it is possible to retain them on the plants by the magic touch of the fertile pollen from another flower. Snowflake has been sought after for years as a seed parent, but never could be caught till this season, and now a couple of blooms have been fertilised. A patch of this kind growing between Early Rose and Beauty of Hebron can be told to a plant, because not one of Snowflake has an expanded bloom, whilst the others are blooming freely. Colour of tuber is no guide to colour of flower, as many red kinds have white blossoms and some others have mauve coloured ones. Equally some white tubered kinds have dark, and perhaps the darkest flowers. The present season affords special opportunities for marking the various matters of interest incidental to Potatoes. The new Early Ohio, one of the American Rose family, has the dwarfest top of all the section and is flowerless.

— THE BRUSSELS EXHIBITION.—This, according to the report of our correspondent, is large and interesting, but lacking colour. The general quality is excellent, but there is nothing very prominent or distinctive. A large contingent of foreign and British horticulturists is present. Dr. REGEL is chairman of the jury, Dr. MASTERS secretary. The meetings of the Congress begin on Friday, and are to be continued on Saturday and Monday. The first subject to be treated of is the Phylloxera question and the Berne Convention.

— THE EVENING FÊTE AT SOUTH KENSINGTON on Wednesday passed off a great deal more successfully than the authorities could have anticipated early in the evening, when the rain threatened to spoil the sport, as many times it has done before. Towards 8 P.M., however, the rain cleared off, and a cool pleasant air was experienced during the remainder of the evening. The illuminations were carried out most creditably, and for an hour or two the large conservatory was full to overflowing, though during no part of the evening were the east and west quadrant arcades unduly crowded. The bulk of the floral decorations very appropriately came from Chiswick, but very effective groups were also contributed by Mr. B. S. WILLIAMS, The General Horticultural Co., Messrs. OSBORN & SONS, Mr. HUDSON, gr. to H. J. ATKINSON, Esq., Gunnersbury; Mr. ALDOUS, and Captain PATTON, of St. John's Wood.

— THE WEATHER.—General remarks on the weather during the week ending July 19, issued by the Meteorological Office, London:—The weather was rather fine in the south of Scotland, and south-west of England, but elsewhere dull, unsettled, and very showery. Severe and frequent thunderstorms were experienced over England and Ireland, and in some places were accompanied by heavy hail. The temperature was about equal to the mean for the time of year over Scotland, and in "England, S.," but slightly below it in all other parts of the country. The thermometer was generally lowest (about 45°) during the early morning of the 16th, but as the day advanced the temperature rose rapidly, and at Strathfield Turgiss and Southampton the maximum of 79° was registered; at most other stations the highest readings during the week ranged from 74° to 77°. The rainfall was less than the mean in "Scotland, E." and "England, S.W.," and about the average in "Ireland, N.," but in all other districts the fall was more than the mean. In the central and northern parts of England and in the south of Ireland (owing to the thunderstorms noted above) the excess was very considerable. Bright sunshine was rather more continuous in "Ireland, S.W." and central England and east of Scotland than during last week, but in all other parts of the kingdom was much less prevalent. The percentage of total possible duration was greatest (58) in "England, S.W.," and least in "England, N.E.," where it was only 8. The wind was light and rather variable in direction, but generally north-easterly or easterly during the first five days; on the 18th and 19th, however, a south-westerly or westerly breeze was blowing on all except our most northern coasts.

— GARDENING APPOINTMENTS.—Mr. DURRANT, late Head Gardener, Knowle Hill, Cobham, Surrey, has been appointed Head Gardener to AMBROSE ISTD, Esq., Ecton House, Northampton.—Mr. J. WRIGHT has succeeded Mr. DURRANT as Head Gardener to J. E. COOK, Esq., Knowle Hill, Cobham, Surrey.—Mr. THOMAS CRASP, late Foreman at Balcarres Gardens, has been appointed Head Gardener to Mrs. HARGREAVE, Arborfield Park, Reading, Berkshire.

ARISTOLOCHIA UNGULIFOLIA.

OF this remarkable hothouse creeper* cut specimens were shown at South Kensington on June 5 last, along with growing examples of *Lycopodium dichotomum*, from Mr. Mortimer, gardener to Major Storer, Purley Park, near Reading. It is a plant of singular appearance, as the accompanying illustration (fig. 28, p. 117) shows, but though possessing much botanical interest, and well worth a place amongst stove climbers where the curiosities of vegetable structure are counted worthy of observation, it is scarcely to be regarded as a decorative subject. It forms a free-growing climber, with smooth terete furrowed stems, and glabrous leathery leaves, 6 or 7 inches long, cordate and pedately five-nerved at the base, three-lobed below the middle, with broad sinuses, the two lateral lobes arcuate and blunt at the end. The flowers, which are about 3 inches long, and of a dull brownish-purple colour, grow in short racemes from the leaf-axils. The perianth, which is smooth everywhere on the inside, is constricted so as to appear stipitate at the base, above which it is swollen out in a globose or oblong form, near the end of which grow two thickened projections, which are purple, with a whitish border; the upper end of the tube is again contracted and somewhat curved, and terminates in a two-tipped limb, of which one lip is larger and of an ovate or oblong form, and the other is minute. The column is stipitate, club-shaped, the lobes of the style linear-oblong, arcuate, connivent at the apex, and the anthers roundish-oblong. The plant appears to be of vigorous constitution and of free-growing habit.

Home Correspondence.

The Ribston Pippin, &c., at Ribston Hall.—Referring to your correspondent's account of the origin of the Ribston Pippin, and your note on the same, I may observe that I have an old letter from a member of the Goodriche family, the former owners of Ribston, which says—"The Ribston Pippin came from Normandy about the beginning of the last century. My great-grandfather, Sir Henry, had a friend abroad who sent him over three pippins in a letter, which being sown, two came to nothing; the present old tree at Ribston is the produce of the third of these pippins, and has been transplanted into all parts. Another account.—Sir Henry, father of the last Sir John, being at Rouen, in Normandy, he procured the pippins of some fine flavoured Apples, and sent them to Ribston. They were sown, and the produce in due time planted in the park (now George Garth). Out of seven trees which were planted five proved decided . . . all dead, the other two proved good Apples: they are . . . yet they never were grafted." I believe the writer of this letter was an old Miss Clough, and the letter was sent to my father by Mrs. Fairfax, of Gilling Castle, herself one of the Goodriche family. The date at which the pippins were sent over was 1709. The *Pyrus domestica*, mentioned by your correspondent, is the survivor of two remarkable trees. The other, which stood near the great Plane, was blown down a few years since. The remaining tree girths 8 feet at 4 feet from the ground. It has a clean bole up to 10 feet, and then breaks into a considerable number of rather upright branches. The foliage is very like that of the Mountain Ash; the fruit grows in bunches, and when ripe exactly resembles a small Pear. There is no fruit this year. The colouring in autumn is very fine. The late Honourable W. Herbert, Dean of Manchester, and Rector of Spoforth in 1844, called the tree "not the wild but the common Service tree, *Sorbus domestica*." In the same year Professor Babington wrote after the meeting of the British Association at York, as follows:—"Before leaving York I had had reason to believe that my original idea concerning the wild Pear which you left with me was correct, viz., that it is the *Pyrus domestica* of Smith, of which one naturalised tree exists in Wyre Forest, on the borders of Shropshire. Mr. Jas. Backhouse examined the specimen, and gave that as his opinion, and since my return home I have examined it carefully, and am satisfied that that is its true name." The late Mr. H. E. Strickland wrote an almost identical letter about the same date. A description of the tree in Wyre Forest will be found in Lee's *Pictures of Nature Round Malvern*, 1856. I may say, that the severe frost of last winter entirely destroyed fine specimens of *Cupressus macrocarpa*, *Cryptomeria elegans*, *Juniperus recurva*, and seriously injured *Abies*

macrocarpa or *Coulteri*, *Picea Pinsapo*, and *Abies Morinda*. *Taxodium sempervirens*, *Abies excelsa*, together with most of the Roses, Hollies, common and Portugal Laurels, *Thuopsis borealis*, the *Thuias*, *Cupressus Lawsoniana*, *Cryptomeria japonica*, the *Wellingtonias* and many others are uninjured; but the young Oaks and Ashes have suffered severely. *John Dent Dent, Ribston Hall, Wetherby, July 19.* [An account of the Wyre Forest Service, with an illustration, will be found in our volumes i. and vi., new series. Eds.]

Herbaceous Plants.—To enjoy herbaceous plants thoroughly, no position suits them better than a long irregular sweeping border with the back row formed of tall *Delphiniums*, *Phloxes*, and other plants of the requisite form and height, amongst which *Anchusa italica*, *Achillea Ptarmica flore-plena*, and the variegated *Symphytum officinale* might be used with good effect by intermixing the white flowers of the *Achillea* and the variegated leaves of the *Symphytum* with the large green leaves and blue flowers of the *Anchusa italica* and the *Delphiniums*. Then the second row might be composed of plants of the yellow *Coreopsis lanceolata*, *Epilobium angustifolium*, several of the *Lychnises*, and *Potentillas* in variety, not forgetting the beautiful blue *Salvia patens*, than which there is no more handsome plant in cultivation for the embellishment of beds or borders. *Apropos* of this fine plant, I remember before the present system of bedding-out became so popular, a very striking bed formed with a centre of this blue *Salvia* and edged with a double form of white *Feverfew*, the name of which I am sorry I cannot remember. The flowers very much resembled those of the *Achillea*, but the plant was dwarfer and was kept pegged down. (*Enocheras* are also lovely border plants, such varieties as *glauca*, *macrocarpa*, and *taraxacifolia* are exceedingly pretty, indeed the second-named is a handsome plant for planting *en masse*. The front lines might be composed of annual *Chrysanthemums*, and dots of some good strain of *Mignonette*, *East Lothian Stocks*, &c. *H. C.*

The Alexander Peach.—Having forced and fruited this valuable early Peach (I believe the earliest on record—April 24), from a pot-plant I had from the Messrs. Rivers last autumn, I should say that the Alexander is prolific, as it ripened every fruit, for there were only twelve, which were carefully set, having it in the early Peach-house about December 12. For a pot-tree, it coloured fairly at that early period of the year. The Amsden June had only five fruits, as there was little blossom. I rather think it is a clingsone from one that fell off it, which I tasted; the flavour was good for so early a Peach. I shall try the Alexander this next year more extensively, having ordered more plants of it, and feel sure it may be had by the middle of April. Rivers' early kinds followed on well, so that that up to this there has been a full supply, and with a third house we shall go on till September. *George Bond, Walnut Gardens, Lydbury North.*

A Yellow or Golden-leaved Nettle.—I was much interested in Mr. Forsyth's note on this plant. The chances are, however, that it will not remain permanent even if propagated from cuttings. Being green from the ground upwards is proof pretty positive that it will not come golden from seed. Constant as the stinging Nettle generally is, it is, however, also subject to considerable variation. The site appears to have a good deal to do with these changes. For instance, I never found a variegated Nettle in a swamp or even a damp situation; but often on dry banks and in sunny hedge-rows I have met with Nettles more or less variegated, but whether as much so as Mr. Forsyth's specimen I cannot say. I have, however, met with them variegated to the ground. In the very few instances in which I attempted the work of domestication, they invariably ran back into their primitive verdure. The attempt, however, is worth trying, for the Nettle is not only hardy but early. It would fill a niche of colour in the spring garden before most other plants had broken ground. And this reminds me that justice has not yet been done to the Nettle as a culinary vegetable or as a forage plant. In seasons like this, for example, when our gardens were bare of grass many a sunny bank was almost knee-deep in Nettles. A simple prescription for cooking this might be useful. Plain boiled like other greens, and eaten either with or without melted butter and meat, they have a woolly feel on the palate, which does not commend them to most people. Shredded small and converted into Nettle broth they are less objectionable. They are said to be beautiful and anti-scorbutic, and the taste for them strengthens by exercise. I have known ladies, abundantly supplied with the best vegetables, order Nettles in season twice or more every week. In the cases that came more immediately under my notice the Nettles were cooked and served in the same way as Spinach. Managed thus they were soft, sweet, and appetising. The Golden Nettle might be

* *Aristolochia* (*sub* *Diplolobus*) *ungulifolia*.—Volubilis, glabra; foliis subobcordatis alio 3-5-actis, lobis lateralibus curvatis apice rotundatis; floribus racemosis; perianthio super ovarium stipitato, basi globo, medio rarum arcuato tubulato, superne in limbum periphericum peltatum subbilabiatum expanso. Labuan.—*Masters, Journ. Linn. Soc.*, xiv., 494.

worth seeing after as a useful spring border or bedding plant, and fill its niche of gold in the garden and afford tender pickings for the pot afterwards. *D. T. Fish.*

The Sparrow as an Insect Destroyer.—Mr. Fish in his burst of righteous indignation against the sparrow commits what I am sure must be an act of

certain circumstances, will search for and greedily devour insects, I have more than once had satisfactory proof, and I feel assured that when he can find a good supply of fat caterpillars, he will leave almost anything in the way of food for them. Some years ago, the pot Strawberries here were attacked by the larva of a small species of moth, which bred in such numbers as to threaten the destruction of the plants.

remarked sparrows dodging about amongst the plants in a rather unusual manner, having that pre-occupied and knowing look which distinguishes this artful member of the feathered tribe when he is searching for something that he feels sure of finding. The persistence with which they returned to the same spot, induced me to watch them more closely, and I then had the satisfaction of seeing that each time a

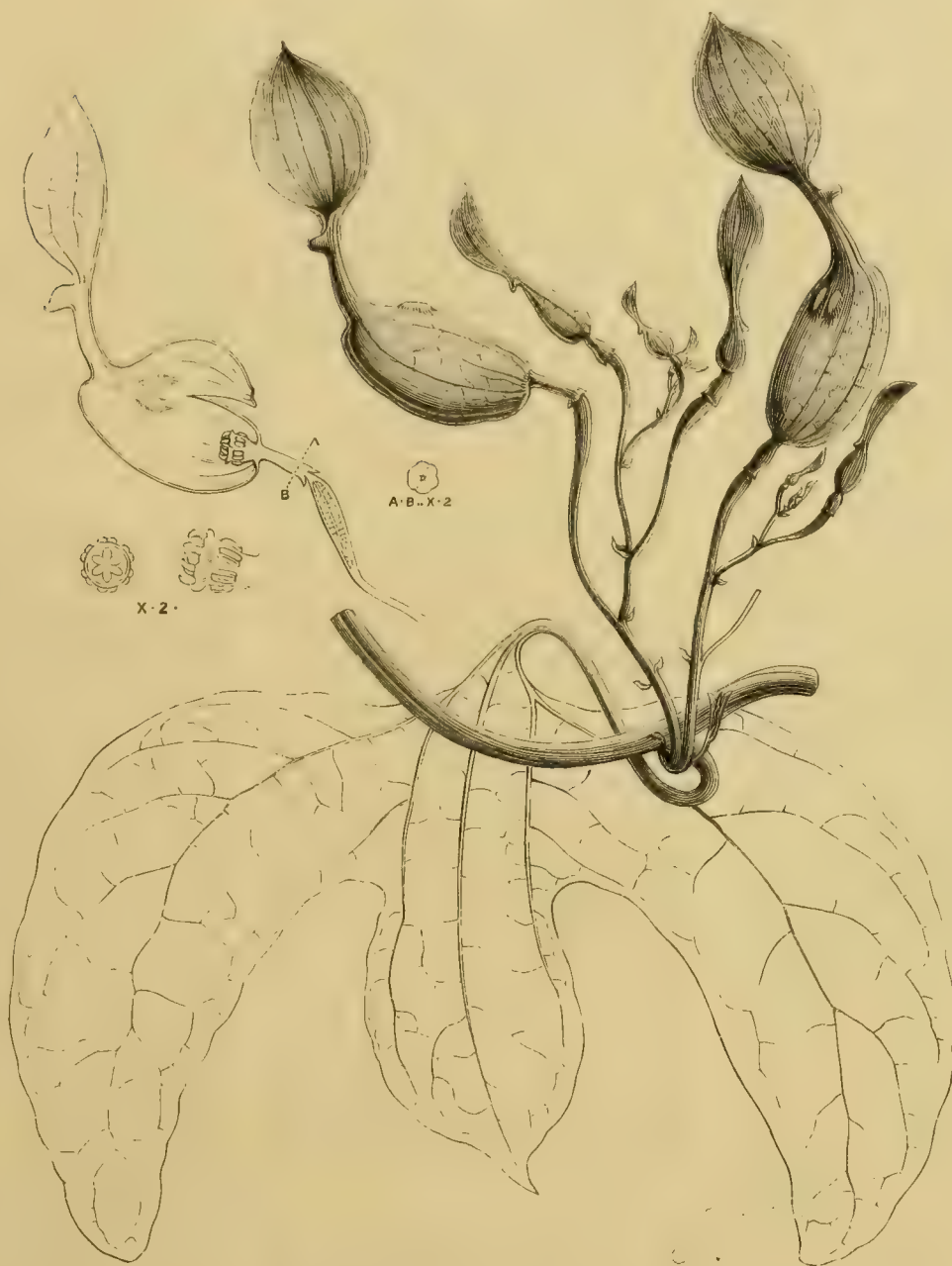


FIG. 28.—ARISTOLOCHIA UNGULIFOLIA. (SEE P. 116.)

unintentional injustice. That this bird is an evil-doer and a great nuisance to gardeners at certain times of the year, few even amongst the most enthusiastic admirers of the feathered tribe will be so bold as to deny. At the same time, rogue and *mauvais sujet* though he may be, let us before we finally condemn him to execution take what evidence may be collected in his favour. Should he be found to possess any redeeming qualities, it is only fair that they should be chronicled in his behalf. That the sparrow under

The grubs were so small as almost to defy detection, several beds of plants being so infested that the leaves were completely "skeletonised," presenting a most curious but to me a by no means agreeable appearance. We used to brush the plants over with a soft broom and pick up and destroy all that could be found, but in spite of all that could be done, the enemy continued its ravages until the advent of an unexpected ally, when the aspect of affairs became altogether changed. For some days I had

bird left the plant he carried away at least a dozen caterpillars. So fond of the larvæ did the birds become that when they had cleared all off in the more quiet parts of the garden, they made the most daring raids upon the more frequented parts of it. After that time I had no more trouble with the caterpillars—I left them to the sparrows. It is well known that sparrows voraciously attack grain crops; but will any one tell me what they live on and feed their young upon at this time of the year? It cannot

be grain, as it is not yet ripe, and wherever one goes, even far removed from human habitations, one finds colonies of this bird, the old ones hopping amongst the branches of the Oak and other trees. The Oak I know to be the home of a species of small green caterpillar—is it not for them that the birds are searching? The sparrow breeds at a very quick rate, and the food for the young must be of a succulent nature. I am, therefore, taking into consideration the facts of the case—and I do not think that even Mr. Fish can accuse me of giving way to false sentiment in the matter—strongly of opinion that the sparrow destroys a large amount of vermin during the summer months. I do not know whether the sparrow is a worm-eater or not, but I will take your correspondent's word for it that he does not indulge in this particular luxury; at the same time I can inform him that this wretched bird will most greedily devour any number of small slugs. The sparrow well knows what is good, and when he visits the crisp Lettuces he probably relishes the slugs and caterpillars which he there finds quite as much as the salad accompaniment. If I remember rightly, Mr. Cannell could tell us a little about the sparrow. I believe that in the case of Geraniums infested with larvae he advises the sprinkling of bread crumbs to attract the sparrows, who, once getting scent of the dainty morsels, take care to make a daily inspection of the plants. *John Cornhill, Byfleet.*

Lychnis Haageana, &c.—We found here last year that this plant behaved in the manner described by Mr. Wolley Dod, curling up its leaves the wrong way, and looking very absurd. This season it is not so eccentric, and has bloomed, and also conducted itself more reasonably. *L. H. sanguinea* is a beautiful variety, its foliage looks natural, and the glowing flowers large and well opened. It is much handsomer than the *Lychnis chalcidonica* of old-fashioned places, which comes at the same time. *Lychnis Haageana* and the red variety prefer shade; they grow here on the north side of a thick hedge of Colchic Laurel, where they get little sun; the soil rather light loam, but well enriched annually. Perhaps the vagaries of the white *Lychnis* were due to the youth and inexperience of the plant—let us hope so. If any of your readers have not tried a bed of Orange Lilies *bulbiferum umbellatum*, mixed with blue Lime-grass, and the indigo-coloured *Eryngium rigidum* (much the best of its class), they will do well to make the experiment another season. It is quite a "Happy thought." *H. M. E.*

The Gardeners' Benevolent Institution.—Are practical gardeners, being life members, that is, subscribers of ten guineas to the funds of the Institution, eligible to be placed on the pension list without election, provided their circumstances are such as to satisfy the committee that they need the assistance of the Society? In other words, are ten-guinea life members, being practical gardeners, placed on an equality as regards pensions to themselves or their widows, with annual subscribers of a guinea for fifteen years? A good deal of uncertainty seems to prevail on this head; were it removed possibly a good many life members might be obtained. There are not a few practical men who might make a special effort to pay ten guineas at once who would shrink from incurring the responsibility of paying a guinea annually for an indefinite time. An answer in next week's *Gardeners' Chronicle* will oblige *A Life Member* (who also subscribed for many years).

The Time to Plant the Tulip Tree.—I notice Mr. Colebrook's inquiries on this subject. Doubtless the main cause of the death of his trees planted last November was the unusual severity of the winter, that killed not a few Tulip trees which had not been weakened by transplantation. For the future I should plant earlier or later—that is, in October or in February. Tulip trees in many situations deplete early; it might, therefore, be moved so early as to permit the roots to get a fresh hold of the soil before winter. All trees and plants that have been transplanted are in danger while they continue unattached to the earth, hence the importance of curtailing this intermittent state as much as possible. While the sap is still in motion in a downward direction roots are reformed and healed more rapidly than at any other period. The earth is also warmer, as well as the sap more active in October, and terrestrial heat quickens the motion of the flows of plants, as well as excites root-growth. Unless root-action can be re-established before winter it is better not to disturb the roots till the spring. Tulip trees moved in February have a shorter period of root dormancy than those transplanted in November, consequently they not seldom do better, and the same rule holds good of not a few tender trees and shrubs. It is, however, a safe precaution to twist a bit of old mat or a few rough straw-bands round freshly-planted Tulip trees, for under the most favourable circumstances they not seldom succumb to the cold. The stronger the soil they grow in the more likely they are

to suffer. I have had Tulip trees perish on the clay, strong loams, and wet subsoils, while those on dry sites and in mixed soils have escaped. Poor or late growths are fatal to the hardiness of Tulip trees. The trees are also brittle and the branches, when growing strong, are not seldom broken to such an extent as to mar the beauty of the trees. Finally Tulip trees are often run up rapidly in nurseries. Possibly they may have been crowded together. In their lifting many of the roots suffer. They also resent exposure to cold winds or biting frosts more than most trees. If removed from warm or crowded nursery lines or masses and set out singly last November in such places as Mr. Colebrook describes, it is little to be wondered at that they all perished. The tree in its best state is but ill adapted to withstand a frost of 30°. *D. T. Fish.*

—The best time to plant the Tulip tree, *Paulownia*, *Catalpa*, *Ailantus*, *Magnolia*, *Judas-tree*, and other such-like flowering trees is just before growth commences; growth and roots are then made simultaneously when the soil is warm. After a good deal of experience in planting these in France I am certain this is the best time to do it; this was also the time such men as the late M. Barrillet, M. Leroy, and M. Riuener used to recommend; and their recommendation in such matters, as all who know them will admit, was of the highest order. I have planted *Magnolias* in June with great success, but April and May is the time for the others, when growth is on the move. I therefore think Mr. Colebrook would do well to try this period for his plantation another season, and to use some free kindly soil around the roots at the planting, making sure there is no wireworm in the soil, and dewing overhead night and morning if the weather be dry. *Henry Knight, Floors.*

Potato Disease.—It grieves me to have to say that yesterday I found, in Denver, in Norfolk, a field of Potatos which had been severely attacked. The proprietor told me the disease had first made its appearance there about ten days ago. The Potatos were American Early Rose and Sutton's Red-skin. The former exhibited the well-known symptoms of the disease first, after which it attacked the latter, and in the course of a very few days the leaves will have disappeared. The tubers are affected as well as the leaves. The land is very good silty soil, and well suited to the growth of Potatos; it is, moreover, fully exposed to light. There are no screening trees or hedges or other overtopping plants of any kind. It should, however, be noted that Potatos were grown on the same piece of land last year and failed entirely, so it is reasonable to suppose the soil was full of the resting-spores of the *Peronospora*. In a journey of some 18 miles I looked out carefully for the disease, but this was happily the only case I saw. I had, indeed, hoped that I should not find the disease at all so early in the season, but I am now with the greatest apprehension for the safety of the whole crop. We have had a good deal of wet and cloudy, sunless weather, but in comparison with our neighbours in Northamptonshire, Oxfordshire, and Leicestershire, I consider we have been highly favoured at present. If Ireland suffers again this year as she did last, what is to become of the poor Irish cottager, who still clings with such tenacity to his Potato? *W. Marshall, Ely, July 20.*

—The Potato disease appeared here yesterday (July 20). At a cottage show at Bury on the 19th, no speck of it was seen on a very fine display of Potatos. We have only seen it on two sorts as yet, *Brownell's Beauty* and *Climax*. It hit the former hardest. We whipped up both at once, and are in readiness to dis-haul the whole or lift them the moment a speck appears on the leaf. We hope the disease will give us time, as it mostly attacks varieties in detail. Heavy thunder showers, as I write: the worst possible weather for the Potatos. *D. T. Fish.*

Dimorphism in the Pear.—I was lately visiting some farms in East Norfolk, and observing a fine healthy looking Pear tree, evidently a *Williams' Bon Chrétien*, trained against a wall in a friend's yard, remarked that it was a pity it was like so many of its kind this year—fruitless. "Ah!" said my friend, "I grafted that myself, on a Thorn stock, and took the scion from a *Jargonelle* Pear tree growing on So-and-so's barn," mentioning a farm and tree that I knew. "You must have made some mistake there," said I, "as no two Pears can be more distinct than this is from the *Jargonelle*; and besides, the fruits of the two kinds are as dissimilar as possible," and taking out my pencil I sketched on the whitewashed wall the outlines of the two Pears. "Well," said my friend, "that is strange, for when this tree blossoms at the proper time it bears Pears like that," pointing to the figure of the *Williams' Bon Chrétien*; "and when, as is sometimes the case, it blossoms late, after the leaves and shoots are formed, the Pears are like this," pointing to the *Jargonelle*; "and I have always supposed this was caused by its being grafted on a Thorn stock. But just come into

my garden, and I will show you two small trees I have grafted myself with scions from this tree on Pear stocks." I accordingly went with him, and he showed me two unmistakable *Jargonelles* on suckers from a cooking Pear of some kind, and he said in answer to my questions that he had taken no other scions and done no other grafting at the same time; and, in fact, that these three were about the only grafts he had made since he had lived there. There was no fruit on either of the trees, but he must be a novice indeed who cannot distinguish a *Jargonelle* from *Williams' Bon Chrétien* by the foliage and habit, or who cannot point out the two kinds of foliage and habit alone among hundreds of others. I shall be glad to hear what you and your correspondents have to say on this matter. *G. A. C.*

Aquilegia Skinneri.—This comparatively scarce *Columbine* is now at its best in my garden, where the first flower of it opened about July 1. Several of your correspondents mentioned it in their lists of spring flowers, but as with me it does not show buds till all other *Columbines* are nearly over, I ask to be allowed to describe it. I have perhaps a dozen flowering plants, raised from seed obtained in spring, 1879, from Mr. W. Thompson, of Ipswich, and as they all agree exactly in their characteristics, I feel sure they are the genuine species. The plant I describe is growing in full sun on a well-drained bed of loam and leaf-mould, with 2 feet of broken limestone under it. It is 3 feet 4 inches high, the flower-head 2 feet across, bearing ten to twelve flowers open at a time. The flowers measure 3 inches from the end of the spurs and $1\frac{1}{2}$ inch across to the tip of the anthers, and are of a clear red colour, except about $\frac{1}{4}$ inch of the lower end, where both the calyx and corolla leaves are on both sides of a bright pea-green. I have often been shown long flowered varieties of *A. californica* or *A. canadensis* as *A. Skinneri*, which they resemble somewhat in form, but flower much earlier and are less ornamental than the true *A. Skinneri*. *C. Wolley Dod, Edge Hall, Malfas, July 19.*

The Gooseberry Caterpillar.—I see from your last week's issue that Mr. Tegg, of Bearwood, is troubled with a severe visitation of the Gooseberry caterpillar, and am induced to mention what has proved a perfect cure in our case. On or about June 12 I noticed that some of our trees were getting badly infested with the caterpillar. I first tried hand-picking, but found too many of them to be dealt with in that way at this season of the year. I next tried a patent insecticide, a good composition for scale, thrips, &c., but it proved harmless to the Gooseberry caterpillar. I then got a fair armful of branches of the common Elder and Black Currant in about equal quantities, bruised them, and poured about 30 gallons of boiling water on them, letting it stand all night. Next morning I had all the trees syringed sharply with the liquid, and when the syringing was done, I had three or four handfuls of fresh-slaked lime thrown under each tree, keeping the lime clear of the fruit. We have not seen any caterpillars since. *Robert Maher, The Gardens, Boyne House, Tunbridge Wells.*

Mulchings.—With the incessant downpour that we have been having almost daily for nearly two months past, it seems like a mockery to read of mulchings to keep out drought. Our Strawberries, on the contrary, have needed a waterproof mulching, were such possible, overhead, to protect them from being utterly rotted. Still, "J. S.'s" remarks are important enough in dry weather, and I quite agree with him. Seaweed, too, is capital for some crops, where it is available—for Cauliflowers in moderation, and Celery to any extent. If partially washed and dried first it is also capital for Strawberries. The saline matter is disagreeable to the slugs, though it may not exist in sufficient quantity to injure the plants. I also heartily endorse the editorial note in favour of cocoa-fibre refuse. The longer, rougher, and harder the fibre the better for Strawberries and such things. In this coarse state slugs and snails will hardly venture amongst it. Barley-chaff forms another capital mulch for Strawberries. Well worked in under the leaves and the ground covered with it, the prickly awns will repel almost every living thing that tries to creep over it. The chaff will also occasionally impale a Strawberry, but that is a small matter compared with the immunity the fruit enjoys from slimy pests. Tolerably fresh tan is also a capital mulch for Strawberries. When washed a few times and exposed to the air the bits of bark do not flavour the fruit with tannin, while the tan forms a capital anti-splash, anti-slug, and anti-ant mulch. Short grass is the worst possible mulch for Strawberries, for the reasons stated by "J. S."; while Fern refuse, cocoa fibre, light seaweed, Barley-chaff, and spent tan are among the very best. Tan is a capital mulch for Potatos. Some hold that it is an antidote to disease; it may be so to some extent. A liberal dressing of tan to heavy land proves a capital dressing for Potatos, the yield is generally clean and heavy.

The mulchings on light land also add to the weight the crops by the conservation of the moisture and the manurial strength of the ground. In some districts tan is a useless incumbrance or waste. Most of the attempts made to convert it into a profitable fuel have failed. I have seen stacks on waste lands by the roadside accumulating for years. The farmers as a rule are prejudiced against it. There is no doubt that soaked in sewage it becomes a valuable manure; alone it probably has but little manurial value. I have, however, seen capital Potatoes grow in tan alone, and a liberal mixture of tan proves one of the best preparations for Potatoes. Its effects may be chiefly or wholly mechanical—it matters little or nothing, so long as they are highly beneficial. Dried tan is also a capital material with which to store Potatoes. Tan is antiseptic and astringent, and both those qualities are useful to protect Potatoes from common rotteness, and probably also to mitigate the destructive effects of the disease. *D. T. F.*

Simple Art in the Plant Stove.—However much we are indebted to the skill of modern artists in the formation and structural embellishment of our plant-houses there is one fact that is vividly portrayed in most of the best examples of artificial art, and that is, that somehow or other there is a stiffness about it which betrays the hand of the mechanic rather than the careless hand of Nature. It is true that the choice of situation or the force of circumstances has something to do with many examples of unhappy selection in the shape of plant-houses, but much may be done by internal arrangement to relieve the eye from the stiff formality of oblique rafters and perpendicular pillars. In the plant stove numerous creepers (not new ones), such as Bougainvilleas, Allamandas, Passiflora princeps, the most lovely of all stove creepers for giving effect, and the beautiful Ipomoea Horsfalliae, together with the old Cymbidium purpureum, are all handsome objects when judiciously mixed and loosely trained with their wreaths of flowers overhanging (irregularly) a bank of Ferns, with here and there a dot of Caladium argyrites arranged alternately with some of the grass-like Aralias or some other object that will give relief to the deep green shade of the Ferns. Then again foliage plants should be arranged, the dark and light shades intermixed pleasingly, or failing the latter a plant of Eucharis or the lovely Poinsettia fragrans in flower would answer the same purpose, and afford a pleasing *tout ensemble* which would render a visit to plant-houses more agreeable than when they are regarded as mere places for carrying on the manufacture of plants. *W. Hinds.*

Potting Orchids.—When at p. 15 I gave a list of Cattleyas which at that time might be safely potted, I did so, not as Mr. Douglas thinks, because they were breaking, but simply because I knew from experience that the plants named would, immediately after potting, throw out more roots than at any other period of the year—the rule with me being to give, as often as possible, new compost to new roots. As a fact, neither *C. Warneri*, *C. gigas*, nor *C. amethystoglossa* are breaking, but are just about in the same stage as Mr. Douglas describes the Anguloas. Still this is the best time to repot such, as from the base of the current year's growth will now issue a host of roots. These roots speedily take hold of the new compost, and the plant is thus quickly established. The same holds good with the Anguloa: when this Orchid breaks, its roots are by no means active, the plant turning its attention more to flowering than to growth. Although the young growth will push a few roots, both it and the flowers draw nearly the whole of their nourishment from the old bulbs, as the shrunken appearance of such after flowering too plainly shows. Immediately the flowering stage is over growth is the aim of the plant. Many new roots are formed, which, if they have new compost to run in, continue to grow for weeks after the young bulb appears to have finished up. Coming to practical facts—at the date in point (July 3) I potted some Anguloas, which, instead of being checked by the operation, are making satisfactory progress. *J. C. Spyers.*

Seedling Ixoras.—I have now in bloom a beautiful collection of seedling Ixoras. The plants fill a bench about 40 feet long in one of the stoves; they are in 4, 5, and 6-inch pots, dwarf and compact, many of them bearing five or six trusses of well-developed blossoms. They have a vigorous, healthy foliage, and all shades of orange and orange-scarlet are well represented. There are ten or twelve varieties, and the display made by this mass of bloom is both novel and effective. *John Fraser, The Nurseries, Lea Bridge Road, E.*

PUBLICATIONS RECEIVED. — *The Bee-keepers' Manual*. By Henry Taylor. Revised by Alfred Watts. (Groombridge.)

THE BELGIAN NATIONAL HORTICULTURAL EXHIBITION.

AN Englishman rarely has wit enough to say the right thing at the right moment, and your reporter is no exception to the rule, else he would have made a neat reply to the greeting tendered him on arrival, "Eh bien, M. —, vous êtes toujours fidèle à la Belgique." A proper response would have been, "Mais oui, Monsieur, c'est parceque la Belgique est fidèle à soi-même." This present exhibition of horticultural products is an instance in point. The ruling idea is patriotic. It is Belgian—it is historical. There may be local jealousies and bitter rivalries, there may be warm differences of opinion as to political matters—there is but one feeling of patriotism. Belgian literature in all departments is tinged with it. Authors are fond not only of working in the present for the welfare of their country, but they are especially in the habit of recalling their ancient history and the deeds of their forefathers—and those forefathers in the departments of botany and horticulture truly made their mark, as witness de l'Obel (Lobelia), Dodoens (Dodonæa), de l'Escluse (Clusia), and many others. It is necessary to remember this when writing or reading of this present exhibition. It is one dedicated, not to all the glories of the country—which has too much of the jingo smack about it to please an Englishman—but to the progress of the country since the achievement of its political independence in 1830. And that progress in art, in literature, in science, and especially in industrial pursuits is something to be proud of. It is a little country, without doubt, but its sons are intelligent, active, and untiring. The exhibition proves it. The horticultural section alone must here receive attention. Like the rest of the exhibition, the historical idea pervades the whole of it. In 1830 where were all these Palms, these Cycads, these Agaves, these Tree Ferns? Not in Belgium surely. By whom was all this crowd of decorative plants introduced? The answer is suggested by the names of Van Houtte, of Verschaffelt, of Linden, and of very many more. Horticultural industry in Belgium is relatively more commercially important than it is even with us, hence the large share it takes in the present exhibition, hence the reason why it overflows its boundaries, and Palms and Aralias jostle one another amid sheaves of corn and agricultural implements. It does represent the importance of Belgium horticulture truly, but it does not do so as fully as it might do. Partly on account of the season, partly from other causes, many departments of gardening are unrepresented, and a good "Quinquennial" at Ghent has more of varied interest than the present.

The show occupies a portion of the general exhibition building and of the surrounding garden. The main area of the building allotted to horticulture is nearly square. At one end is a rockwork with a serpentine pool at the base, whose sloping banks are dotted with groups of Marantas and Begonias, and with fine specimen plants. At the summit is a coign of vantage whence one may survey the whole forest. For forest-like it is in its profusion of Palms, Ferns, Cycads, glorious Aroids, and such-like; forest-like is it in its somewhat sombre monotony of green and in the comparative absence of flowers (Bromeliads and Begonias specially excepted); forest-like is it in the relative absence of prominent hills or imposing masses. The *coup d'œil* is, in truth, too uniform both as regards colour and form, but it may be that before these notes see the light all this will be changed, for, as I write, the workmen are busy re-arranging the whole. As before stated, some portions of the horticultural exhibition have had to be crowded in amongst the agricultural sections, and there are also supplementary stoves, &c., in the grounds. The exhibition is therefore large; it is more, it is fine, and it is very interesting, but it lacks colour.

The first procedure on Tuesday was to elect an international jury to decide on the national products. Belgium has apparently no dirty linen to wash, and so she does not object to secure the services of outsiders. In fact, she seems to prefer them, for the President of the jury was a Russian (M. Regel), and the general secretary was an Englishman (Dr. Masters), and each section was presided over, or largely constituted by foreigners—Austrians, Germans, Portuguese, Italians, English—men of all European countries, and some besides—but all devotees of Flora—all desirous to pay homage to plucky little Belgium, while she, in her turn, pays the various nationalities the delicate compliment of requesting

them to be the assessors of Belgian perseverance and skill. The jury having been constituted in the constitutional, not to say democratic way usual at these gatherings—(a contrast to our more despotic way of ruling such matters)—the work began. For some of the sections it was easy, but for Section 1 it was not child's play. From noon till nearly six did those devoted members of Section 1 tramp backwards and forwards, forwards and backwards, east and west, or west and east. In Concours 586, for instance, there were five competitors whose collections were dispersed in five widely separated localities. Having inspected No. 1, poor Section 1 was marched off to No. 2, a quarter of a mile off. On the road they espied Collection No. 2015 which they knew fell to their share: a halt was accordingly made and a note taken. Perhaps another outlying interloper was espied and treated in the same way, and then M.M. de la Première Section at length stopped before Concours 586, No. 2. This done a search was made for Concours 586, No. 3—interlopers picked up on the way; and so with Nos. 4 and 5. Hence by the time all five lots of this class had been inspected, M.M. de la Première Section were considerably "mixed" in their ideas as to the relative merits of Nos. 1, 2, 3, 4, and 5, and it was necessary to go all over the ground again to refresh the memory of Section 1 as to the merits of the several exhibitors in Class 586, and so on, throughout the whole section, numbering between twenty and thirty classes. The fatigue, mental and bodily, the loss of time, the harassing doubt as to whether justice could be done under such circumstances, may well be imagined. Of course, while I am here, I feel myself more Belgian or cosmopolitan than English, and therefore it is not unbecoming for me to say that the English system of judging is far better, more accurate and certain, much quicker, and less laborious than the Continental plan. The large number of members of each section of the jury is a great disadvantage also. In consequence of the whole day being given up to judicial functions, it was not possible for your reporter to note all he should have liked to have done. Up to the time of writing, moreover, neither catalogue nor list of awards has been issued, and will not be until this letter is in type. He fears, therefore, that some injustice may unintentionally be rendered to some of our hospitable friends, but they will know the circumstances, and make allowances accordingly.

The first class, and the first lot, struck the keynote of the exhibition. It consisted of a collection of stove, or greenhouse plants introduced into Belgium since 1830 (the Liberation year) by the exhibitor or his "ascendants." M. Linden was the only exhibitor in this class, which was a pity, for great as M. Linden's achievements are, he has many worthy rivals; in any case he amply merited the 1st prize, which was awarded to him. M. Linden's collection comprised eighty-five examples, mostly small, and many of them familiar enough now. Marantas and Aroids, Bromeliads and Ferns—a remarkable group truly, and one which, in compliance with the historical nature of the exhibition, may be printed at length on another occasion—suffice it to mention as samples, *Eucharis amazonica*, *Pteris tricolor*, *Cocos Weddelliana*, *Dichorandra musica*, and last, not least, *Anthurium Andreanum*. By the way, it was pleasant and appropriate to meet among so many botanists and horticulturists men like Roetz and André, who have been so successful in gleaning materials for their *conférences* to work upon.

M. de Smet obtained a 2d prize for a smaller group of greenhouse plants of like historical interest. It was characterised especially by Agaves (absent from M. Linden's lot). The plants were small, but included such good things as *A. Victorie regine*, *A. utahensis*, *A. Besseriensis*, *A. hystris*, *A. Leopoldii*, *Yucca Desmetiana*, &c.

The sixth "concours," for a group of 100 species and varieties of greenhouse plants in or out of flower, gave the judges some trouble, for there were five competitors, whose lots were separated by considerable distances one from the other. M. Linden ultimately obtained the 1st place, Jacob-Makoy the 2d, M. A. Van Geert the 3d, and M. Van Houtte the 4th. In M. Van Geert's group was a curious plant, *Rubus flexuosus*, with fimbriate stipules and hastate angular leaves, with a milky-white blotch on the upper surface and covered with rusty down beneath. In M. Van Houtte's group was a plant of *Cardwellia sublimis*, in bloom—a plant not often seen in flower, but, as shown, not very effective. M. Jacob-Makoy showed, among other things, *Aralia amboinensis*, with large circular palmated leaves, the leaflets stalked obovate acuminate, dark, shining green—an effective and ornamental plant. Concours 7 and 8 were both well contested, comprising fifty and thirty specimen flowering plants respectively—by no means up to our specimen greenhouse plants, but interesting for their variety. The names of the exhibitors are unknown for the present.

NEW PLANTS.

In the group for twenty-five plants introduced since 877, M. Van Houtte was awarded a 1st prize, and

M. Jacob-Makoy a 2d. For twelve new plants introduced since 1878, M. Linden was 1st, while M. Van Geert and M. Jacob-Makoy also competed. Among M. Linden's plants were *Myodocarpus fraxinifolius*, an arborescent Umbellifer from New Caledonia, with dark-green Ash-like leaves; *Geissois racemosa*, also from New Caledonia—a remarkable plant with large palmate leaves, the segments of which are stalked, oblanceolate, serrate at the edge, and with large Magnolia-like intrapetiole stipules; *Colocasia neo-guineensis* with hastate leaves, green, sprinkled with white spots; *Amorphophallus Peyri*, from the Seychelles, an Aroid with stiff, cylindric, erect leaf-stalks, creamy-pink in colour, and marked with thin, close, longitudinal, blackish lines: the blade of the leaf is palmate, with narrow lanceolate-acuminate, entire dark green segments; *Pothos aurea*, a creeping plant, with fleshy cordate-ovate leaves blotched with yellow; *Dieffenbachia Leopoldii*, with deep green velvety leaves, traversed by a central white stripe; *Anthurium Andréanum* and others, not unknown at our own exhibitions.

For six new plants introduced by the exhibitor, and not yet in commerce, M. Linden was again 1st with *Dracena Lindenii*, a variety with lanceolate spreading leaves of a yellow colour, banded lengthwise with stripes of green; *Aralia gemma*, a remarkable and pretty Araliad from New Caledonia, having the brownish purple-spotted stem of so many of its allies, and the pinnately-lobed leaves cut up into unequal lobes, segments, and teeth, in a manner not easy to describe, but the effect produced is that of coarse lace; *Aralia regina*, with palmate leaves, cut into long linear drooping segments, of a dark olive-green colour; *Caraguata cardinalis*, a Bromeliad, with yellowish-green outer, and orange-scarlet inner, leaves; *Aspidium Germinii*, with crested pinnæ; and *Massangea Lindenii*.

M. Jacob-Makoy was 2d in this class with *Culcasia Wallisii*; a plant named *Eugenia* (?) *Glaziouana*, with pretty weeping habit and dense foliage of small dark green ovate-acute leaves. The other plants in this competition shown by M. Jacob-Makoy and M. de Smet were pretty familiar to English eyes. M. Linden was fortunate also in securing the 1st prize for six new Palms not in commerce, consisting chiefly of so-called species of *Kentia*, *K. triangularis*, *glauca*, *Wouweri*, *Calamus* sp., &c. For three new foliage plants there were five competitors. M. Dallièr secured the victory with *Erythrina marmorata*, *Aralia spectabilis*, and a Maranta. M. Linden came in 2d with *Cespedeza Bonplandii*, a handsome Theophrasta-like plant; *Aralia spectabilis*, and *Dracena neo-caledonica*, a large green-leaved form. In the class for one new plant in flower *Chaenostoma hispida* was shown; it is a neat growing plant, with small dense ovate toothed leaves, and small white flowers, which if well cultivated would make a pretty greenhouse plant, but it stood no chance against M. Linden's *Anthurium Andréanum*. For one new fine-foliage plant M. Dallièr was 1st with *Alocasia Thibautiana*, and M. Linden 2d with the *Geissois* before-mentioned. Another exhibitor showed a remarkable South African Composite (?), with shrubby habit, thick ovate leaves, densely covered on both sides with hoary down. In the class for one new Palm M. A. Van Geert showed *Calyptrotrichia Swartzii*; M. van der Meersch-Mertens a fine specimen *Phoenix* sp., of very striking appearance; and M. Linden, *Kentia robusta*. In the competition for a single new Cycad, two fine plants were shown—a noble specimen of *Encephalartos Friderici* *Guilielmi*, with its curiously conduplicate glaucous leaves; and the elegant *Cycas media*, which won the 2d prize for M. van der Wouwer, the *Encephalartos* being placed 1st, to the account of M. A. Van Geert. The class for one Croton produced an equal vote on the part of the jurors, which was ultimately converted by the casting vote of the President into an award to M. Linden for *Croton Bergmanni*, a large obovate-leaved variety with bright yellow variegation, as contrasted with *C. Williamsi*, which, in the judgment of your reporter, was the better plant of the two. For one herbaceous Fern M. Jacob-Makoy was 1st with a *Marattia* Moorei, a species with purple stems and gracefully curved much lobed fronds, with rather broad toothed segments; and M. Linden 2d, with *Adiantum celebense*, a species with lanceolate pinnules. The 1st prize for one Tree Fern was awarded for *Cibotium Moorei*, a fine Fern with blackish-grey, shaggy scales on the rachis. The 2d prize was allotted for *Alsophila paraguayensis*. For one new Aroid M. Van Houtte obtained the first award with *Anthurium Warocqueanum* in competition with *Pothos aurea* previously mentioned, *Xanthosoma picturatum* and *Anthurium Veitchii*, the latter shown by M. d'Haene. The prize for a single Bromeliad was awarded to a seedling variety raised by M. Morren between *Vriesia psittacina* and *V. psittacina* var. *brachystachys*, the result being a cross differing from either of the parents. For a single Orchid the prize went to M. Massange, of Louvrex, for the beautiful *Cypripedium Haynaldianum*, recently described in our columns. For a single

Conifer the 1st prize went to M. A. Van Geert, for a fine *Araucaria* from Norfolk Island; the 2d to M. Jacob-Makoy for a variety of *Cryptomeria japonica* called *C. Carné*, but apparently not distinct enough to warrant a separate name.

DECORATIVE PLANTS.

Under this head were shown some very fine collections of Palms, Aroids, Cycads, Araliads, Begonias, Marantas, &c.

M. Albert van der Wouwer, of Antwerp, had a truly magnificent lot of forty Palms, Cycads, Tree Ferns, and plants of that character. In his collection was a superb *Areca Baueri*, an equally fine *Scaevola robusta*, a noble *Encephalartos Friderici* *Guilielmi*, &c. M. Van Houtte had a similar but on the whole less fine collection. M. Linden also showed well in this class, his *Artocarpus imperialis* coming out in grand contrast with the other plants. In the competition for thirty stove foliage plants, variegated or coloured, M. Linden showed a good collection of *Dieffenbachias*, *Alocasias*, *Marantas*, *Dracenas*, *Curculigos*, &c. M. Van Houtte showed also a fine collection of similar plants, with *Cyanophyllum magnificum*, *Anthurium crystallinum*, &c. The same exhibitor showed a good group of *Dracenas*, having for competitors MM. Dallièr and Auguste Van Geert. M. Van Houtte's collection of *Dieffenbachias* was also noteworthy.

Begonias, both the fine-foliage and the tuberous varieties, were well shown by various exhibitors. Without them the show would have lost much of what little colour it possessed. The colouring of the foliage varieties was often very effective in the foreground of the groups on the banks surrounding the central pool and in other prominent positions. *Souvenir de Lede* (milky), *Roi Fernando* (milky on an olive ground) may be cited among the most striking. Among the tuberous section there were some very good doubles, large in size and bright in colour. Gasson Malet, a new seedling of a rose-magenta colour, and Princess Stephanie, a double with pinkish-white flowers, may be picked out for special note, but by whom they were exhibited this deponent saith not.

The collections illustrative of natural orders or genera are often very striking at these exhibitions. It was so on this occasion, especially with Aroids, Palms, Cycads, Araliads, and Rhopalas among foliage plants, and Bromeliads among flowering plants. A group of Aroids (No. 234), in the centre of the building, was one of the most remarkable collections in the whole exhibition. M. Linden's Palms, thirty-five in a collection, deserve fuller notice than it is possible to give them, as also did the noble Cycads of M. Ghellinck de Walle. The group of Araliads shown by M. d'Haene, from its novelty, merits longer notice. A group of this character illustrative of the various species and varieties now in cultivation would do much to break the monotony of some of our shows at home. The collection of Rhopalas shown by M. Dallièr was also of a very ornamental and novel character. The groups of Bromeliads, both in foliage and flower, were novel and remarkable. M. Dallièr and others showed collections of these plants, which to an Englishman's unaccustomed eyes were among the most interesting, as they certainly were among the most brilliant of the exhibits. A group of some half-dozen species of *Platycerium* may also be noted as one of the most noteworthy features. It included fair-sized examples of *alcicorne*, *grande*, *Hilli*, *Willinkii*, &c.

Two or three good collections of Cacti and other succulents were shown in one of the outlying houses, but the period at which it is necessary to write these notes precludes mention of the exhibitors' names or those of their plants. It may be incidentally mentioned that one of the most effective bits of picturesque grouping was managed by massing a number of columnar Cacti or Euphorbias on the banks of the ornamental water on the exterior of the building. Some of these miscellaneous matters must be left till another occasion; meanwhile this present instalment may be fitly terminated with some notice of the

ORCHIDS.

Doubtless owing to the hot sun, and the duration of the exhibition, Orchids were not shown in very great numbers. Mr. Dieudonné Massange, of Louvrex, showed in the competition for twenty-five. Among his plants was a fine variety of *Cattleya Mossiae*, with an unusually richly coloured lip; C. Mendeli, C. superba, another C. Mossiae, with over thirty flowers; C. Warneri, with twenty-seven flowers; C. Schilleriana; *Colax viridis*, a new species with green sepals, smaller oblong petals, purple spotted, and a small violet-coloured lip; *Cypripedium barbatum*, *Anguloa Clowesii*, *Vanda tricolor* var. *planilabris*, the rare *Renanthera matutina*, with very narrow orange-brown segments; *Thunia Dodgsoni*; and a good variety of *Odontoglossum caudatum*, O. Alexandræ with two spikes. For a specimen Orchid, *Anguloa Clowesii*, with twenty flowers, was shown. No. 298 showed, in a collection of twenty-five including *Cattleya Eldorado splendens*, a good variety of *Epidendrum*

prismatocarpum, *Cypripedium Stonei*, *Bollea coelestis*, and others. Another exhibitor—No. 300—showed a very bright-flowered form of *Phalenopsis Luddemanna*. In yet another collection were *Vanda suavis* and *tricolor*, *Cypripedium purpuratum*, *C. villosum*, *barbatum*, *superbum*, and others. M. Demoulin showed a fine tub of *Sobralia macrantha*.

Among M. Linden's collection of Orchids was a fine specimen of *Vanda Lowii*, perhaps the most remarkable Orchid in the exhibition; *Vanda suavis*, *Oncidium macranthum*, *Anguloa Clowesii*, *Cypripedium superbiens*, *Thunia alba*, *Disa grandiflora* with six flowers, *Anguloa Ruckeri*, &c.

Reports of Societies.

National Rose Society's Exhibition at Manchester.—The annual exhibition in connection with the National Rose Society was held on Saturday at the Botanical Gardens, Old Trafford, Manchester, and was visited by a large number of persons. The exhibits were staged in the great exhibition-house, the dark foliage in which served to set out in a very striking manner the rich hues of the Roses. Some apprehension had been felt by the committee of the Society lest the exhibition should, in consequence of the recent stormy weather, prove an inferior one, but though this cause did undoubtedly affect the show, fortunately it did not do so to any very great extent. The local exhibitors appeared to be the chief sufferers from the tempestuous weather which has recently prevailed, and consequently do not appear in a relatively good position in the prize list. It was a matter of general observation that though the number of exhibits had been diminished, still the condition of the Roses shown did not appear to have been materially impaired. The amateurs' blooms were, if anything, a little in advance of those exhibited by nurserymen. The special prize given for the best seedling Rose was secured by an amateur, the Rev. E. N. Pochin, of Barkley Vicarage, Leicester, with his *Mary Pochin*. Among the most noticeable exhibits were the Countess of Rosebery and the Harrison Weir, both of which were shown by Mr. G. P. Hawtrev, of Slough. The raising of new varieties seems to be on the increase in England, and though it can scarcely be said with accuracy that English cultivators succeed in obtaining the manifold beauties which mark the specimens raised by French growers residing in the neighbourhood of Paris or Lyons, still in some material points the English product is the superior, the moisture of our climate appearing to be more favourable to hardy development than the warmer climate of France. This is shown by their power to survive colder weather than the French seedlings. A feature of the show which could not escape the observation of visitors was the predominance of the red or Yorkshire Rose, and the great dearth of the badge of the county palatine—the white Rose. The show would have been all the more attractive if there had been a larger admixture of the pearly white Rose. We only noticed one solitary example of the pure white, *Boule de Neige*, which is appropriately named, since when cultivated in the open air its flowers, which are almost spherical, are of such a rare whiteness as to deserve comparison with a snowball. A considerable number of dilute primrose-coloured Roses were shown, and there was also on view a box of *Niphetos*, which has not inaptly borrowed a name signifying literally a snow-storm. Another old favourite which was wanting was the combination of the red and white Rose. Perhaps in future years the exhibition may be made more comprehensive in this respect. The competition on Saturday in nearly all the classes was exceedingly close. Messrs. Cranston & Co., of Hereford, secured the 1st prize for seventy-two, distinct, single trusses, and also for twenty-four, distinct, three trusses of each. Messrs. Paul & Son, Cheshunt, obtained 1st prize for forty-eight, distinct, three trusses of each. The award in the class open exclusively to local nurserymen, showing eighteen, distinct, single trusses, was given to Mr. William Yates, Heaton Norris. Mr. Hawtrev, of Slough, was also a successful exhibitor, and was awarded two 1st prizes. In the two classes for dark and light hybrids, Mr. T. Jowitt, of Hereford, carried off both of the 1st awards, Messrs. Cranston & Co. occupying the 2d place in each class. The only supplementary exhibit was a box of Persian *Ranunculi*, shown by Mr. Samuel Barlow, of Chadderton. The box contained beautiful varieties of this flower, which is not appreciated in this neighbourhood to the extent it deserves to be.

The following is a list of the awards:—Seventy-two, distinct, single trusses: 1st, Cranston Nursery and Seed Co., Hereford; 2d, Messrs. Paul & Son, Cheshunt; 3d, G. Davison & Co., Hereford; 4th, Mr. W. Rumsey, Waltham Cross. Forty-eight, distinct, three trusses of each.—1st, Messrs. Paul & Son; 2d, Cranston Nursery Co.; 3d, Messrs. Davison & Co. Twenty-four, distinct, three trusses of each.—1st, Cranston Nursery Co.; 2d, Messrs. Paul & Son; 3d, Messrs. Davison & Co. Twenty-four, distinct, single trusses.—1st, Mr. T. Griffiths, Hereford; 2d, Messrs. G. Bunyard & Co., Maidstone; 3d, Mr. H. Frettingham, Nottingham. Eighteen, distinct, single trusses (open to local nurserymen only).—Mr. William Yates, Heaton Norris. Tens or Noisettes, distinct, single trusses.—1st, Cranston Nursery Co.; 2d, Mr. G. Prince, Oxford; 3d, Messrs. Paul & Son. Thirty-six, distinct, single trusses.—1st, Mr. T. Jowitt, Hereford; 2d, Mr. G. P. Hawtrev, Slough. Twenty-four, distinct, single trusses.—1st, Mr. A. G. Soames, Bourne; 2d, Mr. T. Jowitt; 3d, Mr. G. P. Hawtrev; 4th, Mr. T. B. Hall, Rock Ferry. Twelve, distinct, single trusses.—1st, J. H. Pemberton, Esq.; 2d, Mr. E. R. Whitwell, Darling-

ton; 3d, Mr. William Stubbs, Nantwich. Six, distinct, single trusses.—1st, Rev. A. Cheales, Surrey; 2d, Mr. E. Mawley, Addiscombe; 3d, Mr. William Stubbs. Six, distinct, single trusses, of district grown Roses.—1st, Mr. James Brown, Heaton Mersey; 2d, Mr. William Brockbank, Didsbury; 3d, Mr. J. Davenport; jun., Altrincham. Twelve Teas or Noisettes, distinct, single trusses.—1st, Mr. G. P. Hawtreay; 2d, Mr. A. G. Soames. Six Teas or Noisettes, distinct, single trusses.—1st, J. H. Pemberton, Esq.; 2d, Mr. T. Jowitt. Six new Roses, distinct, single trusses (not in commerce previous to 1877).—Mr. G. P. Hawtreay. Twelve new Roses, distinct, single trusses (not in commerce before 1877).—1st, Messrs. Paul & Son; 2d, Cranston Nursery Co.; 3d, Messrs. Davison & Co. Twelve single trusses of any Hybrid Perpetual, dark.—1st, Mr. T. Jowitt; 2d, Cranston Nursery Co.; 3d, Mr. G. Prince. Twelve single trusses of any Hybrid Perpetual, light.—1st, Mr. T. Jowitt; 2d, Cranston Nursery Co.; 3d, Messrs. Davison & Co. Twelve single trusses of any Tea or Noisette.—1st, Cranston Nursery Co.; 2d, Mr. G. Prince. Twelve single trusses of any yellow Rose.—Mr. G. Prince. Best seedling Rose.—Rev. E. N. Pochin, Leicester. *Manchester Guardian*.

Woodbridge Horticultural.—This Society held its annual *fête* on July 15 in the Abbey grounds, under very favourable auspices as regards the weather, the day throughout being fine, with plenty of sunshine to entice visitors, who came in great numbers, and appeared highly pleased with the splendid productions spread out before them. It must be very gratifying to the committee and the indefatigable secretary, who has now laboured for twenty-five years for the Society, to see what the nursing has grown to, and to feel that they have contributed so much in their town and neighbourhood for the advancement of horticulture, and to have had so large a share in imbuing many of the public with such pure taste, and affording them so great an amount of enjoyment. That his and their efforts are appreciated is shown by the esteem in which they are held, and the liberal patronage bestowed on the show, as not only do all around flock to see it, but many of the nobility and gentry in the neighbourhood give special prizes, which are always competed for in a very spirited manner. These "specials" are a great attraction, which no one knows better than Mr. Whistock—who does not leave a stone unturned in getting as many as he can. Besides all this he has managed to allure some of the principal London nurserymen down by his persuasive art, and has got them to contribute; and these productions of theirs being particularly choice and valuable, give the exhibition an *éclat* that, without them, it would not possess. The groups sent by Messrs. Veitch, of Chelsea, and Osborn, of Fulham, were alike remarkable, not only for the great taste displayed in their arrangement, but for the many beautiful things they contained, that of the first-named firm having fine bits of *Odontoglossum Alexandræ*, *O. vexillarium*, *Disa grandiflora*, *Masdevallia Harryana*, and other Orchids; *Croton Princess of Wales*, *C. Mortii*, *C. Challenger*, and *C. Lord Derby*, all of which are very striking and rich in colour. *Tillandsia tessellata* and *T. Zahnii* attracted much notice, as did also the several *Dracenas*, conspicuous among which were *D. Chelsoni*, *D. Goldieana*, *D. Bausei*, and others of the new broad-leaved types. These and Palms of various kinds, with *Sarracénias*, *Bertolonias*, *Sonerilas*, and insectivorous plants, formed a most interesting and valuable collection. That from Messrs. Osborn, of Fulham, was equally noteworthy, and contained many things of rare merit. Had it not been for these exhibits the show would have been weak in this class, as, excepting the contributions from the Messrs. Gilbert, of Ipswich, who carried off the principal prizes, stove and greenhouse plants were but poorly represented. The groups, however, limited to small sized pots, formed quite a feature, and the effect would have been much more telling could they have been afforded sufficient room, but as space was limited they had to be somewhat crowded to get the several lots in. This new departure, in bringing out the infants as well as those of such elephantine proportions, is a step in the right direction and worth encouraging, as it introduces more variety and shows at a glance what is most useful for general decorative purposes, if a little taste is displayed in putting them together. The 1st prize for the best was deservedly awarded to Mr. Benham, the 2d to Mr. Mill, gr. to Lord Rendlesham, and the 3d to the Messrs. Gilbert. For the best specimen Orchid, Mr. Mill was 1st for a fine well bloomed plant of *Phaius albus*, and 1st for four, the most telling among which was the grand looking *Oncidium macranthum*. The same gentleman showed a fine lot of Ferns, having amongst them a splendid specimen of *Davallia Mooreana*, which is one of the most telling for exhibition when it gets to a large size. Roses were good, as they always are from Mr. B. R. Cant, who took the 1st prize for twenty-four; Mr. F. Cant, of Colchester, coming in 2d. In the amateurs' class for twelve, the Rev. H. A. Berners carried off the special prize offered by Sir R. Wallace; and in the smaller classes there were also some very meritorious flowers, especially in that for six Marie Baumann, which brought out a fine lot from Mr. B. R. Cant. Next to Roses, cut blooms of Zonal *Pelargoniums* made the greatest display, and in looking at these one cannot help noticing the remarkable improvement that has been made in them of late years, which has placed them in the foremost rank for the embellishment of greenhouses during the summer. The show of herbaceous cut flowers, too, ought to commend them for general cultivation, for assuredly there is nothing so useful for borders in the foreground of shrubs. Take the *Delphiniums*, the *Galega persica* and *alba*, *Alströmarias* and *Irises*, like those shown in Messrs. Gilbert's stand, which took 1st, and what can be finer? And

then, again, there are the *Pyrethrums*, just over, and many others yet to come on. The table decorations in the fruit tent were got up with great taste, those made up of wild flowers almost rivaling those of exotics.

In the fruit department Mr. Mill, gr. to Lord Rendlesham, outdistanced competition, especially in Grapes, he having magnificent bunches of Black Hamburgh, weighing at least 4 lb. each. Mr. Fisher, gr. to Lord Waveney, and Mr. D. Irving, gr. to the Duke of Hamilton, also showed well in this class. In that for the heaviest two black and two white Mr. Mill was again 1st, as also for Muscats, and again for the collection, in which were splendid Grapes, Peaches, and Nectarines, a Melon, Figs, British Queen Strawberries, and Cherries. Mr. Fisher was a good 2d with a very meritorious lot, and Mr. Irving 3d.

Vegetables were, as usual at this show, most excellent, and among Peas Telephone took the lead, it being a long way better than Telegraph, with which it was at one time said to be identical. Instead of this, however, it is not only different in the colour of the pod, but the Peas are of a much paler green and far more delicate in flavour, Telephone being tough and corny, whereas Telephone is tender, sweet, and delicious. From general appearance it would seem to have originated from Dr. Maclean, as it looks like an enlarged form of that most excellent variety, but whether this be so or not it is a grand Pea, and one that is likely to be in great favour for a long time to come. Unlike others that were sent out some years back the pod is no wind-bag, but is full, and will therefore yield satisfactory results in the shelling. *J. S.*

Natural History.

ONION-FLY.—The Onion-fly has lately begun to show itself to such an extent in some localities that a few suggestions as to treatment may possibly be acceptable to those whose Onions are suffering as badly as those in my own garden.

Here the attack began about a month ago; the tops of a large proportion turned yellow, and on inspection there were from one to eight of these white legless maggots in possession of the bulbs, which, of course, gradually putridified and died.

I did not find that any application killed the mag-

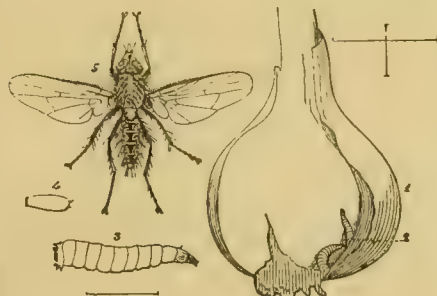


FIG. 29.—THE ONION-FLY.

gots, and also it appeared to me that the maggots strayed about from one bulb to another much more than they are usually supposed to do, but in the matter of stopping the second attack I think I am having some success.

These maggots, as known to all who watch them, feed till they are full-grown in the bulb, then leave it, and change to little oval red-brown pupæ (or fly-cases), which may be found lying round the remains of the Onion in the earth; and shortly from these fly-cases there come up small grey two-winged flies. These flies may be seen on the surface of the Onion bed, and unless they are very carefully looked after (and, too often, even if they are) they will lay eggs, and begin a new attack on the remains of the bed of Onions which escaped the attack of their parents. To stop this, not having wood-ashes at hand, I have tried sifting a good coat of soot through the bottom of a fairly open Willow-twig basket over the bed. The application is thus rapidly and effectually made, and, as far as I see, drives away the flies. I am also trying covering some of the bulbs with a mixture of about half dry earth and half soot; and now each morning—or two succeeding mornings, and then waiting awhile—am watering them (as the soot washes down, and ceases to be a weak defence) with a very weak application of the fluid sold as Soluble Phenyle. I mix about a common wineglassful of this in two and a half gallons of water, and give it overhead through the rose of a watering-can, giving usually—though I do not see that it is necessary—a second application of cold water, lest the chemical in the fluid should

burn the leaves. The plants will bear the application, as far as their roots and general health is concerned, certainly six times stronger, but when this stronger mixture was given twice a-day some failed. Given as above, as a watering, it appears to be acting excellently. I do not see any Onion-flies frequenting the bed, and the plants under treatment are deep green and vigorous, excepting the remaining sufferers from the first attack. Where it can be done, the infested bulbs, with the contained maggots, should be removed carefully and burnt; they should not be drawn, but taken up with a spud, or something that will get the decayed mass and its contents up together. Simply drawing, as I have seen it practised, does little good; the decayed top of the bulb comes away, with the dead leaves which it is drawn off by, but the lower part, and generally all the grubs, remain, either to travel through the ground where they choose, or, if advanced enough, to turn into pupæ as healthy as if nothing had been done.

I believe that with the remedies above mentioned, the peculiar smell of the tar-like fluid and of the soot, is a help as a deterrent. In the case of nitrate of soda, which is sometimes recommended, I have recently experimented by putting a number of Onion-grubs just taken from the bulbs into a solution of two teaspoonfuls of the crystals in a half-pint of water. These grubs remained in it for rather more than six hours, and after being removed and left awhile to recover, the larger part turned out quite uninjured by the application, and the remainder had more the appearance of having been hurt in removing them from the glass than simply of being poisoned.

Possibly some better informed Onion growers will say whether I am right in my conjecture, but my impression is that the extraordinary amount of attack in my own garden is owing to the same (or a nearly adjacent) plot of ground being used two years running as an Onion bed, and also that for various reasons guano, rather than the regular manures known to be desirable, was applied. *O.*

OVER, AROUND, AND UNDER THE GANNET CITY.—A friend and I arrived at North Berwick from Edinburgh on July 13, for the purpose of visiting the celebrated Bass Rock. On the following morning we went over to Canty Bay, 3 miles east of North Berwick, and whence boats may be had to the Bass, distant about 2 miles.

As a fresh breeze was blowing dead ahead and a considerable sea on, the boatmen told us landing would be a matter of some difficulty, even if we could land at all; however, after waiting some considerable time we decided to make the attempt. Two hours' sailing against wind and tide (during which we were fairly drenched with spray) brought us under the lee of the Bass, and we drifted gently towards the landing-place on the southern side; the tide by this time was running up strongly, and we were met by such a swirl of angry surf from the east as to render landing impossible, we therefore reluctantly stood in for shore. The next day was equally unfavourable, but the third proved all we could desire.

Our host of the "Canty Bay Inn" having provided us with some luncheon to take with us, as well as a bottle of fine old whisky in case of accidents, we started about eleven o'clock. Half an hour's pull brought us to the landing-place—about half a dozen steps cut out of the rock and close to the ruins of the old fort and prison, on the ledges of which stood rows of the "sentries of the Bass," or puffins; their white breasts, bright red parrot-shaped bills, and legs of the same colour, were brought into fine relief by the sombre colour of these time-stained ruins.

Our road (if such it can be called) lay for some distance over the sharp-pointed trap of which the rock is formed, until we reached the steps leading to the door of the prison ruins. The sentry's walk, battlements, and dungeons can still be seen, as well as a dwelling-house of two rooms, each about 30 feet by 16. At the end of the one, which has recently been tiled over, is a large fireplace, extending the whole width of the room; here are still hanging on the walls the faded decorations used on the occasion of the visit of H.R.H. the Duke of Connaught in 1877. The date at which these buildings were erected is not accurately known, but it must have been anterior to 1405, in which year James I. fled here for a short time from his uncle, the Duke of Albany. The dungeon is above 36 feet by 18; it has a low arched roof,

a little light and air being admitted by holes through the thick walls, so arranged that the unfortunate prisoners could obtain no glimpse of land. It was chiefly used during the religious persecutions in Scotland as a prison for the Covenanters, whose sufferings in this lonely and loathsome dungeon must have been horrible.

On the next terrace, which is reached by a moderate ascent, stand the four walls and gable ends of the chapel, supposed to have been built long before the prison and fort; inside, on the right of the doorway, is the stone for the holy water, and at the eastern end another stone of a similar description.

From this point we took a turn to the west, to make our first close acquaintance with the gannet, or solan goose. Having reached the edge of the cliff, we saw only a few yards from us thousands of these most lovely birds sitting or standing on the innumerable ledges of the cliff, many with their solitary young one beside them, some of which were downless and looking like black toads; others, more advanced, were covered with the most beautiful soft pure white down.

We now moved farther upwards and to the east, the travelling being somewhat rough owing to the surface of the black soil which covers the rock in some places being perfectly honeycombed by the geese for the roots of grass for building their nests; then we descended rather abruptly to a terrace on the face of the eastern or larger cliff. Here we were amongst the geese! Thousands packed on the face of the cliff, thousands on the wing below us creating quite a giddy sensation by so much dazzling whiteness in perpetual motion; other thousands 300 feet below us, looking like patches of snow on the blue waters of the glassy sea. This was indeed a sight to be long remembered, one of which no adequate description can be given.

A hard scramble (sometimes on all fours) up the face of the grassy slope brought us to the summit, on which is a cairn supporting a flagstaff. Here we were glad to have half an hour's rest and a pipe, as well as to enjoy the lovely views of the highly cultivated district of East Lothian, the Firth of Forth, the Fife coast, the Isle of May, and the ruins of Tantallon Castle. The most important event on our return journey was luncheon and the old whisky, which we enjoyed near the chapel ruins; after which we descended to the boat by a different route, very much like the roof a house, down which it was necessary to make use of all the hands and feet we possessed, and sometimes one extra.

Safely on board our boat again we started for a pull round the Bass, the tide running strong at the eastern end we had to stick tightly to the oars for a short distance. Here is the eastern entrance to the cavern which runs underneath the rock to the western side; we could not enter here on account of the surf. Further on we came underneath the overhanging cliff rising sheer from the sea for more than 300 feet: the sight was truly grand; only from a small boat close under these cliffs can the sublime grandeur of this mighty rock be thoroughly felt or appreciated.

By making various unearthly noises, in doing which my friend was exceedingly successful, we succeeded in frightening thousands of geese and other birds from their resting-places, making quite a cloud above us.

Arriving at the western side we came to that entrance of the cavern: here the water was perfectly smooth, so we poled our boat some 200 feet inside where she grounded; from this point we could see the light on the other side, the remainder of the distance must be travelled on foot but having no torches with us we had to give up. The entrance to this cavern is about 130 feet in height rapidly diminishing to about 30 feet, and about 14 to 15 feet wide. The beautifully clear water, in which were scores of jelly-fish of many colours; the beautiful seaweed growing on the boulders at the bottom, and the perfect stillness, were very charming.

Our tour of the rock finished we sailed ashore, where, thanks to our thoughtful hostess, dinner was waiting, and after eight hours climbing and sailing we found it very acceptable. After a short rest we lighted our pipes and had a lovely walk home to our comfortable quarters in the Royal Hotel, North Berwick; thus winding up one of the most interesting and enjoyable days I have ever spent.

A few particulars on the habits of the solan goose may be interesting, I will therefore give them as detailed to me by Mr. Downie, the lessee of the rock and inn at Canty Bay.

Some authorities suppose the solan goose to belong to the northern hemisphere only; this is an error, as it is found in large quantities between Cape Aquillas and Port Natal. It begins to arrive on the Bass in the month of March, and further detachments continue to arrive until June. It never hatches more than one young; it is supposed to sit on the egg like other birds, placing the foot on it only when in danger of being disturbed. Mr. Downie assures me that having watched them for hours he is satisfied that during the whole period of incubation they have always one foot on the egg, changing the position of the feet about every twenty minutes. In this opinion he is confirmed by many old men who have had long experience on the Bass. The nest is composed of the roots of grass, seaweed, &c., is about 30 inches in diameter at the base, about 5 or 6 inches high, and 18 inches diameter at the top inside. The egg is 3 inches long by 2 in diameter; the colour of the shell proper is a pale blue, this is covered by a coating of lime deposited on it by the bird before laying, giving them a dull white appearance. The period of incubation is from five to six weeks. The young when first hatched is without down and of a bluish-black; it is fed in its early days with fish in a pulpy state, which is gradually made less pulpy by the parent until it can take fish *au naturel*, when it is disgorged by the side of the nest, and the young one helps itself. After two or three days the down makes its appearance and continues to grow until the young bird at five or six weeks old becomes a mass of beautiful snow-white down. The first feathers are dark-brown, with small white specks, which colour is retained until the first moulting, they then become gradually lighter until the bird is five years old, when it assumes its proper plumage, which is pure white, except the black points to the wings, and a most lovely brownish-lemon colour on the top of the head and upper part of the back of the neck. It has a most lovely greyish-blue eye, surrounded by a bluish-black disc, the average size birds measuring 6 feet from tip to tip. The young being sufficiently advanced, the birds leave the rock during the months of September and October, to "follow the fish," and duly reappear when the breeding period returns.

The eggs and young birds form one of the principal sources of revenue, to take which experienced and daring men are employed, in some places on the very edge and face of the cliffs. They step about with apparent ease, but the procedure cannot be looked upon by the novice without a shudder. At the great takings the men are lowered down the cliffs by two ropes, one of which is made fast to a safe piece of rock and used as a hand-rope; the other is fastened round the body, and is held on the top by one or more trusty mates. The hand-rope is also used for signalling when the collector cannot make himself heard to those above.

Over 2500 eggs of various kinds (chiefly of the solan geese) have been collected and sold this year. A thousand young birds will be taken for roasting, the oil from which is carefully preserved and sold for lubricating purposes, and the cooked bodies sold in the neighbouring towns and villages for eating. Many excursionists also come to "Canty Bay Inn" for a "guse and a gill," to pick and enjoy on the grassy slopes which surround this lovely bay.

I cannot conclude without tendering to Mr. Downie, the new proprietor of the "Canty Bay Inn," the best thanks of myself and friend for his extreme kindness in guiding us over, round, and under the Gannet City; and I can assure all who may visit this most interesting place that they will find good accommodation and every attention to their wants cheerfully rendered to by him and his obliging wife. A word for the veteran "Old John," now eighty-five years of age, and his two mates, who carefully, skilfully, and cheerfully attended us. X.

EREMURUS ROBUSTUS. — Dr. Asa Gray communicates the following note to Coulter's *Botanical Gazette*: — "Eremurus robustus, that stately plant of Turkestan, which is now displaying its raceme of half a yard in length in the Cambridge Botanic Garden, exhibits strong proterandry correlated with a movement of the style analogous to that of *Sabbatia*. When the flower opens the slender style becomes at once strongly deflexed; on the second or third day, when the stigma becomes receptive and the anthers effete, the style straightens and brings itself nearly into the line of the axis of the flower."

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, JULY 21, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.				HYGROMETRIC DEVIATIONS FROM GLASHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 60 Years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 Years.	Dew Point.	Degrees of Humidity Sat. 100.	
July	In.	In.	°	°	°	°	°	°		In.
15	29.81	-0.01	72.2	56.0	16.2	62.5	-0.2	57.9	85	WSW 0.05
16	29.89	+0.08	75.7	54.1	21.6	63.5	+0.8	59.5	87	E.S.E. 0.00
17	29.81	+0.01	77.0	54.0	23.0	62.8	+0.1	58.6	88	N.E. 0.00
18	29.81	+0.01	75.0	56.0	19.0	63.0	+0.2	53.8	72	WSW 0.05
19	29.85	+0.05	74.0	53.0	21.0	62.2	-0.1	51.8	69	WSW 0.04
20	29.93	+0.14	76.5	52.1	24.4	62.0	-0.4	51.8	70	WNW 0.00
21	29.89	+0.10	77.5	52.5	25.0	63.8	+1.5	56.1	77	WNW 0.14
Mean	29.86	+0.05	75.4	54.0	21.4	62.8	+0.2	55.6	78	W. sum 0.28

July 15.—Fine, but dull and very cloudy. Rain in morning. Thunder at 9 A.M. Lightning at night.
— 16.—A fine day. Cloudy. Rather dull at times. Distant thunder at 6 P.M. Lightning at night.
— 17.—A dull morning, fine afterwards. Distant thunder in evening. Lightning at night. Close. Oppressive.
— 18.—A fine day, cloudy at times. Thunder at noon. Showers at 10.30 and 2 P.M. Warm.
— 19.—A fine day, partially cloudy. Windy. Little rain in early morning, and shower at 8 P.M.
— 20.—A fine bright warm day. Partially cloudy. Clear at midnight.
— 21.—Generally fine and warm, very cloudy and dull at times. A little hail fell at 11.30 A.M., and heavy rain fell between 3 and 4 A.M. Distant thunder in afternoon. Fine at night.

LONDON: *Barometer*.—During the week ending Saturday, July 17, in the vicinity of the metropolis the reading of the barometer at the level of the sea increased from 29.99 inches at the beginning of the week to 30.18 inches by the morning of the 12th, decreased to 29.95 inches by the morning of the 15th, increased to 30.09 inches by the morning of the 16th, and decreased to 29.95 inches by the end of the week. The mean reading for the week at sea level was 30.08 inches, being 0.19 inch above that of the preceding week, and 0.08 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 77° both on the 14th and 17th to 71° on the 12th; the mean value for the week was 74°. The lowest temperatures of the air observed by night varied from 51½° on the 13th to 56° on the 15th; the mean for the week was 53½°. The mean daily range of temperature in the week was 20½°, the greatest range in the day being 24½°, on the 14th, and the least 16½°, on the 15th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—11th, 59°·3, -3°; 12th, 60°·5, -1°·9; 13th, 59°·8, -2°·7; 14th, 61°·9, -0°·7; 15th, 62°·5, -0°·2; 16th, 63°·5, +0°·8; 17th, 62°·8, +0°·1. The mean temperature of the air for the week was 61°·5, being 1°·1 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 151° on the 14th, 149½° on the 13th, 148½° on the 11th, and 141° on the 12th; on the remaining days of the week the highest readings were between 115° and 125°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 47° on the 14th and 47½° on the 11th; the mean of the seven lowest readings was 49½°.

Wind.—The direction of the wind was S.W. and N.E., and its strength strong at times.

The weather during the week was fine, partially cloudy, and occasionally showery.

Thunder and lightning was frequent throughout the week.

Rain fell on three days during the week; the amount measured was 0.32 inch.

ENGLAND: *Temperature*.—During the week ending Saturday, July 17, the highest temperatures of the air observed by day were above 77° at Truro, Brighton, London, Norwich, and Nottingham, and below 68° at Sheffield and Hull; the mean value from all stations was 74½°. The lowest temperatures of the air observed by night were below 48° at Truro, Plymouth, Leicester, Wolverhampton, and Nottingham, and above 53° at Bradford and Sunderland; the general mean from all places was 49½°. The extreme range of temperature in the week was

above 31° at Truro and Nottingham, and below 18° at Sheffield, Bradford, and Sunderland; the mean range of temperature in the week from all stations was 24½°.

The mean of the seven high day temperatures was above 73° at Brighton, London, Cambridge, and Nottingham, and below 65° at Sheffield, Hull, and Sunderland; the general mean from all places was 69½°. The mean of the seven low night temperatures was below 53° at Truro, Plymouth, Cambridge, and Wolverhampton, and above 55½° at Brighton, Norwich, and Sheffield; the mean from all stations was 54½°. The mean daily range of temperature was above 21° at Cambridge and Nottingham, and below 10° at both Sheffield and Sunderland; the mean daily range from all places was 15½°.

The mean temperature of the air for the week from all stations was 59½°, being 3½° higher than the value for the corresponding week in 1879. The mean temperature was above 62° at Brighton, Norwich, and Nottingham, and below 58° at Hull, Bradford, and Sunderland.

Rain.—Rain fell on every day of the week at Leicester and Bradford. The heaviest falls were in the Midland Counties and in Yorkshire; whilst in the Southern and Western counties the falls were very small. The heaviest falls were 3.03 inches at Bradford; 2.97 inches at Leicester; and 2.35 inches at Hull; and the least falls were 0.05 inch at Truro, and 0.32 inch at Blackheath (London); the average fall over the country was 1.40 inch.

The weather during the week was generally fine, with heavy showers, and frequent thunderstorms.

Heavy floods occurred at many places, especially in Leicestershire.

SCOTLAND: Temperature.—During the week ending Saturday, July 17, the highest temperatures of the air observed by day varied from 75° at both Glasgow and Paisley to 65½° at Aberdeen; the general mean from all places was 69½°. The lowest temperatures of the air observed by night varied from 42° at Glasgow and Paisley to 50½° at Aberdeen; the mean from all stations was 45½°. The mean range of temperature in the week from all places was 23½°.

The mean temperature of the air for the week from all stations was 58°, being 3½° higher than the value for the corresponding week in 1879. The mean temperature was above 59° at Dundee, and below 57½° at Edinburgh and Aberdeen.

Rain.—Very little rain fell during the week; the heaviest fall was at Aberdeen, 0.80 inch, and the least fall, 0.05 inch, at Glasgow; at Paisley no rain was measured; the average fall over the country was 0.30.

DUBLIN.—The highest temperature of the air was 74½°, the lowest 43½°, the extreme range 30½°, the mean 57°, and the fall of rain 2.79 inches.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

BEGONIA MRS. H. COPPIN.—Mr. Coppin, who received a First-class Certificate for this plant at South Kensington last week, informs us that the average size of the flowers is 3½ inches in diameter, not 2½ inches, as stated by us at p. 86.

BOOKS: J. C. Harvey's *Flora Capensis*, which is unfortunately incomplete. It extends, however, to three volumes.—*A. M. N. Stove and Greenhouse Plants*, by B. S. Williams, to be obtained of the author, at Victoria Nursery, Upper Holloway, N.

CANTERBURY BELLS: H. Cannell. Your Clematis Canterbury Bells, a fine strain of the calycanthemous race, were exceedingly attractive, and much varied in colour. They make fine border flowers.

DOUBLE STOCKS: G. Nott. These do not produce seeds, but a good strain produces from seed a large percentage of double flowers.

GUM: A Constant Reader. It is made of white shell-lac, pounded fine, and dissolved in spirits of wine or methylated spirits.

INSECTS: J. Day. *Otiorynchus sulcatus*, a destructive pest in vineries. Spread a sheet under the Vines at night, give the canes a few smart taps with the hand, and you will capture the lot with perseverance.—*A. D. S.* The excrescences on the Willow leaves are galls caused by the punctures of a gall-fly belonging to the family of the sawflies (*Nematus gallicola*). The minute footless grubs found in the leaf-buds are produced from eggs laid there by a minute wasp, *Cecidomyia salicina*. *I. O. W.*

LAPAGERIA: A. Paterson. A very good variety, but not superior to others in cultivation; the flowers have the demerit of being rather constricted.

MELONS: S. B. The rate of growth depends on circumstances, especially on the amount of sunshine, and also on the sort. On this point you give no information; if you will do so we will try to give you the desired information, which, however, can only be stated as an average.

NAMES OF PLANTS: F. C. 1, *Brassica nigra*; 2, *Erysimum cheiranthoides*.—*T. Rawdon Smith*, Miltonia

spectabilis.—*T. B.* Did not arrive fresh enough for determination.—*T. S. P.* Certainly *Lilium Brownii*.—*H. B. S. S.* *Tellima grandiflora*, as near as we can tell from such a wretched scrap.—*W. Comfort.* *Francia sonchifolia*.—*R. P. J.* We cannot attempt to identify such miserable bits.—*M. Y.* *Silene maritima*.—*K. V. I.* *Spirea arifolia*; 2, *Lonicera Ledebourii*.—*T. Abercrombie.* The Yellow Sultan, *Centaurea suaveolens*, or *Amberboa odorata*.—*J. E. I.* *Aerides odoratus*; 2, *Cattleya Harrisoniae*; 3, *Oncidium flexuosum*; 4, *Centranthus ruber*, crimson variety; 5, *Helianthemum rhodanthum*.—*C. E. F.* *Woodia ilvensis*.—*Hortus.* *Aschimenus coccinea*.

PETUNIAS: H. Cannell. A splendid lot of flowers, varied in every possible way as to colour and marking, and fine in shape. Some of the varieties were enormous, both doubles and singles being fully 5 inches in diameter.

SOOT FOR CHRYSANTHEMUMS: C. P. Your tank will hold just over 400 gallons. Tie 2 pecks of soot up in a bag, and sousé it about in the water until it is highly discoloured. Let the bag remain in the water, and sousé it occasionally. The water should not be used until it settles after stirring it up. You should also use guano-water; two quarts would be enough for 400 gallons.

VINES: G. S. The more probable cause of your Grape bunches running off into tendrils is the badly-ripened wood of the past year. Properly ripened wood would never produce such a result.—*Constant Subscriber.* The young shoots are simply scorched—a very common occurrence with young Vines. Careful ventilation is the only means of prevention. There is something in constitution which makes one Vine suffer whilst another escapes.

VIRGINIAN STOCK: Daniels Brothers. Your New Giant Virginian Stock, a deep puce-rose, is very bright and telling, much darker than the ordinary purplish-tinted forms, and likely to be useful for lines in the annual border if it keeps true to colour.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Messrs. Osborn & Sons (The Fulham Nurseries, S.W.), General Catalogue of Stove and Greenhouse Plants, Ferns, &c.

COMMUNICATIONS RECEIVED.—*J. C. & Co.*—*N. E. B.*—*W. D.*—*W. G. E.*—*E. J.*—*S. A. M.* (crowded out).—*H. & Co.*—*R. P. G. C.*—*W. B. H.*—*D. R. & Co.*—*J. Decaisne*.—*Alpha.*—*J. T. H.*—*T. B. W.*—*M. J. G.*—*C. M. H.*—*B. F.*—*T. W.*—*W. P. R.*—*A. E. S.*

Markets.

COVENT GARDEN, July 22.

The bulk of the soft fruit has now reached us, and prices have been well maintained. Grapes are in excess of the demand, and values are lower. Trade falling off considerably. *James Webber, Wholesale Apple Market.*

FRUIT.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apricots, per box ..	1 0-1 6	Lemons, per 100 ..	6 0-10 0
Cherries, per ½ sieve 6-12 0		Melons, each ..	3 6-7 0
Cob Nuts, per lb. ..	1 0-1 6	Oranges, per 100 ..	6 0-12 0
Currents, black, ..	8 0-9 0	Peaches, per doz. ..	6 0-12 0
½-sieve ..	8 0-9 0	Pine-apples, per lb. 1 6-4 0	
Gooseberries, green, ..	2 3-3 6	Raspberries, per lb. 0 3-0 5	
per ½-sieve ..	2 3-3 6	Strawberries, per lb. 0 6-1 0	
Grapes, per lb. ..	1 6-5 0		

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, ..	1 0-..	Horse Radish, p. bun. 4 0-..	
per bundle ..	1 0-..	Lettuces, Cabbage, ..	0 6-1 6
— English, p. 100 ..	5 0-6 0	Mint, green, bunch. ..	0 4-..
Aubergines, per doz. 3 0-..		Mushrooms, p. bask. 1 6-2 0	
Beans, French, p. lb. 9-..		Onions, per bushel. ..	5 0-7 0
Beet, per doz. ..	1 6-2 6	— Spring, per bun. ..	6 0-..
Cabbages, per doz. ..	1 0-2 0	Parsley, per lb. ..	0 0-..
Carrots, new, bunch 4 0-6 0		Peas, English, per qt. 1 6-..	
Cauliflowers, doz. ..	3 0-6 0	Potatoes (new), per lb. 0 2-0 6	
— English, each ..	1 0-..	Radishes, per bun. ..	0 2-..
Celery, per bundle ..	1 6-2 0	Small salad, pun. 4 0-..	
Chilis, per 100 ..	3 0-..	Sinach, per bushel 2 6-..	
Cucumbers, per doz. 8 0-12 0		Tomatoes, per dozen 2 0-3 0	
Endive, per 2 doz. ..	1 6-3 0	Turnips, new, bunch. 0 4-..	
Garlic, per lb. ..	1 0-..	Vegt. Marrows, doz. 4 0-..	
Herbs, per bunch ..	0 2-0 4		

New Potatoes:—Jersey Kidneys, 7s. per cwt.; Round, 6s.; home-grown Myatt's, 8s.; Rounds, 6s. to 7s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz. 6 0-12 0		Fuchsias, per dozen 5 0-12 0	
Bedding Plants, various, per doz. 1 6-2 6		Hydrangea, per doz. 12 0-24 0	
Begonias, per doz. ..	6 0-18 0	Lilium eximium, doz. 12 0-24 0	
Bouvardias, per doz. 12 0-24 0		— auratum, p. doz. 30 0-60 0	
Calceolarias, per doz. 6 0-12 0		— speciosum, dozen 12 0-30 0	
— Herbaceous, doz. 6 0-9 0		Lobelia, per dozen ..	3 0-6 0
Crassula, per dozen 12 0-18 0		Mignonette, per doz. 5 0-9 0	
— large, per pair. ..	5 0-10 0	Musk, per dozen ..	2 0-6 0
Cyperus, per dozen 4 0-9 0		Myrtles, per doz. ..	6 0-12 0
Dracena terminalis 30 0-60 0		Nasturtiums, dozen 3 0-6 0	
— viridis, per doz. ..	12 0-24 0	Palms in variety, ..	2 6-21 0
Erica, various, dozen 12 0-30 0		Paragoniums, dozen 9 0-24 0	
Eucynthus, various, ..	6 0-18 0	— Ivy-leaved, doz. 4 0-8 0	
Ferns, in var., doz. 4 0-18 0		— Incolor. ..	4 0-12 0
Ficus elastica, each 1 6-7 6		— scarlet, per doz. 3 0-9 0	
Foliage Plants, various, each ..	2 0-10 6	Rhodanthe, per doz. 6 0-9 0	
		Roses, Fairy, p. doz. 6 0-10 0	

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms ..	0 4-0 6	Pansies, 12 bunches 2 0-6 0	
Arum Lilies, per dozen ..	3 0-6 0	Pelargoniums, 12 ..	0 6-1 0
Bouvardias, per bun. 1 0-4 0		— zonal, 12 sprays ..	0 3-0 9
Calceolarias, p. bunch 0 9-1 0		Pinks, 12 bunches ..	0 3-0 9
Carnations, 12 bun. 5 0-0 0		Phlox, 12 bunches ..	6 0-12 0
Cornflowers, per doz. 3 0-6 0		Primula, double, per bunch ..	1 0-1 6
Eschscholzia, 12 bun. 3 0-6 0		Roses (indoor), doz. 1 0-9 0	
Eucharis, per doz. ..	4 0-6 0	— outdoor, 12 bun. 4 0-9 0	
Feverfew, 12 bun. ..	4 0-6 0	Spinacea, 12 sprays ..	0 6-1 0
Forget-me-not, 12 ..	3 0-9 0	Stephanotis, 12 spr. ..	3 0-6 0
Gardenias, 12 blms. ..	4 0-..	Tropeolum, 12 bun. 1 0-3 0	
Heliotropes, 12 sp. ..	0 6-1 0	Tuberose, per dozen 2 0-4 0	
Mignonette, 12 bun. 2 0-6 0			

SEEDS.

LONDON: July 21.—The usual summer quietness still characterises the trade for farm seeds. In red Clover seed there is for the moment nothing doing. New samples of Trifolium, white Clover, and Rape seed, are now appearing, but prices for same, as might be expected, are not yet fixed. There will, it is said, be a large crop this season of German white. Holders of new French Trifolium express ideas as to values considerably in excess of those entertained here, and consequently hardly any business in the article has yet taken place. Canary and Hemp seeds show no quotable variation. Feeding Linseed is steady. There is a scarcity of Buckwheat. Haricot Beans and blue Peas keep firm. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CATTLE.

At Copenhagen Fields on Monday the few choice qualities of beasts on sale perhaps rather exceeded our top quotation, but trade was very dull. Notwithstanding a larger number of foreign sheep than usual the total was smaller than last week, and trade was very slow at prices lower on the average. Choice lambs and calves sold at fully late rates. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 6s.; sheep, 5s. to 5s. 8d., and 6s. to 6s. 10d.; lambs, 6s. 6d. to 7s. 6d.—On Thursday extreme quietness prevailed in the cattle trade. Supplies of stock were short but ample. Beasts changed hands heavily at about Monday's prices. Sheep and lambs were dull at previous curancies, and calves sold quietly.

HAY.

Tuesday's Whitechapel Market report states that the demand for fodder was quiet, and with a moderate supply prices were as follows:—Prime meadow hay, 80s. to 138s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 110s.; inferior, 30s. to 70s.; and straw, 30s. to 39s. per load.—On Thursday a moderate supply of hay and straw was on sale. The trade was dull for low stuff, but prices very firm for best qualities.—Cumberland Market quotations:—Superior old meadow hay, 105s. to 112s.; inferior, 50s. to 84s.; new hay, 50s. to 90s.; superior old Clover, 126s. to 132s.; inferior, 84s. to 100s.; new Clover, 50s. to 105s.; and straw, 36s. to 42s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that supplies offering have been moderate, and sales have proceeded slowly, at the following quotations:—Lisbon, new, 7s. per cwt.; Jersey kidneys, 7s. 6d. to 8s.; Cherbourg round, 6s. 6d.; ditto, kidneys, 7s.; Jersey round, 6s.; and French round 6s.—The imports into London last week amounted 1250 boxes from Cherbourg, 1125 from Barfleur, 1127 packages Jersey, 1319 sacks St. Nazaire, and 100 bags Ostend.

COALS.

The prices current at market during the week are as follows:—Beeside West Hartley, 14s. 3d.; Walls End—Haswells, 15s.; Lambton, 14s. 6d.; Original Hartlepool, 15s.; Wear, 13s. 6d.; Tunstall, 13s. 6d.; Chilton Tees, 14s.; Hetton, 15s.; Hetton Lyons, 14s.; Vanes, 14s.; Thornley, 14s. 9d.; Tees, 14s. 9d.

Government Stock.—On Monday the closing price of Consols was, for delivery, 98½ to 98½, and for the account, 98½ to 98½. Tuesday's closing prices were 98½ to 98½ for delivery, and 98½ to 98½ for the account. The final quotations of Wednesday were, for delivery, 98½ to 98½, 98½ to 98½ for the account. Thursday's closing figures were, for delivery, 98 to 98½, and for the account, 98½ to 98½.

To Gardeners.

FOR SALE, New Archangel Cargo MATS, in lots of ten, 1s. 3d. each, delivered; in lots of 100, 15s. per 100, delivered.

RAFFIA, in lots of 7 lb., 1s. 6d. per lb., delivered; in lots of 14 lb., 1s. 4d. per lb., delivered; in lots of 28 lb., 1s. 2d. per lb., delivered.

SILVER SAND, from Antwerp and Rouen, always in stock. **JOHN G. EAST**, 7, Side, Newcastle-on-Tyne.

MATS, RAFFIA FOR TYING, TRAINING STICKS and LABELS, Bamboo Canes, Virgin Cork, &c.

C. J. BLACKITH AND CO., COX'S QUAY, LOWER THAMES STREET, LONDON.

ARCHANGEL AND PETERSBURG MAT MERCHANTS and IMPORTERS.

All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description. RAFFIA FIBRE, NETTING, and TIFFANY, TARPULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to **J. BLACKBURN and SONS**, 4 and 5, Wormwood Street, London, E.C.

ANDERSON'S RUSSIA MATS,

For COVERING, TYING, and PACKING, are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plain sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design. F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c. F. ROSHER AND CO., Brick and Tile Merchants. See Addresses above.

SILVER SAND,

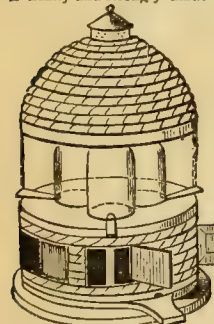
fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post. PLINTS and BRICK BURNS for Rockeries or Ferneries. KENT PEATS or LOAM supplied at lowest rates in any quantities.

F. ROSHER AND CO.—Addresses see above. N.B.—Orders promptly executed by Rail or to Wharves. A liberal Discount to the Trade.

Gather Honey from Your Flowers.

NEIGHBOUR'S Celebrated BEEHIVES. PHILADELPHIA EXHIBITION, 1876. PARIS EXHIBITION, 1877, 1878.

Three Silver Prize Medals awarded George Neighbour & Sons. The IMPROVED COTTAGE BEEHIVE, as originally introduced by G. Neighbour & Sons, working three bell-glasses, is neatly and strongly made of straw; it has three windows in the lower Hive. This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.



Price, complete £1 15 0
Stand for ditto 0 10 6

Also BAR FRAME HIVES of most approved construction, at 7s. 6d., 12s. 6d., to 25s. each, and Philadelphia Frame Hives, complete with Cover and Stand, 42s.

An Italian Alp Queen, with full directions for uniting to Black Stocks, at current prices.

LIGURIAN and ENGLISH BEES.—Stocks and swarms may be obtained as heretofore.

THE APIARY. By ALFRED NEIGHBOUR. 5s., postage 5d. A newly arranged CATALOGUE of other improved Hives, with Drawings and Prices, sent on receipt of two stamps. GEO. NEIGHBOUR AND SONS, 127, High Holborn, W.C., or 149, Regent Street, London, W.

KOPF'S EXTRACT OF MEAT COMPANY, LIMITED, 5, AGAR STREET, CHARING CROSS, LONDON, W.C.

First Prize Gold Medal obtained at the Sydney International Exhibition, 1879, for "Extracts of Meat and nutritious preparations generally."

KOPF'S EXTRACT OF BEEF.—The purest form of beef tea; 8 to 10 per cent. more nutritious than any other.

KOPF'S ESSENCE OF BEEF.—Especially adapted for invalids who can take no other form of nourishment.

KOPF'S BEEF LOZENGES.—Invaluable to those who have to fast long.

KOPF'S CONSOLIDATED SOUPS, comprising Erbswurst or Pea Soup, Mulligatawny, Green Pea, Scotch Broth, Hotch Potch, &c. In tins, Ox Tail, Gravy, Mock Turtle, &c.

KOPF'S PREPARED MARROW, from Best Beef Marrow Bones.

KOPF'S COMPRESSED VEGETABLES. Preserving the properties of Fresh Vegetables.

KOPF'S CONSOLIDATED TEA and COFFEE. With and without Milk and Sugar. The above Preparations are patronised by the Nobility, the Army, Navy, Sportsmen, Yachtsmen, Tourists, &c.

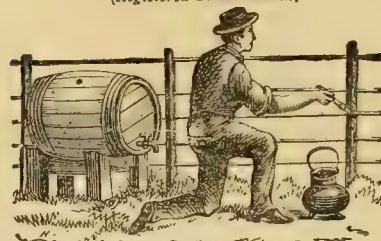
KOPF'S EXTRACT OF MEAT COMPANY, LIMITED, 5, AGAR STREET, CHARING CROSS, LONDON, W.C.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING **GARDEN POTS** of best quality are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application. **LONG TOM.**

Geometrical Mosaic and Encaustic TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
MAW AND CO., Benthall Works, Broseley, Shropshire.

HILL AND SMITH'S BLACK VARNISH, for Preserving Ironwork, Wood, or Stone. (Registered Trade Mark.)



This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.

"Pierrefield Park, June 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Pierrefield Park, Chepstow.—I am, Sirs, yours respectfully, Wm. Cox."

CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c. sent free on application to HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½d. per lb.—all colours. Improved Zinc White Paint, 4½d. per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

BELGIAN GLASS for GREENHOUSES, &c., Can be obtained in all sizes and qualities of

BETHAM & SON,

9, LOWER THAMES STREET, LONDON, E.C. B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

HORTICULTURAL WINDOW GLASS, 15-oz. and 21-oz., in Boxes containing 200 feet, Carriage Paid to any Railway Station in England. Price Lists on application.

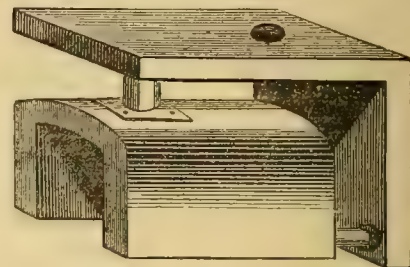
ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

Established 150 years.
WINDOW GLASS, SHEET LEAD, PAINTS, &c.
THOMAS MILLINGTON AND CO., Importers and Manufacturers, have a large quantity of GLASS in various sizes and thicknesses:—

Inches.	Inches.	Inches.	Inches.	Inches.
15-oz., 6 x 4 to 7½ x 5½, 9s., 10s., 11s., 12s.	8 x 6 to 10 x 8, 9s. 6d., 10s. 6d., 11s. 6d., 12s. 6d.	10½ x 8½ to 14 x 10, 10s., 12s., 13s., 14s.	15 x 10 to 18 x 12, 11s., 13s., 14s., 15s.	20 x 12 to 24 x 16, 11s. 6d., 13s. 6d., 14s. 6d., 15s. 6d.
20 x 17 to 24 x 18, 12s., 14s., 15s., 16s.	20 x 13, 20 x 15, 20 x 16, 20 x 17, 16s., 17s. 3d., 18s. 3d., 20s.			

15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case. 21-oz., for Cutting up, 34s., 41s., 50s., 66s. per 300 feet case. LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present. Lists on application.

REMOVED to 43, Commercial Street, London, E.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz. the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

SIZES.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	7 0 0
20 "	18 "	24 "	400	8 0 0
20 "	18 "	30 "	500	9 0 0
24 "	24 "	24 "	700	12 0 0
24 "	24 "	30 "	850	14 0 0
24 "	24 "	36 "	1000	16 0 0
24 "	24 "	48 "	1400	20 0 0
28 "	28 "	60 "	1800	25 0 0

Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Balham Hill, S.W., May 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

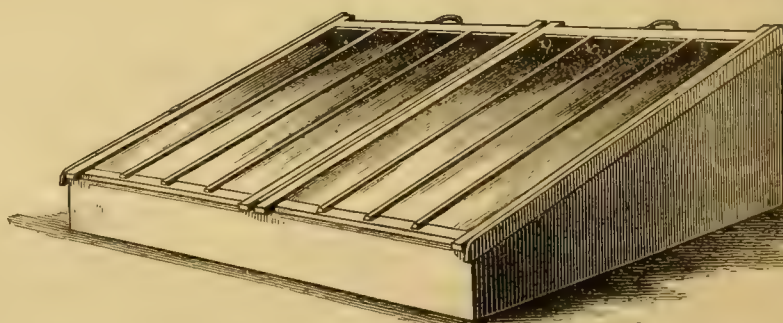
PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.



"EUREKA" FUMIGATORS are the best and cheapest for all purposes. May be had from all Seedsman, &c., 2s., 2s. 6d., 4s. 3d., 6s. 6d. each, package extra. TOBACCO CLOTH, 10d. per pound. SEED DRILLS. CAP GLASSES, SYRINGES, &c. Lists free. SYERS, Bowdon, Cheshire.

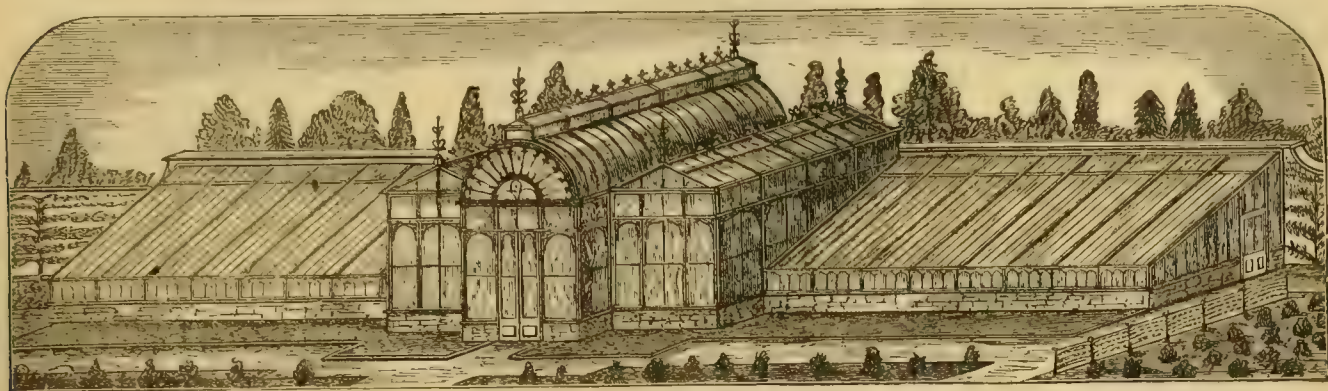
BOULTON & PAUL, NORWICH.

MELON and CUCUMBER FRAMES always in Stock.

1-light FRAME, 6 feet by 4 feet, .. £2 0 0
2-light " 8 feet by 6 feet, .. 3 7 6
3-light FRAME 12 feet by 6 feet, .. £4 17 6
4-light " 16 feet by 6 feet, .. 6 7 6
Made of the best seasoned red-wood deal. Glazed with English 21-oz. Sheet Glass. All painted three times in best oil colour. Iron Handle to each Light, and an Iron Cross Bar.

Carriage Paid to any Railway Station in England and Wales, also to Dublin, Edinburgh and Glasgow. Any damage in transit made good, if advised immediately. Packing Cases not charged for if returned at once carriage paid. Lights only, 6 feet by 4 feet, painted and glazed, 16s. each. Orders amounting to 40s. carriage paid.

HENRY ORMSON,
HORTICULTURAL BUILDER AND HOT-WATER APPARATUS ENGINEER,
STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.



THE BEST BUILT HOTHOUSES AND CONSERVATORIES.
Surveys made and Gentlemen waited on in any part of the Country. Catalogues, Plans, and Estimates supplied gratis on application.
UNSURPASSED BOILERS AND HEATING APPARATUS.

NEW PATENT GRASS-CUTTERS

(PATRONISED BY THE BOARD OF WORKS).

W. CLARK, 232, Oxford Street, London, W.,

Begs to call public attention to a Patent Grass-Cutter he has just invented for use in the Garden and Farm, based upon the principle of the well-known "Clark's" Horse-clipping Machine, and which is, by its lightness of construction and rapidity of action, far preferable to the existing implements in use, and supplies a want long felt by every one who possesses a garden, namely, an instrument which will mow grass where inaccessible to the lawn mower, trim grass plot edges, clip Ivy and other creepers, also shrubs and trees, and keep in order Box borders and fancy Trees, &c.; all which this ingenious little instrument is capable of doing.

It is made in three sizes, to cut in breadth 8 inches, 12 inches, and 16 inches respectively; and is so easy in working, and at the same time so effective, that even ladies can work it without feeling fatigued, there being no occasion to stoop on account of the long wooden handles attached to the machine, and a greater quantity of work can be done in a given time than by any other method.

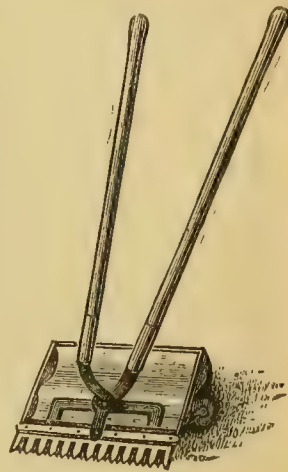
This invention is also applicable for Farm purposes—Reaping Corn and other Crops, Clover, Rye, &c., equally as well as accomplishing the objects for which it is required in the garden; and the cost being so small in proportion to the saving in time and quality of finish effected, it is placed within the reach of all, and needs but a trial to prove its superiority.

PRICES.

The 8-inch Machine, complete with Rollers and Tray	..	..	21s.
Ditto, without Rollers and Tray	..	..	18s.
The 12-inch Machine, complete with Rollers and Tray	..	..	28s.
Ditto, without Rollers and Tray	..	..	24s.
The 16-inch Machine, complete with Rollers and Tray	..	..	38s.
Ditto, without Rollers and Tray	..	..	33s.

To be obtained of all Ironmongers, Horticultural and Agricultural Implement Manufacturers throughout the Kingdom, and of the Patentee,

W. CLARK, 232, OXFORD STREET, LONDON, W.



PRICES:

8-inch ..	£2 2 0
10-inch ..	3 3 0
13-inch ..	4 4 0
15-inch ..	5 5 0
18-inch ..	6 6 0

Awarded the First Prize at the Sydney Exhibition.

"THE COVENTRY" LAWN MOWER

(REGISTERED). MANUFACTURED BY

NETTLEFOLD & SONS,
54, HIGH HOLBORN, LONDON, W.C.

The attention of the Public is invited to "THE COVENTRY" LAWN MOWER, which can be confidently recommended as the best and cheapest in the market; for lightness and ease in working it cannot be surpassed.

It has all the improvements which have of late been introduced into this class of Machine, either in England or America.

It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind.

It is cheaper than any other Machine of its class before the public.

It is made, as its name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron.

These Machines can also be SUPPLIED WITH ROLLERS at same price, and with Grass Boxes at a small extra cost.

"ART WITH ECONOMY,"

Applied to Conservatories and Greenhouses.

With Illustrations, Prices, &c.

Part I., now ready. Post-free, twelve stamps.

CHEAP ART-SUMMERHOUSES.

Illustrations and Prices Gratis.

T. H. P. DENNIS & CO.,

MANSION HOUSE BUILDINGS, LONDON, E.C.

WORKS: CHELMSFORD.



GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, &c. Cheapest Prices of **WATSON AND SCULL**, 90, Lower Thames St., London, E.C.

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

THE "ACME" LABELS (REGISTERED).



Highly commended by all the Gardening Papers.

Specimens and Price List on application.

SOLE MANUFACTURERS,

STEVENS & PINCHES, 48, LEICESTER SQUARE, W.C., and 27, OXENDON STREET, S.W.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for HOT-WATER PIPES and CONNECTIONS.

4-inch Pipes, 1s 8/ per yard. Other sizes equally low.

SILVESTER & SAINSBURY, Castle Hill Foundry,

Engineering and Boiler Works, Newcastle, Staffordshire.

By Royal Letters Patent.

RITCHIE'S GAS LIGHTING and HEATING APPARATUS.

No Flue required. Specially adapted for Drying Newly-built Houses. Silver Medal awarded in 1873 at Wolverhampton Exhibition. The deleterious and unpleasant vapours arising from the burning of ordinary coal gas are prevented from escaping, and are made to circulate within the Apparatus or Stove in such a way that they become thoroughly condensed, and are carried off in the form of a liquid, in which will be found the sulphur and other poisons which are drawn from and would in the ordinary way be left in and mixed with the surrounding atmosphere; consequently health is not prejudicially affected, Works of Art, Plants, Pictures, Books, Furniture, &c., are not injured, and the atmosphere is rendered uncontaminated and perfectly healthy.

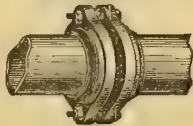
Prices from 50s. to £100.

Full particulars and testimonials forwarded on application to **RITCHIE & CO.**, 23, St. Swithin's Lane, London, E.C.

JONES & ATTWOOD.

ENGINEERS and IRONFOUNDERS, STOURBRIDGE.

JONES'S IMPROVED EXPANSION JOINT. THE BEST HOT-WATER JOINT.



Medal Awarded Horticultural Show, Aston, 1875.

SIMPLE, DURABLE, NEAT, CHEAP. Specially adapted for CHURCHES, SCHOOLS, MANSIONS, PUBLIC BUILDINGS, &c.



Illustrated CIRCULAR and Price LIST; also Estimates for Heating with the most improved BOILERS, EXPANSION JOINT PIPES, or COILS, on application.

PIPE, with SOCKETS and BENDS, for heating purposes. C. S. P. 95, Messrs. Deacon's, 154, Leadenhall Street, E.C.

By appointment to H.M. the Queen and H.R.H. the Duke of Connaught.

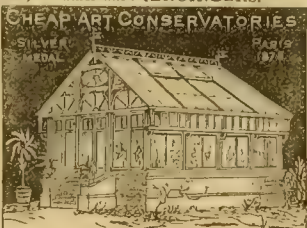
ROSSER & RUSSELL, HORTICULTURAL BUILDERS and WARMING ENGINEERS. Offices: 22, Charing Cross, W. Works: Queen's Wharf, Hammer-mith.

NEW PRICE LIST

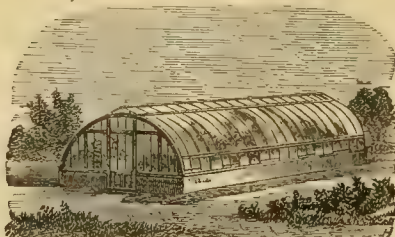
of Cheap Wood Greenhouses and Heating Apparatus free on application.

New System of Patent Glazing.

CATALOGUE of ARTISTIC CONSERVATORIES, 1s.



W. H. LASCELLES, HORTICULTURAL BUILDER, 121, BUNHILL ROW, LONDON, E.C.



W. H. LASCELLES' Patent Bent Wood Curved Greenhouses and Conservatories can be erected as cheaply as plain ones, and can be glazed with straight glass.

Illustrations sent post-free, and ESTIMATES given without charge for any Horticultural Work.

Sketches of Wooden Houses, suitable for Store-houses, Tool-houses, &c., sent post-free on application.

CHEAP HORTICULTURAL BUILDINGS.

VINERIES, ORCHARD-HOUSES, GREENHOUSES, CONSERVATORIES, PORTABLE BOXES, and every description of HORTICULTURAL STRUCTURES, erected in any part of the country, at prices bearing comparison with any House in the Trade, combined with simplicity, durability, and first-class quality of materials.

J. MILLS, Horticultural and Steam Joinery Works, Broadwall, Stamford Street, Blackfriars, London, S.E.

THOMAS' GARDEN FURNITURE for 1880.

GARDEN SEATS. No. 366.



4 ft. 22s. 6d. 5 ft. 24s. 6d. 6 ft. 27s. 6d. 7 ft. 30s. 8 ft. long. 32s. each.

Under 6 ft., with 2 iron supports; 6 ft. and above, with 3 ditto.

FOLDING IRON TABLES. CHAIR. No. 350.

No. 346.



Japanned Oak. 21-inch, 10s. 6d. each. 25-inch, 12s. 6d. "

Orders can be executed on receipt.

LAWN MOWERS of any make supplied at 15 per Cent. discount for Cash with order.

J. J. THOMAS & CO., 87, QUEEN VICTORIA STREET, E.C.

Works: 285 & 362, Edgware Road, London, W. 5 per Cent. discount allowed for Cash with order off Garden Seats and Tables.

FRENCH GREENHOUSE BLINDS

Made of Wood and Iron only.

MEDALS AWARDED:

Paris, 1878, 1876, 1865, 1862;

Marseilles, 1866;

Bordeaux, 1860, &c.

SOLE AGENTS for GREAT BRITAIN,

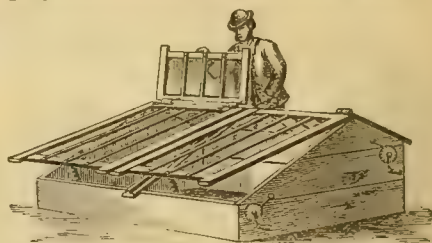
W. RICHARDSON & CO.,

North of England Horticultural Works,

DARLINGTON.

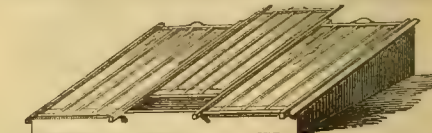
BOULTON & PAUL, NORWICH.

No. 74.—NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.—Our illustration shows a new frame for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater height and more convenience than the Melon frame No. 75. The front is 11 inches high, without the light, 32 inches at the ridge, and 22 inches high at the back.



Size.	Length.	From front to back.	Gearing extra to 8 ft. size and upwards.	Packing Cases.
No. 1 ..	4 feet ..	6 feet ..	£3 0 0 ..	— .. 4s. 6d.
No. 2 ..	8 feet ..	6 feet ..	4 15 0 ..	5s. 6d.
No. 3 ..	12 feet ..	6 feet ..	6 10 0 ..	6s. 6d.
No. 4 ..	16 feet ..	6 feet ..	8 5 0 ..	8s. 6d.
No. 5 ..	20 feet ..	6 feet ..	10 0 0 ..	9s. 6d.

100 No. 75 MELON and CUCUMBER FRAMES.



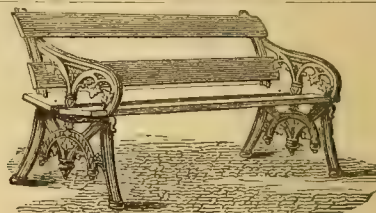
Ready to dispatch on receipt of order.

	CASH PRICES.	Packing Cases.
2-light Frame ..	8 feet by 6 feet .. £3 7 0 ..	4s. 6d.
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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—

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Nov. 8.	1880.—Jan. 10.	May 8, 29.
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Director, Horticultural Exhibitions.

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CARTERS, the Queen's Seedsmen, High Holborn, London.

Orchids.

THE NEW PLANT and BULB COMPANY

beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.

Lion Walk, Colchester.

Myosotis elegantissima.

The new Silver-edged, Blue-flowered Forget-me-not.

RODGER, McCLELLAND and CO. are

now sending out this superb Novelty for the Spring Garden. Good plants 3s 6d. each, 30s. per dozen. Can be sent by post.

64, Hill Street, Newry.

Hyacinths, Tulips, &c.

BUDDENBORG BROS., Bulb Growers,

House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

Begonias.

JOHN LAING and CO.'S unrivalled Gold Medal Collection is now in bloom.

Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out.

LISTS free on application.

The Nurseries, Forest Hill, London, S.E.

SPIRÆA ULMARIA VARIEGATA.—

Beautiful golden variegated foliage (see the Garden, of June 12, 1880, p. 513).

Messrs. BUDDENBORG BROS., Hillegom, near Haarlem, Holland, offer fine plants of the above at 20s. per 100.

WM. CUTBUSH and SON

beg to announce that their GENERAL PLANT CATALOGUE

is now ready for the ensuing season, and may be had post-free on application.

Highgate, London, N.; and Barnet, Herts.

CAMELLIAS.—Thousands of Plants of all

the best sorts, well set with bloom, from 1s. 6d. to 30 Guineas each. Intending Purchasers should visit the collection between now and October, as the Plants, being now set out-of-doors, are more easily seen than when under glass.

WM. PAUL and SON, Paul's Nurseries, Waltham Cross. Entrance from the platform, Waltham Station, half an hour's ride from Liverpool Street and St. Pancras Stations.

JULES DE COCK, Nurseries, Ghent,

Belgium.—Specialities of AZALEAS INDICA and MOLLIS, CAMELLIAS, DEUTZIA GRACILIS, and SPIRÆA JAPONICA, for forcing.

NEW PALMS, CAMELLIAS, and AZALEAS,

JACQUES COENE, St. Pierre-Alost Nursery, Ghent.

AZALEAS, CAMELLIAS, PALMS, DRACENAS, YUCCAS, and other Ornamental Plants

of all classes for market, &c., in any quantity.

J. VAN DER SWAELMEN, Lily Nursery, Ghent, Belgium.

WHITE CAPE FLOWERS.—200,000, just

imported, to be Sold cheap. Sample and price on application.

GEO. P. DARBY, Hertfordshire Seed and Plant Establishment, Watford.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES, HERE-

FORD. (Established 1785.)

Descriptive CATALOGUES on application. Address

CRANSTON'S NURSERY and SEED COMPANY

(Limited), King's Acre, near Hereford.

ALEXANDRA PALACE,

London, N.

SATURDAY FLOWER SHOWS.—CUT FLOWERS

WANTED for every Saturday during Summer and Autumn.

Those having stock for Sale (or Exhibition), are requested to send price per 1000 to

J. FORSYTH JOHNSON, Director Horticultural Exhibition.

WANTED, about 20 CAMELLIA TREES,

8 to 10 feet high. Must be best Double White and Fimbriata, Red. Size and lowest price to

E. MIZEN, Mitcham, Surrey.

WANTED, CARNATION, PINK and PICOTEE PLANTS and CUTTINGS, State

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SILBURY, Crediton, Devon.

WANTED STRAWBERRIES,

strong, Sir Chas. Napier, La Grosse Sucrée, and new kinds; also ZONAL PELARGONIUMS, Mrs. Pollock, Vesuvius, &c.

H. CANNELL, Home for Flowers, Swanley.

To Farmers, Market Gardeners, and Others.

WANTED, FRUIT of all kinds, Prompt re-

turns and moderate Commission.—WISE and RIDES,

General Agents, 3, Tavistock Court, Covent Garden, W.C.

SUTTON'S HOME-GROWN SEEDS, &c.

PARIS, 1878.

In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (a superior distinction accorded to no other English Exhibitor of Seeds) was conferred on our Managing Partner, Mr. M. J. SUTTON, by the French Government.

SUTTON AND SONS, Reading, London and Paris.

ROSE BUDS for immediate working, at

55s. per 1000. Apply to

E. WILKINS, Thorncroft Rose Farm, Sutton, Surrey.

POLYSTICHUM LONGCHITES

(the Holly Fern), 6s. per dozen, 40s. per 100.

J. B. YOUNG, Landscape Gardener, Bridge of Allan.

FRUITING PLANTS

of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.

THOMAS RIVERS and SON, Sawbridgeworth, Herts.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery,

Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of

eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a

"SPECIAL LIST of FERNS," free on application.

To the Trade.

ENGLISH SOWING RAPE SEED and WHITE

MUSTARD.

H. AND F. SHARPE have fine clean

samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application.

Seed Growing Establishment, Wisbech.

Vines for Present Planting.

JOHN COWAN, The Vineyard and

Nurseries, Garston, near Liverpool, is now offering a

splendid Stock of VINES raised from Eyes this spring, and

specially prepared for planting Vineries.

CATALOGUES free. The Trade supplied.

HELLEBORUS NIGER (Christmas Rose).

—Imported healthy small plants at £5 per 1000, £40 per 10,000.

J. VAN DER SWAELMEN, Lily Nursery, Ghent, Belgium.

Gardenias.

MESSRS. JOHN STANDISH and CO.

have a magnificent stock of the above plants to offer.

They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.

Royal Nurseries, Ascot, Berks.

To the Trade only.

E. H. KRELAGE and SON, NURSERYMEN,

SEEDSMEN and FLORISTS, Haarlem, Holland.

The Wholesale CATALOGUE (No. 347A) of Dutch Flower

Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants,

for 1880-81, is now ready, and may be had free on pre-paid

application, by Nurserymen, Florists and Seed-men.

PRIMULAS and CINERARIAS.—Dobson's

strain, extra strong, in 60-pots, clean and healthy, fit for

immediate repotting, 2s. per dozen; out of pots, 1s. 6d. per

dozen. Package free. Cash with order.

EDWARD HALL, Florist, Methley Park, near Leeds.

The New Double Tropæolum

HERMINE GRASHOFF.—Nice Plants, to

grow on for winter flowering, 1s. 3d. each, 12s. per doz.

Special offer for large quantity.

E. B. SPENCE, Seed Merchant and Nurseryman, Darlington.

EWING and CO.'S Magnificent Collection

of ROSES is NOW in FULL BLOOM. Intending pur-

chasers are specially invited to inspect the stock. The Nurseries

are open to the Public on Week-days. CATALOGUES of

Roses and General Nursery Stock gratis and post-free.

The Royal Norfolk Nurseries, Eaton, near Norwich.

HORTICULTURAL ESTABLISHMENT,

2, Porte St. Lévin, Ledeborg, Ghent, Belgium.

Director: POLYDOR VERRAENE, FILS.

STRAWBERRY RUNNERS.

Strong, healthy, and well-rooted, from V. H. de Thury

President, Sir J. Paxton, Rivers' Eliza, and other good varieties.

Price LIST, &c., on application. MANUAL ON STRAW

BERRY CULTURE, with sample of plants, post-free, 1s.

W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

STRAWBERRIES.—The fact of my

being located in the midst of hundreds of acres of all the

best Strawberries and Raspberries, enables me to supply them

both cheap, good and correct to name; and all requiring Runners

should order at once.

CATALOGUE post-free. Special Prices for large quantities.

H. CANNELL, Swanley.

Select Seeds for Present Sowing.

CABBAGE, ONION, LETTUCE,

CALCULARIA, CINERARIA, PRIMULA, as well

as all others of very superior quality.

JAMES DICKSON and SONS, 108, Eastgate Street, Chester

SALES BY AUCTION.

Specimen Stove and Greenhouse Plants.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **WEDNESDAY**, August 4, at half-past 12 o'clock precisely, an **IMPORTANT COLLECTION** of **STOVE and GREENHOUSE PLANTS**, being the property of a Gentleman who is giving up their culture. The collection contains beautiful specimens of *Adiantum Farleyense*, *Cyrtoceras reflexum*, *Allamanda Wardleana*, *Croton Weismanni*, *Maranta Veitchii*, *Golden and Silver Ferns*, *Eucharis Amazonica*, new *Dracenas*, &c.; also some fine specimens of *Azalea indica* well set with bloom-buds, and a nice lot of healthy plants of *Lilium auratum*, with five or six flower-buds on each stem; also a Collection of Semi-established **ORCHIDS**, consisting of *Laelia Dormaniana*, *Oncidium curtum*, *O. Forbesii*, *O. concolor*, *O. dasylepis*, *O. crispum*, *Cattleya marginata*, *C. Schilleriana*, *C. intermedia*, *Laelia cinnabarina*, *Promexia citrina*, several other Collections of Established and Imported Orchids, and a Consignment of Tree Ferns, and other Roots, just received direct from Hokitika, New Zealand, consignment of Bulbs from Algiers, &c.; and an importation of *Cattleya Acklandia*, just received direct.

May be viewed the morning of Sale, and Catalogues had.

The Magnificent Collection of Established Orchids of the Right Hon. Lord Londesborough.

MR. J. C. STEVENS has received instructions from the Right Hon. Lord Londesborough, to **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **TUESDAY**, August 17, and following days, at half-past 12 o'clock precisely each day, his Valuable and Extensive **COLLECTION** of **ORCHIDS**, amongst which will be found fine Specimen Plants of the following rare varieties:—*Mastevalla Harryana*, Bull's blood variety; *M. Trochilus*, *M. Macrura*, *M. Tovarensis*, *M. Veitchiana*, *Veitch's best variety*; *Lycaste Skioneri* alba, *Cattleya labiata*, summer and autumn flowering varieties; *Laelia accepta* Dawsoni, *L. purpurata*, with pure white sepals and petals and dark purple lip; *L. autumnalis*, Mr. Rucker's best variety; *L. Jonghiana*, *Cattleya exoniensis*, *C. Dowiana*, *C. gigas*, *C. Warneri*, Mr. Rucker's variety; *Celogyne cristata*, *C. cristata Lemoineana*, true *Dendrobium Falconeri*, *D. erythraanthum*, *D. Kingianum*, *Aerides Veitchii*, *Angrecum sesquipedale*, finest variety; *Saccolabium Blumei*, *Phalaenopsis Portiana*, *P. casta*, *P. leucorrhoda*, *P. Lowii*, *Angrecum Elliisi*, *Pleione Reichenbachii*, *Odontoglossum vexillatum*, *O. Hallii*, *Sobralia macrantha*, Woolley's variety, &c.

May be viewed the morning of Sale, and Catalogues had.

By Order of the Executors.—The Moat, adjoining the Old Palace of King John, Eltham, within half-a-mile of the Station on the South-Eastern Line.—**SUPERIOR FURNITURE, OIL-PAINTINGS, and WATER-COLOUR DRAWINGS, BOOKS, OLD CHINA**, Quantity of **STUFFED BIRDS, LIVE STOCK, ORANGE TREES, AZALEAS, CAMELLIAS, and HEATHS**, **STOVE and other Plants** of a Rare Description, a Small **CELLAR of WINE**, and Part of a Rick of Old **HAY**.

MESSRS. EDWIN SMITH AND CO. will **SELL** by **AUCTION**, on the Premises, on **FRIDAY and SATURDAY**, August 6 and 7, at 12 o'clock each day, on account of the number of Lots, the **ROSEWOOD DRAWING-ROOM SUITE**, Indian China Ornaments, Bronzes, Oil Paintings, and Water-colour Drawings, Spanish Mahogany Dining-room and Library Fittings, Turkey and Brussels Carpets, Full-compass Grand Piano forte by Collard & Collard, Wardrobes, Chests of Drawers, Marble-top Washstands, capital Feather Beds, Standard and Illustrated Works, Outdoor Effects, Half-bred Alderney Milch Cows, Store Pigs and Poultry, Plants, Implements, Tools, and a Farm-cart. On view the day prior.

Catalogues on the Premises, and of the Auctioneers, 302, Regent Street, W.

Preston, Lancashire.

By order of the official Liquidator, and for unreserved competition, in order to wind up the Estate.

THE PRESTON NURSERY and PLEASURE GARDENS COMPANY (Limited).—In Liquidation.

MESSRS. JABEZ B. JONES and SON have been instructed to Catalogue and offer for unreserved **SALE** by **AUCTION**, on **TUESDAY, WEDNESDAY, THURSDAY and FRIDAY**, August 10, 11, 12 and 13, commencing each day at 11 o'clock, the whole of the extensive **COLLECTION** of **STOVE and GREENHOUSE PLANTS**, British and Exotic Ferns, Orchids, and other Contents of the Houses; together with the **HORSES, CARRIAGES, VANS**, and modern **IMPLEMENTS and TOOLS**, and other Effects, at the above Nurseries. The collection includes some of the finest Specimen and Exhibition Plants in the North of England, amongst which may be named a magnificent *Cycas revoluta*, 9 feet across, with 50 new fronds; *Cycas revoluta*, 7 feet across; *Phormium tenax variegata*, 6 feet by 7 feet; splendid pair of *Alsophila capensis*, 3 feet 3 inches trunks; 1 fine *Dicksonia fibrosa*, 2 feet 6 inches trunk; *Areca Verschaffeltii*, 8 feet high; *Cycas circinalis*, 20 feet across; *Dasylium glaucum* and *acrostichum*, 6 feet across; *Plectocoma Andersoni*, 12 feet across; pair of *Cyathea dealbata*, 3 feet trunks and splendid heads; *Seaforthia elegans*, 10 feet high; pair of *Gleichenia flabellata*, 5 feet through; *Gleichenia semivestita*, 3 feet 6 inches by 3 feet 6 inches; pair *Dicksonia antarctica*, 4 feet stems; pair *Dicksonia squarrosa*, 5 feet stems; *Alsophila australis*, 5 feet 6 inches stem; *Cibotium regale*, 16 feet across; *Cibotium Schiedei*, 12 feet across; *Cyathea dealbata*, with 8 feet trunk; *Dicksonia squarrosa*, 14 feet trunk, &c.; specimen *Lapageria*, *Allamandas*, *Stephanotis*, *Bougainvillea*, *Dipladenias*, *Gardenias*, *Dracenas*, *Ixoras*, &c.; specimen *Camelias*, up to 8 feet in height; specimen *Azaleas*, up to 6 feet high; magnificent specimen *Ericas*, including *E. Austriana*, *E. Lindleyana*, *E. ampullacea*, *E. obbata*, *E. eximia*; fine *Phenocoma prolifera*, *P. Barnesii*, 5 feet through, &c.; Orchids in great variety; specimen Ferns, including *Adiantum Farleyense*, *A. cardiochizena*, *Davallia Mooreana*, *Thamnopteris australis*, &c.; together with the usual assortment of Plants to be found in extensive establishments of this character.

May be viewed at any time prior to the day of Sale, and Catalogues may be had from Mr. TROUGHTON, Seedsman, Preston, the Agent to the Liquidator; from Mr. TITIS THORP, Lune Street, Preston, Chartered Accountant, the Liquidator; at the Nurseries, Ribblesdale, Preston; or from Messrs. JABEZ B. JONES and SON, Auctioneers, Preston.

Guildford (4845).

TO BE SOLD, a Bargain, a Valuable **NURSERY BUSINESS**—14 Acres of Land, Glass Erections, House and Stabling. Eighteen years' Lease. Incoming about £400. Apply to **PROTHEROE and MORRIS**, 98, Gracechurch Street, London, E.C.

High Field House, near Nottingham.

To **COLLECTORS** of **FERNS, FLORISTS**, and Others. In consequence of having gone to reside in Monmouthshire, E. J. Lowe, Esq., has instructed

MR. J. M. POTT to **SELL** by **AUCTION**, on the above Premises, on **AUGUST 19 and 20**, his valuable and well-known Collection of **BRITISH FERNS, CAMELLIAS**, and other Plants. The Ferns consist of about 4000 Specimens and Half Specimens, amongst which are several hundreds of the finest exhibited plants in England, which have obtained above 100 First-class Certificates from the Royal Horticultural and Royal Botanic Societies for new varieties, and several hundred First-class Prizes in various parts of England and Scotland.

Catalogues are in course of preparation, and will be duly announced in a few days.

TO BE DISPOSED OF, 14 years'

LEASE of **NURSERY**, about 1½ acre. Fruit pays rent ordinary season. Range of Glass over 100 feet run, by 12 and 14 feet; two-thirds planted with Vines fruiting. Thoroughly heated with Hot-water Piping. For further particulars apply **W. WOOD**, 3, Kelvin Grove, Sydenham, S.E.

In Liquidation.—Re T. Hawkins.

FOR SALE, with Possession, on very advantageous terms, the renowned **HAVEN GREEN NURSERY**, Ealing, comprising brick-built Dwelling-house and 8 Acres of Land. Held on lease for an unexpired term of fifteen years at the moderate rental of £60 per annum. Price for the extensive ranges of Greenhouses (heated by thousands of feet of Hot-water Piping, and containing about 31,000 feet super of Glass and Woodwork) may be had on application to Messrs. **FOREMAN, SON and CO.**, Accountants, 32, Gresham Street, E.C.; or to Messrs. **PROTHEROE and MORRIS**, Horticultural Auctioneers, 98, Gracechurch Street, E.C.

Island of Guernsey.

TO BE SOLD, a **GARDEN, VINERIES**, and **GROUNDS**, containing about 2½ acres, in the parish of St. Peter Port, and within a short distance of the town. The Vineries are in all 270 feet long, stocked with the choicest Vines, on which there are now about 3000 lb. of fruit. The Garden was laid out about four years ago. There are upwards of 300 young Fruit Trees, including nearly 100 of the famous *Chauvontelle* Pears. There is a Nursery of about 2000 young Vines, and about 10,000 strong *Asparagus* plants. The Land is held in fee, not subject to any Rent, and the taxes are nominal. One-third of the Purchase Money may be left outstanding.

Apply to **T. GODFREY CAREY, Esq.**, Advocate, Court Place, Guernsey.

To Nurserymen and Florists.

TO BE LET, a most profitable **NURSERY**. Rent only £25. Splendid Hothouses. About 300 feet of glass. Anything grown, and great demand. Fortune to energetic man. Small incoming.

Messrs. **GENDEL**, Land Agents, 94, Queen's Road, Peckham, London, S.E.

H. THORNTON AND CO., Fulham, have

the following plants for Sale, cheap:—**CABBAGE PLANTS**, 3s. 6d. per 1000. **ROSETTE CLOVER**, 3s. 6d. per 1000. Also the best **Milkrack MUSHROOM SPAWN**. Special prices for large quantities.

Primulas—Primulas—Primulas.

Eleventh Year of Distribution.

WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free. Extra strong plants, in 60-pots, 2s. 6d. per dozen, or in **EXCHANGE** for **MAIDENHAIR** and other **FERNS**.

The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

East Lothian Intermediate Stocks.

THOMAS METHVEN and SONS now offer their Choice Strains of these splendid **STOCKS** for present sowing—Scarlet, Purple, White, Snow-white, Wall-leaved, and Cowe's New Crimson—in packets, 1s., 2s. 6d. and 5s. each colour.

15, Princes Street, Edinburgh.

Dutch Bulbs.

C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale **CATALOGUE** of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to

Messrs. **R. SILBERRAD and SON**, 15, Harp Lane, Great Tower Street, London, E.C.

Brassavola Digbyana.

H. EATH and SON have a fine lot of established plants of the above to offer.

5s., 7s. 6d., and 10s. 6d. each.

FLOWERING PLANTS, 21s. each.

Exotic Nurseries, Cheltenham.

DUTCH BULBS.—Cheap Route.—

Buyers when ordering should request the Growers to consign them to **WATSON and SCULL**, 90, Lower Thames Street, London, E.C., Forwarders to all parts of the World; they will then secure speed with cheapness.

NEW GERANIUMS of 1879,

Reduced in Price.
12 **ZONAL GERANIUMS** of 1879, superb varieties, 6s.
12 **GERANIUMS** of 1878, splendid varieties, 4s.
12 **GERANIUMS** of previous years, very select varieties, 3s.
12 **DOUBLE GERANIUMS** of 1879, very superb varieties, 6s.
12 **DOUBLE GERANIUMS** of 1878, fine varieties, 4s.
12 **OLDER DOUBLE GERANIUMS**, best selected varieties, 3s. In good Plants, Post-free from **E. W. KNIGHT**, Florist, Battle, Sussex.

BULBS. DIELYTRAS, SPIRÆAS, At Lowest Prices.

Wholesale Lists free on application.

A. M. C. JONGKINDT CONINCK, **TOTTENHAM NURSERIES**, Dedemvaart, near Zwolle, Netherlands.

ROSES.—In reply to numerous enquiries

Messrs. **WM. PAUL and SON** beg to say that they exhibited 32,000 trusses, equivalent to 50,000 flowers, at the Alexandra Palace Rose Show. Acres of Roses now grandly in bloom. Intending Purchasers are invited to view the collection (which includes all the best decorative and exhibition varieties), to select the sorts they most approve.

PAUL'S Nurseries, Waltham Cross (adjoining Waltham Station), half an hour's ride from Liverpool Street and St. Pancras Stations.

JULES DE COCK, NURSERYMAN,

Ghent, Belgium, offers:—

PALMS, seedlings, in store pots, per 100:—*Areca alba*, 60s.; *A. madagascariensis*, 60s.; *A. rubra*, 30s.; *Chamaerops excelsa* and *humilis*, 8s.; *Corypha australis*, 12s.; *Latania borbonica*, 10s.; *Pandanus utilis*, 20s.; *Phoenix reclinata*, 10s.; *P. tenuis*, 20s.; *Ptychosperma Alexandræ*, 60s.; *Seaforthia elegans*, 20s.

FERNS, in small pots, per 100:—*Adiantum cuneatum*, 3s.; *A. gracillima*, 40s.; *Cibotium regalis*, 70s.; *Dicksonia antarctica*, 30s.; *Lomaria gibba*, 25s.; *L. zamzoides*, 40s.; *Nephrodium racemosum*, 30s.; *Pteris argyrea*, 25s.; *P. serrulata cristata*, 30s.; *Dracena indivisa*, 15 to 20 inches high, 1s. each.

NEW DOUBLE TROPEOLUM, nanum

fl.-pl.—This is the finest novelty in soft-wooded plants introduced this year, and surpasses any other double variety previously in cultivation. The best idea of its merits will probably be given by a brief description of a plant now in our nursery. Age of plant from cutting, about 5 months; length of shoot, 3½ ft.; size of flower, 2 to 2½ ins. in diameter; number of flowers and buds on the plant, 127; colour very dark orange-red. The petals wither on the calyx, but do not fall. Plants, to flower this autumn, post-free, 11. 6d. each 12s. per dozen.

TROPEOLUM, fl.-pl., distinct from above, colour light orange-red, 6d. each.

TROPEOLUM, Dr. Mules, one of the best dark single varieties for climbing, indoors or out, 6d. each.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

TRIPOLI ONION SEED.

GIANT ROCCA—A fine large variety, 6d. per ounce.

LARGE LATE FLAT RED, extra.—Grown from prize bulbs, 1s. per ounce.

LARGE LATE FLAT WHITE, extra.—Grown from prize bulbs, 1s. per ounce.

Also all other kinds of Seeds for Autumn sowing.

CATALOGUES with over 500 illustrations, post-free on application to

BIDDLES and CO., The Penny Packet Seed Company, Loughborough

GREENHOUSE and STOVE

PLANTS.

TUBEROUS BEGONIAS, HERBACEOUS PLANTS, SEEDLING PRIMULAS, CINERARIAS, and CALCEOLARIAS for potting.

COLLECTIONS of **GREENHOUSE or STOVE PLANTS**, in good named varieties, for exhibition or house decoration, at 6s., 9s., 12s., and 18s. per dozen, according to size and quality of collection; varieties omitted which purchasers possess.

CROTONS, in good leading kinds, 6s. and 9s. per dozen.

TUBEROUS BEGONIAS, several thousands of named sorts now on sale, all from last year's bulbs, at 4s., 6s., 9s., 12s., and 18s. per dozen.

PRIMULAS and CINERARIAS, from as fine a strain as any in cultivation, 1s. post-free, 1s. 6d., 2s. 6d., 3s. 6d. for 5s. 6d.

CALCEOLARIAS, 2s. per dozen, 15s. per 100.

All these are now in cold frames, and strong plants, ready for potting into 60's.

HERBACEOUS PLANTS—If these are planted now almost a season is gained in growth, and the plants are much stronger and better prepared for the winter than is the case when planted in autumn.

Our collection comprises almost all worth growing for Garden decoration, and selections can be made for any situations at 3s., 4s., or 6s. per dozen, of twelve varieties, 20s., 30s., or 50s. per 100.

FUCHSIAS, HELIOTROPES, LANTANAS, SALVIAS, COLEUS, TROPEOLUMS, twelve fine varieties of any of these, all named, and including many novelties, 2s. and 2s. 6d. per dozen, 12s. and 15s. per 100.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

To the Trade.

SPECIAL OFFER OF TURNIP SEEDS.

TURNIPS.	Per bushel.
POMERANIAN WHITE GLOBE ..	17s.
GREEN GLOBE, special Prize stock ..	16s.
RED GLOBE ..	17s.
GREEN BARREL, fine early ..	16s.
HARDY GREEN ROUND ..	16s.
WHITE STONE or STUBBLE ..	18s.
DEVON GREYSTONE ..	18s.
GREEN-TOP YELLOW SCOTCH ..	20s.
PURPLE-TOP YELLOW SCOTCH ..	20s.
FOSTERTON HYBRID ..	20s.
YELLOW TANKARD ..	20s.
ORANGE JELLY ..	20s.

SWEDES.

SKIRVING'S IMPROVED ..	18s.
SUTTON'S CHAMPION PURPLE-TOP ..	18s.
EAST LOTHIAN PURPLE-TOP ..	18s.
MARSHALL'S PURPLE-TOP ..	18s.
BANGHOLM PURPLE-TOP ..	18s.
HALL'S WESTBURY PURPLE-TOP, true ..	18s.
GREEN-TOP, large and hardy ..	18s.

I offer as above, which will be all of crop 1880 pure, nett and fine samples, and of reliable stocks. Delivery when required. Early and large Orders are respectfully solicited.

Low Estimates for general **GARDEN SEED**. Orders for the coming season will be gladly furnished on application.

ALFRED LEGERTON, Seed Merchant, 5, Aldgate, E.

THE BEST OF THE NEW GERANIUMS of

1879, in cuttings, very cheap. Denny's, Catlin's, Postans', and Pearson's Singles, and Lemoine's Doubles, thirty of the very best for 10s.; the same in plants for 1s.; fifty older varieties, but all new recently, for 10s.; same in cuttings for 4s.; all post-free. **CATALOGUES** on application.

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PALMS.—Good Plants of the following,

suitable for table plants, are offered as under:—

SEAFORTHIA ELEGANS, 3 to 5 leaves, 12s. to 18s. per doz.

CORYPHA AUSTRALIS, 4 to 6 leaves, 15s. to 20s. per doz.

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HUMILIS, 4 to 6 leaves, 12s. to 18s. per doz.

RÖDGER, McLELLAND and CO., 64, Hill Street, Newry.

The Largest Rose Gardens in England.

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KING'S ACRE, HEREFORD.

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MANY ACRES OF

ROSES NOW IN FULL BLOOM.

Intending Purchasers should visit these Nurseries before purchasing Roses for the coming planting season. 500,000 to select from.

Catalogues free.

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Rose Blooms for Decoration supplied, and forwarded by the morning and evening trains.

CROTON HEATHII ELEGANS.

The most distinct narrow-leaved variety yet sent out.

First-class Certificate, *Haverfordwest*.

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Described in *Gardeners' Chronicle*, July 17 :—"Narrow-leaved variety, with the young stem and leaf pedicels of a bright orange-yellow ; the leaves pale green, and finishing off with age to a dark bronze tint."

Small Plants, 10s. 6d. each.

Larger Plants, 15s., 21s., and 42s. each.

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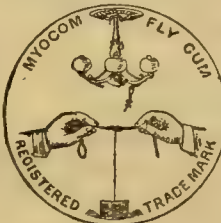
Instead of making your carriage drives and gravel walks unsightly by hoeing up the weeds, dress them with **SMITH'S "WEED KILLER,"** 4 gallons of which when mixed with 100 gallons of cold water, and applied with an ordinary watering can, is thoroughly destructive to all vegetable growth. One gentleman says :—"It is a great boon, saves a lot of labour, and would if it were known be used by all who love to see their drives and walks clean and neat." 7s. 6d. per 100 gallons, carriage paid to any station of Great Northern Railway.
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No Flue required. Specially adapted for Drying Newly-built Houses. Silver Medal awarded in 1878 at Wolverhampton Exhibition. The deleterious and unpleasant vapours arising from the burning of ordinary coal gas are prevented from escaping, and are made to circulate within the Apparatus or Stove in such a way that they become thoroughly condensed, and are carried off in the form of a liquid, in which will be found the sulphur and other poisons which are drawn from and would in the ordinary way be left in and mixed with the surrounding atmosphere ; consequently health is not prejudicially affected. Works of Art, Plants, Pictures, Books, Furniture, &c., are not injured, and the atmosphere is rendered uncontaminated and perfectly healthy.

Prices from 50s. to £10 10s.
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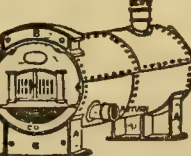
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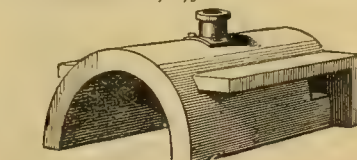
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THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867 ; Highly Commended, 1873 ; and First-class Certificate, 1875.



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It is made in three sizes, to cut in breadth 8 inches, 12 inches, and 16 inches respectively: and is so easy in working, and at the same time so effective, that even ladies can work it without feeling fatigued, there being no occasion to stoop on account of the long wooden handles attached to the machine, and a greater quantity of work can be done in a given time than by any other method.

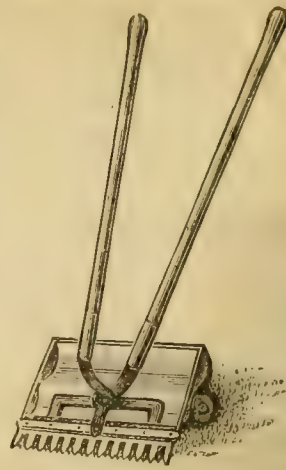
This invention is also applicable for Farm purposes—Reaping Corn and other Crops, Clover, Rye, &c., equally as well as accomplishing the objects for which it is required in the garden; and the cost being so small in proportion to the saving in time and quality of finish effected, it is placed within the reach of all, and needs but a trial to prove its superiority.

PRICES.

The 8 inch Machine, complete with Rollers and Tray	.. ..	21s.
Ditto, without Rollers and Tray	.. ..	18s.
The 12 inch Machine, complete with Rollers and Tray		28s.
Ditto, without Rollers and Tray		24s.
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Ditto, without Rollers and Tray		33s.

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HIGH CLASS KITCHEN GARDENING.

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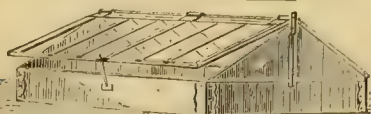
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PARHAM'S PATENT SYSTEM of GLAZING WITHOUT PUTTY,



With Wrought-iron Channelled Rafters, Continuous Lapped Glass, and Rainproof Ventilators under Glass Super Roof.



Parham's Patent Registered Plant Preservers,

With "Truss" Hinge, and no Principals. The Ridge always fits close, the interior is free from all obstruction, and the corners are secured in iron angle-plates: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
6 feet by 3 feet		£2 7 6	12 feet by 3 feet	.. ..	£4 0 0
6 feet by 4 feet		3 0 0	12 feet by 4 feet		5 0 0
6 feet by 5 feet		3 15 0	12 feet by 5 feet		6 5 0
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Any other sizes at proportionate price.

Both systems avoid the heavy expense of re-puttying and breakage of glass, and effect a great saving in cost of re-painting and repairs, combined with absolute freedom from drip.

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(Who has purchased the Business of the late Firm of CRANSTON AND LUCK, Birmingham).

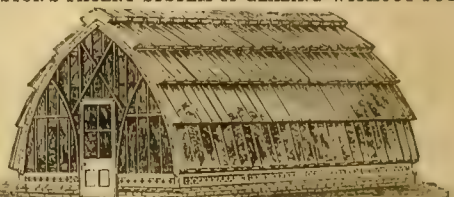
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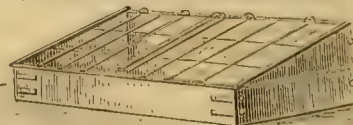
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With Diffused Ventilation, Stepped Roof, Wood Grooved Sash-bars, and Curvilinear Outline on Laminated Principals.



Parham's Extra Strong Garden Frames,

With 2-inch sashes and 1½-inch red deal framing, secured at each corner with two wrought-iron strap bolts: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
4 feet by 6 feet, 1 light		£2 2 0	16 feet by 6 feet, 4 lights	.. ..	£7 5 0
8 feet by 6 feet, 2 lights		3 12 0	20 feet by 6 feet, 5 lights	.. ..	8 15 0
12 feet by 6 feet, 3 lights		5 7 6	24 feet by 6 feet, 6 lights	.. ..	10 10 0

Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork, at proportionate prices.

B. S. WILLIAMS' PRIZE MEDAL FLOWER SEEDS. POST-FREE.

AURICULA, Show, finest mixed ..	Per packet—s. d.	
AURICULA, Alpine ..	1 6	
CARNATIONS, finest mixed ..	1 0	
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and ..	1 6	



CINERARIA, Weather's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d. and ..	1 6	
CYCLAMEN PERSICUM, Brilliant (New) ..	3 6	
CYCLAMEN PERSICUM GIGANTEUM, 5s., 3s. 6d. & (New) ..	2 6	
CYCLAMEN PERSICUM, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and ..	3 6	
PANSY, English Show ..	1 0	
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PRIMULA SINENSIS FIMBRIATA COCCINEA (New) ..	2 6	
PRIMULA SINENSIS FIMBRIATA, Williams' Superb Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d. & ..	1 0	
POLYANTHUS, Wiggins' Prize Strain ..	1 0	
PICOTEEES, finest Mixed ..	1 6	

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Price 1s. 6d. and 2s. 6d. per packet.

From Mr. T. W. DELL, Head Gardener to the Right Hon. Earl of Dartmouth, Fatchull.—"The Cinerarias were splendid, and were very much admired. Some of the flowers measured 2 inches across, and were of the richest colours. The plants were robust and vigorous in growth. The Calceolarias were really good and perfect in shape and colour."

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WEBBS' GOLD-LACED POLYANTHUS ..	0 6	1 0
WEBBS' PERFECTION CYCLAMEN ..	1 6	2 6

Five per Cent. Discount for Cash.

THE QUEEN'S SEEDSMEN, WORDSLEY, STOURBRIDGE.

SUTTON'S CHOICE VEGETABLE SEEDS FOR PRESENT SOWING.



ONION.—Giant Rocca.

This is the largest Onion in cultivation, sometimes growing from 3 to 4 lb. in weight. It is of fine globular shape, very mild flavour, and keeps well. Our selected stock is particularly fine.

Price, 1s. 6d. per oz.

The following varieties, sown in July and August, will come to a very large size during the following spring and summer:—

LARGE EARLY RED ITALIAN ..	Per oz. s. d.	
LARGE EARLY WHITE ITALIAN ..	1 6	
GIANT LATE RED ITALIAN ..	1 6	
GIANT LATE WHITE ITALIAN ..	1 6	
THE QUEEN ONION ..	Per pkt. 1 0	

CABBAGE.—Sutton's Imperial.

The best Cabbage for spring use. If sown the first or second week in July it will produce beautiful Cabbages for early spring use. Heads cone-shaped, very large, firm, and of mild flavour. 1s. per ounce. Also

ENFIELD MARKET ..	Per ounce—s. d.	
IMPROVED NONPAREIL ..	0 8	
IMPROVED EARLY DWARF YORK ..	0 8	
RED PICKLING ..	1 0	

Vegetable Seeds Post-free (except Peas and Beans).

All goods value 20s. Carriage Free to any Railway Station in England or Wales.

SUTTON & SONS, THE QUEEN'S SEEDSMEN, READING.

SEEDLING PLANTS OF CHOICE FLORISTS' FLOWERS.

Free and Safe by Post.



Free and Safe by Post.

All carefully transplanted and in fine healthy condition, from our own superb strains.

AURICULAS ..	Per 100	s. d.	s. d.
CALCEOLARIAS ..	10 6	per doz.	1 6
CINERARIAS ..	10 6	"	1 6
CARNATIONS, very fine ..	10 6	"	1 6
PANSIES, Show and Fancy ..	7 6	"	1 0
" superb Blotched ..	10 6	"	1 6
PICOTEEES, very choice ..	10 6	"	1 6
PRIMULAS, choicest red fringed ..	10 6	"	1 6
" white ..	10 6	"	1 6
" mixed ..	10 6	"	1 6
SWEET WILLIAMS, very choice ..	5 0	"	1 0

Not less than fifty will be supplied at the rate per 100.

DANIELS BROS., THE ROYAL NORFOLK SEED ESTABLISHMENT, NORWICH.

For Present Planting.

Please note Prices. Good strong healthy Plants, from selected seed stocks, viz.:

CABBAGE.—Enfield, Nonpareil, York, Wheeler's and Sutton's Imperial, Thousand-Head, and Drumhead Savoy, Little Pixie Savoy, &c.
KALE.—Thousand-Head and Cottager's.
BRUSSELS SPROUTS.—Stryngour's Giant and Matchless.
All the above plants, at 2s. per 1000, 17s. per 10,000, 75s. per 50,000.
BROCCOLI.—Early Superb White, Late White, Improved Purple Sprouting, at 2s. 6d. per 1000, 20s. per 10,000, 90s. per 50,000.
Packages included. On rail. Samples on application.
N.B. 1000 of above Plants assorted to purchaser's choice, 2s. 6d.
CAULIFLOWER PLANTS, 4s. per 1000.
EDWARD LEIGH, Norcott Farm, near Guildford.



THE Gardeners' Chronicle.

SATURDAY, JULY 31, 1880.

RUSH-BEARING IN WEST-MORELAND.

THE ancient ceremony of Rush-bearing was performed this year at Grasmere in the usual way and on the customary day. It must be at least a thousand years ago since the church of St. Oswald, in Grasmere, was first carpeted with Rushes, and so long as Rushes formed the approved carpet of churches and houses St. Oswald's was continually recarpeted in a ceremonious manner by the villagers. The same necessary removal of last year's carpet, and the substitution of a new one for it, took place in other northern villages. In the height of summer, when the Rushes were at their best, the required materials, fresh and green, were taken from some convenient mere—from Grasmere or Windermere, or any other damp and Rush-producing spot, and were borne to the church and scattered over its flagstone floor. The Sunday nearest July 19 was the appointed time when St. Oswald's would present a fresh and green appearance to the assembled congregation, the work of collecting and of "Rush-bearing" having been performed on the previous day. The Sunday following the twelfth day after St. John's Day was another date of the same kind. At Ambleside, this year, the ceremony which has replaced the "Rush-bearing" drew together an admiring population on July 24. At Grasmere the picturesque details gratified all beholders on the previous Saturday, and an annual discourse appropriate to the occasion was delivered on the following day to a congregation which filled to overflowing one of the most old-fashioned and beautifully decorated churches that can be imagined.

On the evening of the loveliest day of the present year, Helvellyn, lightly capped with a misty haze such as he wears on hot days, with the other peaks and fells that enclose Grasmere, looked down paternally on the village by the lake, and eyed the crowd assembled round the church benignantly.

These old mountaineers are by no means sour or stubborn of temper. They recollect the Rush-bearing as it used to be conducted, and they approve of the changed custom which has rendered it appropriate to the present time. The mountains of Westmoreland, moistened by the genial air of the Western Sea, needed but the planter's hand; and the one thing needful for their share in a perfect landscape has not been spared. Their once undecorated spurs, reaching to the lake and the so-called Mere, now a fertile stretch of butter-making grass, have been most beautifully planted. A dozen "statesmen" of the farming class, and twice as many gentlemen from far and near, have built their nests beneath the hill, like swallows under a roof, and every house adds trees and shrubs to the clothing of the once naked country. Exotics that the weather or the first hard winter stunts and browns in a metropolitan county

thrive here fresh and green. *Pinus nobilis* abounds, bushy, with robust health. The *Cryptomerias* flourish, and the tenderest *Thujas* look fresh. The ornament which has been conferred on these once bare and solitary peaks by planting their park-like bases with such trees and shrubs as surround the modern lake-dwellings of Grasmere and Ambleside—the late Sir John Richardson's, for example, Wordsworth's, Dr. Arnold's, "Christopher North's," or Miss Martineau's—has been of the most signal kind. And the planting of forest timber higher up the slopes has been equally effective. Not a single mountain in the neighbourhood, therefore, could approve of any kind of sentimental twaddle about railroads and innovation. The mountains love the moderns. They know they are the better for their ornamental bases; in short, they know which side their bread is buttered, and what is due to man, their amender and admirer, whether he be a native of some village at their foot, or a tourist.

Helvellyn and his neighbours looked down with an approving eye on the crowd which assembled to witness, or share in, the ceremony of "Rush-bearing," on July 17, at the church of Grasmere, near the lake, and close to that trout-producing, noisy, and pebble-bottomed stream, the Rothay. The time was evening, after tea, at the hour most propitious to needful village gossip—and all gossip must be needful if it cannot be avoided. Young and old were present, and all the fortunate strangers who were visiting Grasmere at the time. The Rector, successor to St. Oswald—if he preached here—mixed among the spectators, and bidden the strangers welcome. His explanation of the Rush-bearing to one among the latter was, that the ceremony has been held on this same spot continuously from the earliest times. The celebration has somewhat altered its character, and for some years past the exhibition of Rushes has been supplemented by that of flowers. The school children are the present bearers, and sixty or seventy garlands are borne in the procession, one by each of the children, carried in the hands and not carried lazily, resting partly on the shoulders, but well and properly borne before in both hands.

The garlands are of various forms. In nearly all of them an upright stick, 3 or 4 feet long, is fastened in a block like an old-fashioned candle-stick, and the flowers are attached so as to completely cover this simple framework, or the stick is elaborated into a cross by means of cross-pieces. Crosses formed the commonest of the floral frameworks, every kind of cross being represented, from that fashioned by a single cross stick to the more elaborate Maltese cross. It was a pretty spectacle to see the boys and girls and their mothers bringing their flower-sticks and garlands into the village from the "green side," where some of the school children reside; and a more attractive gathering has been seldom witnessed than the group of bearers resting their burdens on the churchyard wall in the midst of the clustering and curious crowd—the poet who sung so sweetly on this very spot, whom the old people present still remember when he lived among them, resting here beneath the turf which so many generations have trodden from St. Oswald to the present time.

Gossip, interrupted at the tea-board, and sweetened by the perfume of the Roses, rippled pleasantly along, all in the open like the Rothay outside the west wall, till the procession had been formed. The ladies seemed particularly pleased; one man only uttered a complaint. He was a crabbed villager long past his prime, and he remembered well the Rushes of langsyne. The flowers displeased him. "Let a Rush-bearing be a Rush-bearing," he said, "and let a flower show be a flower show." Another old gentleman approved of the change. He remem-

bered the Rush-bearing of fifty years ago, when it was not much of a sight to see—a few Rushes only being collected and carried into the church by the young men and women. Then he remembered the use of paper flowers to enliven the green Rushes, which was a step in the right direction. He was in favour of flowers, he said, and of schools and education for the young.

Every stranger who followed the procession of flower-bearers into the church must have been surprised at the din of hammers used in fastening the blocks of the flower-sticks to the ends of the pews. Such noises from every part of the sacred building are not quite customary, and might have seemed irreverent but for the foregone impression produced by the solemn entry of the floral offerings and the sound of the inviting bell calling worshippers to evening service.

There is a nave and one aisle in Grasmere church, and presently five rows of flower-sticks had been duly fastened at the ends of the seats, with one row down the centre where the rows of benches meet. The noise of hammers suddenly ceased, the church was filled by the inflowing of the people, and the service commenced, the Rush-bearers' hymn was sung, and a short sermon, not uninspired by the magnificent appearance of the church, decorated by flowers in every part, was delivered.

There are now only three places in England—Grasmere, Ambleside, and Worksop—where the ancient custom of Rush-bearing is still observed, even in that modified form which has overlaid the Rushes with flowers. In several of the northern towns, as at Brighouse, one particular day in the year is still called the Rush-bearing day, though no ceremony is now observed. *H. E.*

New Garden Plants.

CYPRIPEDIUM MORGANIANUM, *n. hybr.**

A grand thing, coming nearer *Cypripedium Stonei* platytanium than any known species, or hybrid, but growing quite freely. Hence it may be foreseen that it will form the pleasure of many collectors when *Cypripedium platytanium* will be kept as a monopoly by Mr. J. Day and a few of his best friends, provided some bold collector does not surprise the shy beauty in her unknown domicile.

It is a hybrid between *Cypripedium superbiens* (Veitchianum) and *C. Stonei*, the first being the mother plant. (Let me add, in parenthesis, that the first-named plant is exceedingly curious, inasmuch as it appears that the rather numerous specimens in our collections are all descendants from two plants. One was introduced by Messrs. Veitch, I think, in a lot of *Cypripedium barbatum*; the other one was introduced from Java by Messrs. Rollisson. They sold the plant to Consul Schiller, and this was the original of my species, *C. superbiens*. I keep the flower, with Messrs. Rollisson's original label on parchment, in my herbarium. The plant of Messrs. Veitch was called *C. Veitchianum*, but the name did not obtain validity by the addition of a description.)

Now to return to our novelty. It has the leaves of *Cypripedium Stonei*. The nerves are a little darker, even the transverse ones. Whether the under side is just as white as is characteristic for *Cypripedium Stonei*, I cannot say, Messrs. Veitch having of course, in their usual prudence, sent but an old leaf. The strong peduncle bears three (more?) grand flowers. Sepals as in *Cypripedium platytanium*, whitish, with some conspicuous dark nerves. Petals broad, ligulate, blunt acute, much longer than the sepals, quite in the way of those of the *Cypripedium platytanium*, whitish sulphur, with very numerous dark brown mauve blotches and stripes inside. Lip nearly as in *Cypripedium superbiens*, but longer, and the sac more conical, light sulphuric-white beneath, and brownish with a certain included mauve tint above. Staminate exceedingly large, nearly square, hooded, broader in front, with two forcipate introrse teeth, hairy.

* *Cypripedium Morganianum* (*Stonei* × *superbiens*).—Foliis ligulatis obtuse acutis, obscurissime nervosis reticulatis non marmoratis; pedunculo valido elato apice puberulo trifloro (semper 2); bracteis triangulis acutis parvis ovatis ovaria parvisime puberula subulva vix tertia aequantibus; sepalis impari elliptico apiculato; sepalis pari connatis ovato-triangulo, tepalibus ligulatis obtuse acutis latiusculis; labello Cypripideis superbiens sed apice magis conico; staminodii maximo subquadrato; antorsum dilatato; dente forcipato introrse antice utrinque; superficie puberula. *H. G. Rehb. f.*

This great novelty was raised in the Royal Exotic Nursery of Messrs. Veitch, by Mr. Seden. It is named in honour of Mr. Morgan, one of the most enthusiastic collectors of Orchids in the United States. *H. G. Rehb. f.*

SAUROMATUM PUNCTATUM, *C. Koch.**

Although not really a plant new to cultivation, since it was described as a garden plant so long ago as 1858, I call attention to it here, as it appears to be a scarce and little known species, and because it is altogether omitted from Engler's recent monograph of the Araceæ.

The habit and foliage of *S. punctatum* resemble that of the well-known *S. guttatum*, but the petiole is more handsomely spotted, the pale greenish ground being well covered with large blackish-green blotches, and marked between the blotches with numerous dots of the same dark colour, from which I suppose the specific name is derived; the bases of the midribs of the leaf segments are similarly marked beneath. The leaf-blade is pedatisect, with 11 to 15 elliptic acuminate segments, deep green, the midrib and veins impressed above, very prominent beneath, scape sometimes attaining a length of 7 inches. Spathe 1½–2 feet long; the narrow lanceolate-linear limb is purplish-green, nearly concolorous and unspotted. Spadix 2 or 3 inches shorter than the spathe.

For a dried specimen and a living plant of this rare species the Royal herbarium and gardens at Kew are indebted to Mr. R. J. Lynch, Curator of the Botanic Gardens, Cambridge, where it has long been cultivated under the name of *S. punctatum*; and although, as to the length of the spadix, the Cambridge plant disagrees with *C. Koch's* description, there can be no doubt as to the correctness of the name, for in all other respects it agrees well with his description. Unfortunately, no specimen of it exists in *C. Koch's* herbarium, so that there is only his description to judge from; he describes the spadix as about 6 inches long, but most probably his specimen was in some way imperfect, because he describes the part on which the flowers are borne as taking up 5 inches out of the 6, and the appendix as being short and rounded; such an appendix as this would be an anomaly in the genus, and as the Cambridge plant agrees with Professor Koch's description in all essential characters, the length of the spadix excepted, which is the normal one of the genus in the Cambridge plant, I conclude that Professor Koch's specimen had an imperfectly developed appendix to the spadix, although the flower-bearing portion was quite normal. *S. punctatum* may easily be recognised from the other described species, in which the spathe is known, except *S. simile*, Schott,† by its unspotted, nearly concolorous limb of the spathe. Besides the present species, *S. sessiliflorum*, Kth., and *S. pulchrum*, Miq., are also omitted from Engler's book; in other words, three out of the ten described species of this one genus are omitted from this most recent monograph of the Araceæ. *N. E. Brown, Kew.*

STENIA GUTTATA, *n. sp.‡*

Take the well-known rare *Stenia pallida*, give it shorter rather blunt sepals and petals, with spots of indian-purple on a straw-coloured ground, let the lip have such blotches too and only seven callous teeth, then change the linear pollinia to pyriform ones, and you have the very unexpected novelty which was gathered a while ago in Peru by Mr. Davis. It is just now in flower with Messrs. Veitch. *H. G. Rehb. f.*

RANDOM THOUGHTS ON ROSES.

I WAS at some pains to count the petals of a fine hybrid perpetual Rose, and to measure, approximately at least, its superficial contents, when I found that instead of the five rosy petals of the flower in the hedgerow, this, by art and perseverance, had got thirty-five petals; and as each one averaged 1½ square inch, and as both sides of the petal were coloured deeply, there would be 100 square inches exposed by this Rose to light and air, and to the manufacturing of that truly delicious perfume which all admire, and which even the dried petals retain for years after the rest of the flower has gone to decay.

Poets, sacred and profane, have lavished praises upon this flower, so that we need not say anything of its charms, and what old writers called its "vertues."

* *C. Koch*, in *Wochenschrift*, i., p. 263.

† *S. simile*, Sch., is placed by Engler as a synonym of *S. venosum*, Sch., but it is perhaps the most distinct species in the genus, having a spathe (apparently unspotted) not more than a quarter as large as that of *S. venosum*, and a very slender subulate spadix, quite unlike that of *S. venosum*.

‡ *Stenia guttata*, *n. sp.*—Arcte affinis *Stenia pallida*, Lindl. Sepalis tepalibus brevioribus obtuse acutis; labelli dentibus tantum septenis; columna utrinque obscure angulata pollinibus depresso pyriformibus.—Peruvia. Excd. Dom. Veitch. *H. G. Rehb.*

It is seldom named in Holy Writ, but when it is noticed there it is in rapturous phrase, as "I am the Rose of Sharon," beautifully paraphrased by Pope:—

"See spicy clouds from lowly Sharon rise,
And Carmel's flowery top perfumes the skies."

The household converse of man to friend is full of idioms borrowed from the queen of flowers, as "*sub rosa*" (under the Rose)—i.e., not for vulgar ears, or to be bruited in common gossip. Again, when things are praised beyond their merits, it is said of such that they are "coloured rosy;" and when the beauties of this world begin to fade, and the sere leaves begin to fall, as if near their journey's end, it is then that we cannot be deceived by the blandishments of anything under the sun, of which the poet has so sweetly said—

"We smell the mould above the Rose."

At the Rose show in the Manchester Botanical Gardens on July 17, the reporter (very sensibly, I think) remarked upon the sameness of the exhibits, just as if there were not now, or never had been, other than hybrid perpetual Roses—as if there had been no parti-coloured white York and red Lancaster Roses, the badges of our contending armies arrayed for civil war—that terrible curse. I recollect the time when the new Baronne Prevost Rose appeared as large as a tea-saucer, and was hailed with delight merely on account of size. That sweet Rose, *Rosa Devoniensis*, too, was a great stride until *Maréchal Niel* eclipsed all before it. But why should I name invidiously any one of such a family of beauties? Surely my native country ought to lay claim to Scots Roses, whose prickles all over seem to wear the Scottish motto, "*Nemo me impune lacessit*;" and if to that we add the climbing Rose, the Dundee Rambler, capable of shooting 20 or 30 feet in one summer, with thorns thick and strong, methinks that, once seen, the "North Countrie" Roses will be remembered.

But surely at such an exhibition of Roses by themselves there ought also to have put in an appearance some of the heads of the families of this genus, such as the Moss Roses, and that pet bantam of a Rose, *Rosa Banksia*, both yellow and white. When I had the good fortune to have charge of the gardens at Alton Towers, I was asked to get Banksian Roses, as the Countess had admired one so much where she had been visiting, and was surprised to find in the garden near the bath-room a large plant on a wall laden with its pigmy Roses; but this was—

"Before decay's corroding fingers
Had marred the lines where beauty lingers;"

for, with a change of ownership, many and great changes have come over the scene there.

When the Princess visited Alton after her marriage, "merrily danced the farmers' wives;" for wine 150 years old was decanted on the occasion, and there was no stint in that day's hospitality. Here, over a secluded walk, was a roof and wall of Roses, and a miniature chapel at one end for prayer.

The elegant Rose which I have dissected was coloured heavily; and this, in my opinion, is at the expense of the flower, for the farther the flower is removed from the normal state of the red and white Roses, the more difficult it is to get a full flower—that is, all the petals perfect in their transformation; for every double flower is a monster, however fair to see; and the oddities of this genus are notorious—for example, the "veil of moss around it thrown," and the fragrance of the Rose so strong in the foliage of the Sweet Brier, otherwise a weedy-looking shrub.

When I revisited Alton, after a lapse of twenty-five years, I was delighted to see Alton Castle, the ancient keep, inhabited, and a church built over the tombs of Lord John and his consort, and the trees that I had planted "yielding a shadow;" but most I admired the high keeping and the excellent management of my successor, Mr. Rabone, with many new and rare things that were not thought of in my time; but my successor is, I am happy to say, quite equal to the occasion, as his work will show. The lovely Gardenia is here made a speciality, and grown to perfection—a thing we seldom see moderately well done, but never better than under glass here. This seems to be the only manageable plant that disputes the fragrance with the Rose; but when we see even *Pæonies* sweet-scented, and many others nearly as sweet as the snowy *Stephanotis*, we cannot help thinking that things glorious are yet in store for the amateur and the professional Rose grower; for—

"The morning veils her dewy face
When brighter sunshine takes her place.

Alex. Forsyth, Salford.

IWERNE HOUSE, DORSET,

THE new and beautiful seat of Lord Wolverton, situated in one of the prettiest valleys in Dorsetshire, about halfway between Blandford and Shaftesbury, promises, from a horticultural point of view, to take rank as one of the leading horticultural establishments in the country. Few situations could have been better chosen, and perhaps there are few districts where the same amount of historical interest can be so clearly associated with objects which cannot fail to attract the attention of the tourist, whether he be horticulturist, historian, or philosopher. The historian or antiquarian will find abundant scope for research in the remnants of Roman camps and entrenchments, the most conspicuous of which are Hamilton Hill and Hod Hill, the latter practically but a wing of the first-mentioned; and many other relics of the struggles that took place during the time of the Roman conquest of Great Britain. These entrenchments rise abruptly, like a vast chain of terraces, and have a very romantic and strikingly picturesque appearance.

The horticulturist who wishes to follow Nature in his pursuits may, if he is so disposed, be able to gather a fund of knowledge from the beautiful scenes which have been formed out of chaotic disorder, and if he can only grasp and retain in his memory the gentle sweeps and natural elevations of this charming tract of country, and endeavour to carry the principle into practical landscape gardening, he will have accomplished something which will raise the standard of the landscape gardener into a position far exceeding what it now is, by having more of Nature and less of practical geometry in his works of art. Having a situation presenting such admirable opportunities for laying out a garden, it is no less a pleasure to enjoy a landscape which is so rich in legendary romance and natural configuration.

The great aim of those who make landscape gardening a study has been to arrange the boundaries and external portions of pleasure grounds and parks in such a way that the eye is gradually conveyed to interesting scenes, which, taken in combination with the artificial grandeur of lakes and stately trees, or perhaps statuary of a suitable kind, assists to modify the tone of the latter by bringing within the sweep of the eye that which is most graceful in Nature, and pleasant and refreshing to look upon. It is at the same time no less a duty to hide unsightly objects by judicious planting, and to see that the formation of dressed grounds is in harmony with the natural landscape of the district. This principle is so often violated in small places that it is well to draw attention to it; the rustic summer-house, the fantastic toy-like flower-basket dropped in a corner or in the centre of a formal plot of pleasure ground are sights so abundant in the suburbs of large towns, that it is a real pleasure to visit a new garden where every branch of horticulture is so faithfully represented in its own department, and so admirably arranged in its relation to its neighbour and its own natural position.

The terrace surrounding the mansion commands a fine view of the flower gardens, which are divided into several geometrical plots, giving ample scope for a variety of planting. The central object is an ornamental stone bed with a gravel walk all round and margined by a single row of flower-beds. In a direct line from here, at the extremity of the grounds, is a huge spreading tree, which has been made to do good service as a conspicuous object, and affords a suitable site for a sheltered shady seat which encircles the tree and from which the beauty of the garden may be enjoyed as well as the architectural beauty of the house, and a magnificent and elaborately fitted conservatory attached to it. This structure, unlike too many that are to be seen, is architecturally neat, and viewed from the outside is a handsomely proportioned building while it affords excellent accommodation for plants in the way of heat and light. The flooring is of mosaic work, and altogether the internal fittings are of the most complete description.

But to return to the flower gardens: the two wings abutting from the centre plot are neat semicircular designs, one being flanked by a subtropical garden and rockery in water which will be an enchanting little spot when the growth of plants and trees are fully developed and furnished. The corresponding side is balanced by an undulating bank of green, with one or two isolated beds, intended no doubt for the grouping of stately foliage and flowering plants.

A short distance from here, on a raised mound

leading to the fruit garden and hothouses, is another group of flower-beds which are very tastefully and effectively planted. Mr. Davidson, allowing for the distance the eye has to travel from the house to this beautiful "peep," has grouped his showiest colours in condensed masses with exceedingly good effect. Even when you are near the beds they do not look glaring, because of the reflection of shade from trees which form an agreeable adjunct to this attractive little corner, which will increase in beauty with time. To the left from this point is a handsome grass walk flanked on one side by a wall covered with Roses and evergreen creepers, and upon the other by a neat bank of shrubs, and a small collection of herbaceous plants. I must not forget to mention a hardy fernery and rockery, snugly situated in another corner of the grounds, before I conclude my brief notes with a few remarks upon the fruit garden and hothouses.

The former, like the latter, being in a state of entire renovation, there is as yet but a foundation being laid for carrying on the work of fruit and plant growing. The houses are either new, or are being remodelled upon the best and most approved principles of modern workmanship and utility. I notice Mr. Davidson has iron slide ventilators inserted in all his houses below the hot-water pipes, in order that a circulation of air may be admitted from the outside in stormy weather without the risk of giving the plants a chill. The air has first to come into contact with the heated surface (the hot-water pipes) before it passes among the plants, and the idea is no doubt a sound and practical one.

The Messrs. Dennis, of Chelmsford, are employed in putting up a range of plant-houses, and they are so admirably arranged that any one who is not so happily situated is half disposed to break the Tenth Commandment. The range is heated by one of Dennis' tubular boilers, and consists of working-shed, covered with glass and heated; propagating-house, plant-house, and two orchard-houses. The arrangement of the plant-houses enables the propagator to prepare his cuttings, root them, and grow them into plants without ever going out of the range, and having the facilities at hand to adjust the temperatures of the different compartments entirely under his control, as the exigencies and conditions of plant development may require.

Some old Vines and Peach trees were bearing capital crops, and some new span-roofed plant-houses, each 18 feet wide and 60 feet long, are filled with miscellaneous collections of plants for furnishing purposes and for supplying cut flowers. The plants are of the usual type employed for such purposes, with but few exceptions. I noticed a buff-coloured *Nerium* from France, and a plant of the old *Fuchsia fulgens*, which is still one of the best of its type for many purposes of decoration, as well as being a suitable plant for the herbaceous garden.

A collection of *Eucharis* is in superb condition, and a collection of Ferns for furnishing is not much behind it in health and vigour. A few months more will see this fine garden in a more advanced condition, and when the upset and anxiety incident upon directing the work of a new place are over, I have no doubt that it will not be difficult to pick up a few practical notes worthy of being recorded from a garden having for its head so excellent and practical a cultivator as Mr. Davidson. H. C.

POTATOS AT PENGE.

ALTHOUGH it is not possible to give any concise estimate of the probable crops of Potatoes that may presently be lifted by our chief exhibitor cultivators, yet in referring to the present appearance of the crop of such a well known exhibitor as is Mr. McKinlay we may derive some general conception of what is the lot of others, and how far the ensuing International Potato Show may be a success or otherwise. Employing an aquatic simile, we may say that Mr. McKinlay has so often carried off the best prizes with his Potato craft that the trim and rig of his vessel prior to the race becomes a matter of special interest to other competitors. If he fails this year it will be because his craft carries too much top-hammer—not an absolute source of danger perhaps, as long as the sea is calm and all is plain sailing, but undoubtedly a dangerous element when the weather becomes squally. Literally, the Potato plants have too much haulm—a fault very prominent in the Penge gardens, but not limited to that locality. The remarkably favourable

growing season has universally induced unusual top-growth, but where the soil is of good quality or largely enriched with manures, there the top-growth of the plants is beyond the usual needs for the production of good root crops. As a result the tubers appear to be later in forming than usual with all those kinds that are in full growth, but with all first early sorts there is no detriment visible, as the produce is as large as can be desired. The unusual haulm-growth would excite little concern were there no fear as to disease visitations behind, but if these come soon and find the tubers only moderately developed, then the excessive top will become an evil and a nuisance.

Mr. McKinlay is, at Penge, favoured with soil of great capacity for the production of Potatoes. It is a deep fibry soft loam, that with a year or two's working becomes literally a bed of sand. And in the old garden at Beckenham, where for several years it has been worked and dressed without stint, it is now even—though no manure has been applied for two seasons—growing marvellous crops of Cabbages, Peas, Parsnips, and other vegetables. In portions of this same old garden, yet kindly placed at Mr. McKinlay's disposal, and having little other stimulus but some artificial dressing, are growing some 30 rods in extent of various kinds, all planted at 3 feet apart, and these look as promising and healthy as can be desired. The season should suit them so far as, with another fortnight of growth, to enable them to produce a grand crop. A large breadth of Beckenham Beauty, a handsome second early white kidney, presents quite a picture, with its spreading haulm, curled leafage, and pretty purple bloom. It will be a sight for the gods when this piece is lifted. To dig up the tubers in this beautiful soil is a double pleasure. Under any conditions of soil the turning out of a fine crop of tubers is always an enjoyable one, but when the soil is so light and soft that it resembles a mass of sifted cocoa-fibre refuse, then labour is transformed into unalloyed pleasure.

It is in Mr. McKinlay's newer garden at Penge where the haulm exhibits such wondrous development—where International wants 6 feet of space, and many others as much also if it could be spared them. In fairly good soils, with high-class culture, 4 feet rows are rarely too wide, this year even that width might have been exceeded with advantage. When, however, nearly half a peck per root of fine handsome tubers are thrown out it is seen that the large intervening space is more than justified. The kinds that have been lifted are chiefly Early Rose, Beauty of Hebron, Royal Ashleaf, the new American Matchless, and a few others that tuber early. These the season has suited well and the growth is not excessive. Amongst the long-haulmed kinds special notice must be given to a very short topped kind named Early Cluster, the haulm not exceeding 14 inches in height. A root of this kind shows a large number of medium-sized very handsome tubers; but with all the dwarfness, the foliage is yet green and vigorous. Mr. McKinlay is probably the only person in this country who has up to the present time grown the variety known hitherto as Shelburne, but now rechristened Matchless. This privilege is per favour of Mr. Bliss, New York, who sends the variety out. It is a smooth, flat kind, having a brownish-white skin, and tipped at the nose with carmine. The sample is handsome and even, and the season fairly early. This kind, grown here from seed saved from two years' home growth, gives a moderate top, but from newly imported seed a rank, coarse haulm. The present results are all in favour of the home-grown seed. Had the season been less favourable, perhaps the imported seed would have given the best crop. Another handsome new kind is Beauty of America, a flat white kidney, that will probably be seen more largely later on. Such kinds as Grampian, Avalanche, Woodstock Kidney, King of Potatoes, Vicar of Laleham, Magnum Bonum, Radstock Beauty, and others, exhibit growth that would surprise those whose cultivation of Potatoes is limited to 2-feet rows, and the hoe to earth up with. Our amateur Potato cultivators can give the uninitiated in the art of cultivation many useful hints.

Up to the 24th inst. not a sign of the disease was manifest in this locality. We walked through the extensive allotment gardens so admirably cultivated by the Alexandra cottage residents, and saw hundreds of patches of Potatoes of many kinds, but heard of no disease. Many had planted the Scotch Champion, and were now rewarded with a perfect thicket of growth, so dense indeed as to present admirable cover

for game. The winter greens planted earlier were smothered, and the promise of tubers by no means a near one. The Rose is the favoured early kind, and this gave good crops. It presents a curious comment, however, upon the oft-vaunted excellences of this Potato, that so little is it in request, as compared with white kinds, that it sells slowly at about £3 per ton in London markets.

THE KEYNES NURSERIES, SALISBURY.

THESE famous provincial nurseries are at all times worthy of a visit from those connected with and interested in floricultural and horticultural pursuits, more especially to those immediately concerned with floriculture. These nurseries might, I think, be appropriately designated the home of the Dahlia, the Rose, and Verbena. The other day, in having a quiet look through, I was much struck with the following, amongst many of the new and distinct varieties of Verbenas, which were all in a healthy and vigorous condition:—Lustrous, intense scarlet, with large, bold, pure white eye; a very strong grower, of a creeping habit, which does not require pegging down. Mammoth, purplish-plum, with small distinct white eye; flowers of a monstrous size, pips flat, large and perfect. Princess, bright rosy-pink, very large flowers and good truss. Zulu, very deep rich claret-colour; a good grower and free bloomer, and a first-rate variety for bedding. Esmeralda, white, striped with purple; large and distinct variety.

By way of giving the readers of the *Gardeners' Chronicle* some idea of the quantity of Verbenas grown annually by the Messrs. Keynes & Co., I may mention that between February and May they send out between 60,000 and 100,000 plants. The Roses, which were, as usual, in a clean, healthy, and vigorous condition, need no comment from me further than the passing remark that 100,000 trees are despatched annually to various parts of the kingdom from the Castle Street Nurseries, and that just now the process of transforming poor "old woman into young lady," budding, is being rapidly proceeded with.

The display of Dahlias promises to be a good and extensive one. Some estimate of the number of Dahlias grown in these nurseries may be formed when I state that there is over half an acre of ground devoted wholly to the growth of trial seedlings, amongst which were some very promising varieties, the blooms being fine in size and good in form, the colours being striking and apparently distinct. From these seedlings Mr. Wyatt is hopeful of obtaining some good results, amongst which, let us hope, may be a blue one. Whilst referring to the Dahlias I may be permitted to remark that there are 10,000 pot roots plunged in coal-ashes, in suitable situations, the major portion of which in due time will be sent to various parts of the country to make good collections; these, too, Mr. Wyatt informed me, make the best roots to propagate from.

One of the houses adjoining the seed store is aglow just now with a fine and varied collection of double, semi-double, and single Pelargoniums, amongst which I noted the following excellent and distinct varieties:—Leviathan, salmon colour, fine large truss, and good for winter flowering; Dr. Denny, crimson-lake, a very free flowering variety; Jealousy, orange colour, fine truss; Madame Thiebaut, semi-double, deep pink; Minerva, a very good and free flowering variety; Proserpine, semi-double, deep scarlet; F. V. Raspail, very good; Mdle. Flora Millin, Henri Jacoby, dark crimson; New Life, a prettily marked and distinct variety; Louise, dark crimson; La Constitution, double salmon; Concorus Reginald, Grand Duke, M. Ousis, rosy-crimson; Wonderful, a double variety of the Vesuvius type, and which is grown largely here for cutting from during the winter months; Madame Ann Ballet, double white—this is a splendid thing, especially for winter flowering.

Pot Vines, as usual, occupy several houses, they are stood on the front stages over the pipes in span-roofed houses, and trained up under the roof to the apex, where they meet. This is a favourable position for pot Vines, fruiting canes, of which there are over 1600 rods, inasmuch as the fresh air which is admitted through the front ventilators immediately diffuses itself among the Vines in its passage upwards and out through the top ventilators. These Vines are in excellent condition, being strong, short-jointed and plump-eyed canes. Independent of the fruiting canes

there are several hundred smaller ones, for planting purposes, grown in the Castle Street Nurseries; tuberous-rooted Begonias, too, are about being made a speciality of by the Messrs. Keynes & Co. In conclusion I may remark that the good keep of the Rose and Dahlia ground, in which there is not a weed to be seen, and the nursery, and nursery stock in general, reflect great credit on the zealous and courteous manager, Mr. J. Wyatt. H. W. W.

ANGRÆCUM SCOTTIANUM.

AT a recent meeting of the Floral Committee of the Royal Horticultural Society the rare *Angræcum Scottianum* (fig. 30) was shown by Mr. B. S. Williams. As it is believed to be the only plant in the country except one, we have deemed it advisable to figure it. The flowers are white, and in form similar to those of its congeners, but the foliage is terete, like that of *Vanda teres*. The plant is a native of the Comoro Isles, off the south-east coast of tropical Africa, whence, through the mediation of Dr. Kirk, we may confidently hope for further novelties.

PANSIES.

THOSE persons who carry on the seed trade inform us that there is a large and constant demand for Pansy seed, and it is no little difficulty to obtain seed that will yield something worthy the attention of the raiser. Sometimes the result is in inverse ratio to the price paid for the seeds. We have seen seedlings produced from seed obtained at a large price from well known raisers, and the result has been most disappointing; while seed at what appeared to be a ridiculously cheap price, have given some flowers good enough to be propagated. The purchaser must take his chance, and hope for the best from his venture. The Pansy will always be a favourite flower, and a good supply can be kept up from seed. Those who desire a succession of bloom should sow twice in a year—in August and September—to have a batch of plants to keep through the winter to flower in early spring; and again in March and April, to bloom in July, August, and onwards: and the grower of these will not depend altogether on seedlings, but will care for any plants that may give flowers of good quality, and propagate stock by cuttings, or by dividing the plants when they have thrown up young growths from the roots. To encourage the plants to do this, the leading shoots need to be top-dressed with some rich light soil on two or three occasions during the summer, one main advantage being that the young growths put up from about the main roots root into the top-dressing, and lay the foundation of a future stock of a useful character. The best time to divide the plants is in October, and the divided pieces can be planted out in a prepared bed for the winter to flower in spring. It would be wise, as a matter of precaution, to have a bed prepared in an old frame, and plant up some of the best flowers, so as to secure a stock for the spring should the winter prove unusually destructive to this class of plants.

The Pansy is among the hardiest of hardy plants, and will stand any amount of frost so long as the weather is dry; it is when sharp frost and continuous wet combine their forces that the Pansy goes down before them. In light warm ground the plants will survive much better than when it is cold, stiff, and wet. If in the warmer, and may we not say sunnier South, the Pansy is liable to be burnt up in hot sunny weather, though there is a great tenacity in the plants when established in suitable soil, they will stand much heat if they can root freely into the earth. We are sometimes led to envy the Pansy growers in the North, who are favoured with a cooler and moister climate in summer, but they are sorely tried at times to preserve their plants through the winter; cold, cutting winds will sometimes work sad havoc with their stock. It may be added that this is the best time of the year for putting in cuttings of Pansies. The best position is a slightly raised bed under a north wall or hedge, where but little sun falls, and where shading can be applied. A bed for Pansy cuttings should be made up of a light, free sandy soil, the cuttings put in in lines about three-quarters of an inch in the soil, and pressed firmly into it. In a month or so these cuttings root nicely, and they make the best of plants for potting up for blooming in pots the following spring.

EUCALYPTUS GLOBULUS.

E. GLOBULUS is at once distinguished from its numerous congeners—except *E. alpina*—by the warty glandular calyces, covered by a crown-shaped lid; besides, the shape of its almost or quite sessile fruit is exclusively peculiar, and bears resemblance only to that of *E. megacarpa* and *E. Preissiana*. The seedlings are of a waxy-powdery somewhat bluish-

while most of the sterile seeds are far less narrow; thus fertile seeds can be easily sifted from sterile seeds of *E. globulus*, whereas the separation of them in *E. alpina* would by the sifting process be as difficult as in *E. obliqua*, *E. macrorrhyncha*, and many other species; furthermore it will endure such severe frosts as at once would prove detrimental to *E. globulus*. The seedlings (and, indeed, also the young shoots from stumps of stems or their charred remnants) find

plants were cultivated on the continent of Europe many years ago, which, though they had not flowered then, accorded in every respect with the early state of *E. globulus*, when covered all over with a bluish-white powdery film, the latter occurring likewise on the branchlets and calyces of the advanced tree and giving rise to the somewhat remarkable vernacular name. The author saw such seedlings in the conservatories of the botanic garden of Kiel in 1846, and

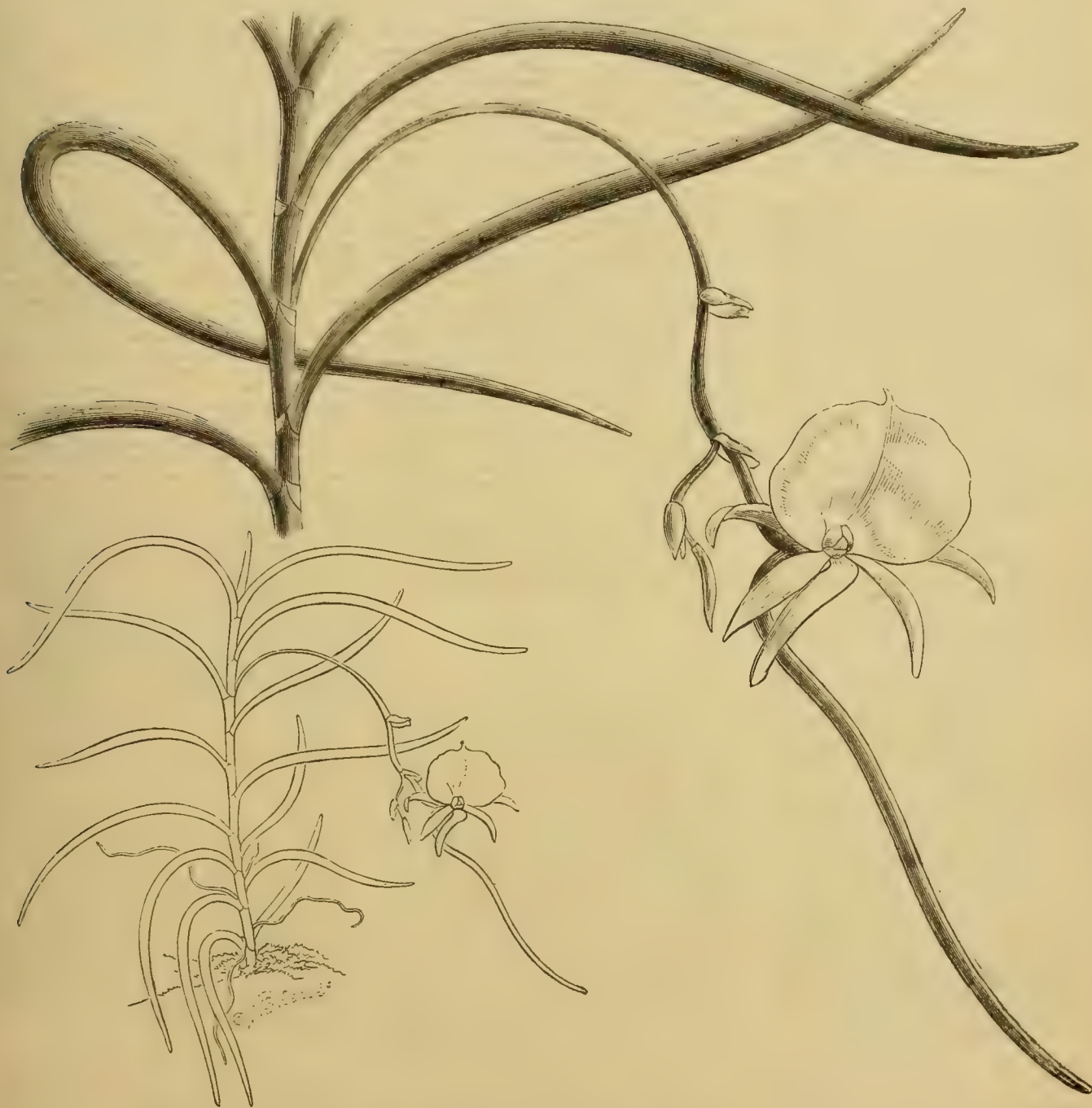


FIG. 30.—*ANGRÆCUM SCOTTIANUM*. (SEE P. 136.)

whiteness, having sharply quadrangular stems and sessile heart-shaped or cordate-ovate leaves. These characteristics, taken together, offer already a mark of discrimination in comparison to *E. alpina*. The latter is, moreover, of very slow growth, remains always a shrub, has thicker more shining almost oval or even roundish leaves, smaller flowers, nearly heart-shaped anthers, less angular fruits with more depressed rim; besides, the seeds of the two are visibly different, those of *E. alpina* being sharply angular, more shining and perceptibly wrinkled-streaked,

in form and coloration a repetition in *E. tetragona*, the whole foliage of which resembles greatly that of the seedlings or young adventitious shoots of *E. globulus*.

Scarcely any doubt exists that *E. glauca* (De Candolle, *Prodromus*, iii., 221), to which on De Candolle's authority also *E. pulverulenta* (Link, *Enumeratio Plantarum Horti Botanici Berolinensis*, ii., 31) and *E. perfoliata* (Noisette, in Steudel's *Nomenclator Botanicus, editio prima*, 1821) belong, represents the young state of *E. globulus*, as under the above name

his university friend, the Hon. F. Krichauff, of Adelaide, who generously presented his whole large collection of dried plants to the writer, preserved in 1847 also in the botanic garden of Berlin specimens of *E. glauca*, which can in no respect be separated from the seedling state of *E. globulus*, and bear besides resemblance only, as above remarked, to the then far less accessible *Eucalyptus* (*Eudesmia*) *tetragona*. But the continued marvellous rapidity of growth of *E. globulus*, its sanitary importance and the value of its hard-wood timber were then in

central European conservatories not at all recognised; and it was only in 1852, when I passed through forests of *Eucalyptus globulus* in Victoria, that I became fully aware of the unparalleled forestal importance of the Blue Gum-tree, and obtained full information on its great utilitarian value, although I received in Adelaide flowering and fruiting branches as early as 1848 from Tasmania.

In the early part of 1853 the author of this work gathered seeds of *E. globulus* on the base of Mount Buller, where the tree is frequent; seeds from this locality were transmitted as important to continental botanic gardens in the course of that year, and probably from these seedlings the first plants arose in Algeria, where now *E. globulus* is by far the predominant tree. Professor Planchon, who wrote a most able memoir on this tree (in the *Revue Deux Mondes*, 1875), assures us that *E. globulus* had been raised already during 1854 in Algeria from seeds obtained from the Jardin des Plantes of Paris, and the Montpellier savant saw flowers in Algeria during his visit in 1863 on trees under the care of M. Hardy. Some seeds may have found their way to Europe much earlier from Hobarton.

M. Prosper Ramel had the fortunate opportunity to witness the quick growth of this *Eucalyptus* in the Melbourne Botanic Garden from 1855 to 1857, though the occasion never occurred to this high-minded gentleman to notice the tree in its forest haunts; only thus he became aware of its incalculable value for *reboisement* in the countries around the Mediterranean Sea, and to him the merit is due of having, constantly encouraged and advised by myself, on his return to France in 1858 pushed enthusiastically and perseveringly the culture of *Eucalyptus globulus* on a forestal scale, for which purpose the seeds were largely supplied by myself; for although the species was cultivated in a few places of South Europe and perhaps even in Algeria for mere garden or park purposes long before, yet its enormous superiority over nearly or actually all other species of *Eucalyptus*, and indeed any other kinds of hard-wood trees, in celerity of growth and general ease of rearing, was then not at all appreciated, notwithstanding that Dehnhardt had already raised this *Eucalyptus* for open-air culture in the earlier part of the century (at least as early as 1829), as proved by an authentic specimen in his collection of dried plants, kindly placed at my disposal for identification of the species by Baron Vincent Cesati, the Director of the Botanic Garden of Naples*; the tree was named by him *E. gigantea*, thus must have attained already a large size under his care. It may be incidentally remarked, that two of the most important of all other *Eucalypts* for cultural purposes, namely, *E. rostrata* and *E. amygdalina*, were also already in an upgrowing state in Dehnhardt's time in the Royal Botanic Garden of Naples.

It was through his Grace, Dr. J. A. Goold, R.C. Archbishop of Melbourne, that plantations of *E. globulus* were first established for subduing the miasmatic exhalations of the Pontinian swamps, as mentioned in a letter of this distinguished prelate to the author of this work under date December 17, 1879:—"The *Eucalyptus globulus* was first raised in the Campagna from seeds, kindly presented to me by you on my visit to Rome in 1869, to attend the Vatican General Council. I handed the seeds to the Superior of the Trappist Monks, who then occupied the monastery and grounds of the Tre Fontane, a most fever-stricken locality. On my next visit to Rome, made a few years later, I had the pleasure to see the good results of your kind and thoughtful presentation in the vigorous growth of many Gum-trees, acting most wholesomely on the poisonous air of that part of the Campagna. The religious able clever men, chiefly French, were most grateful for the gracious gift." Thus through the enlightened circumspection of the dignified chief of an ancient Church the sanitary improvements on the fever-swamps were initiated with prospects of that permanency for which the plans and works of drainage since the time of Appius Claudius (long before the Christian era) had vainly striven, and in the prosecution of which the overpowering force of Nature had baffled the exertions of Julius Cæsar, Trajanus, and many of the subsequent rulers of Rome up to recent history.

The degree of resistance of *E. globulus* to frost depends to some extent, as in the case of many other kinds of trees, on the age of the individual

plant, on the moister or drier situation of its growth, and also on the greater or lesser shelter against wind. Thus upgrown trees of *E. globulus* did not suffer at all during the extraordinarily cold winter of 1879-80 at Antibes, when once in December the temperature sunk even as low as 15° F., the trees standing probably in a sheltered position, when *E. melliodora* and some other congeners lost part of their foliage. Prince Troubetzkoy observed at Lago Maggiore that *E. globulus* stood there a cold of 21° F. Drs. Fedeli and Lanzi stated that a temperature of 21° F. only injured the young shoots, and the monks of Tre Fontane, after repeated observation, maintain that the tree will bear a temperature of 17° F.; all this is in fair consonance with our local experiences here. In the cool elevated but sheltered region surrounding the alpine height of Mount Buller, I observed snow in large masses to lodge sometimes for protracted periods on the branches of *E. globulus*, eventually injuring even strong limbs, but the stem and main branches remaining unharmed and pushing sprig and foliage anew in the spring. In the singularly mild climate of the island of Arran, though nearly 56° N., *E. globulus* survived unscathed the excessively severe winter of 1878-1879, with *Acacia decurrens*, *Dicksonia antarctica*, *D. squarrosa*, *Cyathea medullaris*, *Cordylina australis*, *C. indivisa*, *Casuarina quadrivalvis*, and some other conspicuous plants of Australia and New Zealand, as observed by the Rev. D. Landsborough. Nevertheless, *E. globulus* among tall congeners cannot rival *E. pauciflora*, *E. amygdalina*, and *E. Gunnii* in hardiness. Dr. Aberg, if he accurately identified the species, found at the mouth of the La Plata River the following *Eucalypts* nearly or fully as hardy as *E. globulus*, and all these also of comparatively rapid growth:—*E. obliqua*, *E. leucocylon*, *E. hæmastoma*, *E. largiflorens*, *E. longifolia*, *E. cornuta*, *E. saligna*, *E. resinifera*, *E. corymbosa*, *E. diversicolor*, *E. tereticornis*, and *E. rostrata*; while *E. calophylla*, *E. marginata*, *E. maculata*, and *E. macrocarpa* perished there from frost. In celerity of growth *E. globulus* and *E. corymbosa* carried there the palm, *E. diversicolor* and *E. obliqua* coming next. Professor Goeppert, Dr. Raveret-Wattel and others observed that *E. globulus* will bear a severe degree of cold transiently (about 20° Fahr.), if it did not last sufficiently long to congeal the sap to any great extent, and provided also that the new wood was well matured and the spot of growth a dry one. Baron F. von Mueller, Melbourne

(To be continued.)

"BOTANISCHE CENTRALBLATT."—Under this title a new serial has been started in Leipsic, under the editorship of Dr. Oscar Uhlworm, assisted by numerous other botanists in various countries. It aims to be a general organ of reference in all branches of botany, besides including some original articles. Nos. 1 to 15 mount up to 464 pages, devoted to reviews, abstracts, and simple records of publications. In many instances the contents of books or articles are enumerated or explained without comment; in others, there are extracts with critical remarks, and in others again short notes and paragraphs, are reproduced in their entirety. The scope of the work is comprehensive, including not alone the titles of papers in contemporary scientific serials, but also of some purely horticultural subjects, such as "*Dahlia coccinea* as an ornamental plant," *Hamburger Gartenseitung*, &c. We think it is easier to err on the side of excluding what is useful than in being too comprehensive, but at the same time we are of opinion that the record of such articles as the one just named is by no means of sufficient interest to be included in such a work as the *Centralblatt*. This is one of a category given as an example. Classification is another thing that would greatly improve the work. At present there is no attempt at any kind of classification beyond such headings as "Referate," "Literatur," "Personalnachrichten," &c. Under the second head we have the titles of books, pamphlets, articles, &c., thrown together page after page in the utmost confusion. Again, what is the use of this record?—"Gray, A., Botanical Contributions (*Proceed. Amer. Acad. of Arts and Sc.*, new ser., vol. vii., 1880)." In another place is reproduced a short article on the genus *Corsia*, which appeared in this journal early in the present year, and it is attributed, doubtfully, it is true, to Sir Joseph Hooker, "because it was signed with an H." If the *Centralblatt* is to fulfil a useful purpose it must undergo considerable modification from an editorial point of view. Gratis supplements of decades of descriptions of new species of the Jordanian rank is another of its varied features. What we have said respecting this new venture is in no spirit of hostility, for a work of the kind, properly edited, would be most serviceable to all botanists, and not least to those engaged in editing botanical serials,

MR. WEATHERELL'S NURSERY.

(Concluded from p. 126.)

ROSES are largely grown, the plants in the principal house being managed under quite a different system to that which most of the market growers follow, who in the majority of cases confine their practice to keeping them in limited sized pots, usually occupying low, narrow houses. Mr. Weatherell's largest Rose-house is a lofty double-span about 70 feet long by 35 feet in width, with a path down the centre; right and left of this at intervals of some 5 feet are trellises from the floor up to the roof. The plants are all in large tubs about 5 feet in diameter, are all on their own roots struck from cuttings, old examples with stems nearly as thick as one's wrist; they are trained to the trellises in the way that Peaches are sometimes grown, and in this manner, having so much head-room, the quantity of flowers they produce is very large. The principal varieties are Madame Falcot, Souvenir d'un Ami, Safrano, and Isabella Sprunt. There are Roses in this house all the year round, *Richardia æthiopica* is flowered in quantity in this house during the winter and spring, and this is the only plant that Mr. Weatherell finds will do well under the shade of the Roses in this lofty house. There is another range, 160 feet long, with a path down the centre, over which a row on each side are trained in the form of an arch. All these are in pots, as are the rest of the plants that go to fill the houses, amongst others *La France* is grown in quantity, it being a great favourite with most buyers. The plants in these houses are mostly grown as standards, so that their tops are up near the glass; and although many of them have unusually large heads, they are all, I understand, placed out-of-doors for a time in summer. After they have flowered, a course of treatment is followed that insures the greatest quantity of bloom to come in when most wanted during winter and early spring. Five hundred dozen were cut in last Christmas week. Especial care is taken to keep the stock clear from insects and the still greater pest, mildew. At the time I saw them—the end of May—there was not a trace of greenfly, red-spider, or mildew; the latter is kept down by sulphuring the pipes, to which it is applied as soon as the least trace of the parasite is perceived. A house 100 by 20 feet was filled with some 4000 Roses in 6-inch pots. These are so managed that they bloom a little before outdoor Roses come in, and are sold in the shape of stout compact plants bearing from five to seven large flowers each. They are grown one year after being budded, then taken up and potted early in the autumn, sheltered through the winter, and brought on slowly so as to flower about the end of May. Their diameter is almost equal to their height. The varieties found best adapted to this kind of work, and that also meet the requirements of the generality of purchasers, are Baron de Bonstettin, a velvety dark crimson, shaded with black; Baroness Rothschild, white, shaded with faint pink; Madame Lacharme, white; Madame Thérèse Levet, bright pink; and John Hopper, rosy-crimson. Here again the colours give the key to what is required in a market plant besides a good free-growing habit. The small fairy Roses are largely grown; they are favourites in the market, their bright little flowers always making them sought after. Gardenias were at one time grown in quantity, but they are being gradually given up to make way for more Roses.

SCARLET PELARGONIUMS.

A very large house is occupied by Scarlet Pelargoniums, big old plants that have been for years in 18-inch or 20-inch pots; they are trained to trellises running across the house like the Roses already described. By this method of treating these popular plants with a view to the production of flowers for cutting, I venture to think a greater quantity can be had than from smaller examples grown in the usual manner. The large surface thus occupied by their heads, and the disposition which there is to flower in old plants of this description, favours the conclusion. The plants are seven or eight years old, and cover the trellis up to a height of 6 or 8 feet; they keep on blooming all the year, the temperature during the winter being kept up to 50°.

BOUARDIAS.

A very wide house, 100 feet in length, is filled with Bouvardias. Here, as with most of the market

* See *Nuovo Giornale Botanico Italiano*, xli., 47.

growers of this flower, the plants are managed so as to have the bloom in during the late autumn, winter, and early spring; but there is one innovation from the ordinary practice of most who cultivate them—instead of relying on plants struck the preceding winter, or on such as have been cut close down after flowering, they are principally grown here as standards, on stems 4 feet high, supported by a stick, in the way usual with standard Fuchsias, or other things of a like character. The plan has advantages in getting the heads up nearer the roof in a house that is at all lofty, and in an ordinary stove or intermediate house so grown they would look well and form an agreeable contrast to other things of lower growth. Managed in this way the plants appear to thrive and bloom satisfactorily, looking much better than when suffered to assume the straggling form that old examples usually do when not cut close in. After the main season for demand is over the heads are cut back, and as soon as they have broken the roots are partially shaken out and repotted in good soil, kept close and encouraged to make growth before autumn. The sorts grown are *Vreelandii*, *jasminiflora*, and *Hogarth*.

FUCHSIAS.

At the end of May the remains of these still filled a house 100 feet long by 30 wide, beautifully grown, well furnished plants, large for the small pots they occupy, fully clothed with foliage and flowers, in fact none but the best, close habited, free-blooming kinds are grown here, as elsewhere where the market has to be supplied. Like all other stock of this description, a few weeks would see the whole cleared out, except the plants reserved to produce cuttings.

FERNS FOR CUTTING.

Three houses are devoted to *Adiantums*, principally *A. cuneatum*, for cutting. The elegant *A. gracillimum* does not seem to be cared for in the market, being too delicate in appearance. There is no Fern that appears likely to rival *A. cuneatum* in the estimation of the public for mixing with cut flowers, especially in bouquets; but the way in which it is managed makes a very great difference in its standing long without withering, and unless it will do this it is useless, for when it flags it so far detracts from whatever arrangement of flowers it is associated with that, instead of fulfilling the object in view, it spoils the whole. On this account the large fronds, such as usually seen on plants in private establishments that give evidence of free soft growths, are never present in the market grower's plants, which are bushy and stout—a proof of their being grown with more light and air than the generality of Fern growers allow their plants. Amongst the quantities of seedling *Adiantums* Mr. Weatherell has raised are several quite distinct in form and habit, so much so as to have the appearance of being different species.

YELLOW CALCEOLARIAS.

These meet with a ready sale if in flower just at the right time, that is, when the window boxes now to be met so much in use are being filled, as they supply the colour that nothing else will, but the disease which for some years they have been subject to makes them catchy stock to deal with, otherwise they are looked upon by the growers as a good paying crop, not occupying a great length of time from when the cuttings are struck, late in the autumn, until the season indicated for their being in flower and sold out. To have them in when required they need to be potted up in good time and kept a little warm. A considerable quantity are grown—the kinds, Golden Gem and the old well-known *aurea floribunda*.

PELARGONIUMS.

The above are the principal things which go to fill the 2 acres of glasshouses that occupy the ground on the side of the road opposite to Mr. Weatherell's dwelling, adjoining which another large space has been recently added, and four other ranges, each 160 feet by 18, standing side by side, with a suitable amount of space between, have been put up. All the glass erections at Mr. Weatherell's place are well built and more than usually substantial, admitting plenty of light, and in other ways well adapted for the cultivation of the plants grown in them; but those last erected are amongst the very best we have ever seen, the plants in them being almost as much under the influence of light as if they were stood in the open air. They are all filled with *Pelargoniums*, of which 20,000 are grown annually, mostly such sorts as the market growers

generally cultivate. One of these houses is occupied by plants principally of one kind for the production of cut flowers grown in No. 12's. It is a seedling raised by Mr. Weatherell, named *Purity*, pure white, except a faint tinge of colour on the base of the top petals. As a white flower it would be difficult to imagine anything in the way of a *Pelargonium* better adapted for cutting purposes, the individual flowers not being too large. In the remaining houses were other established kinds, such as *Duchess of Edinburgh*, *Mermerus*, and the improved form of the last, which is like the original, from which I understand it is a sport, in all except colour. The old sort has a good deal of purple in it, the sport bright red or scarlet. This latter colour Mr. Weatherell has for years directed his attention to secure in his seedlings, on account of its being so much more effective by artificial light than the purple or crimson tints. Several unnamed seedlings which he grows largely possess the desired shade, along with the stout short-jointed, profuse flowering habit, without which, however fine their individual flowers may be, they are of no use as market plants. The quantity of bloom produced by the plants grown in the small pots—all 48's in these houses except the first described—could not possibly be exceeded, together with their healthy clean foliage; the shoots are so short and strong that sticks or ties would be useless, unless when the plants have to travel, as these have, to market. Altogether they are models of successful cultivation, such as only can be produced by practice, close observation, and the best appliances. Mr. Weatherell still grows considerable numbers of the *Fancy Pelargoniums*, to which there have been comparatively so few additions for many years, as evidenced by the yet unsurpassed varieties, many of which were going near a score of years ago. A long house was filled with the double pink variety, *Eugene Baudouin*; it is a remarkably free bloomer, possessing a distinct and telling shade of colour, and for cutting is preferred before all other pink varieties by Mr. Weatherell.

The heating of this large extent of glass—like all else connected with the place—is well done; flued terminal-ended saddle-boilers are used, with plenty of piping to keep up the requisite heat. *T. Baines.*

A LECTURE IN A HAY FIELD.

A VERY interesting and instructive lecture was delivered a day or two ago at the Wilts and Hants Agricultural College, at Downton, near Salisbury, by Prof. W. Fream, F.G.S., on "Grasses and Hay." The lecture was characteristic of the style of teaching adopted at this establishment, being delivered and illustrated in the hayfield itself, preparatory to the actual work of haymaking by the students and visitors who listened to it. The special work of the College being the teaching of science as a help to actual farming, the Professor seized the opportunity presented by the cutting of a water meadow to draw the attention of the students to various important points connected with the crop which they had assembled to help to gather in. He first reminded them that their water meadows, bordering the river Avon, were fed off by sheep down to the end of April; so that the luxuriant swathe which they then saw falling before the scythe was the result of only two months' growth during the favourable weather which had attended them this season. They must not leave out of account, however, the valuable manurial effect due to the grazing of over one thousand sheep, nor must they forget that the meadows, intersected as they were in every direction by water carriers, had been periodically flooded. The heterogeneous character of the plants in the hayfield was noted, and it was estimated that there were some forty different grasses represented.

The grasses varied indefinitely in habit, appearance, and time of flowering. They had already become familiar with the characters by which they were able to distinguish between the various grasses, both bad and good. By good grasses he meant those that were of undoubted dietetic value, and which it was desirable to encourage in every way. The bad, or weed grasses, on the other hand, were such as from various reasons should be discouraged as much as possible, though their inferiority was due to various causes. Thus, the soft grass—also called *Honey-grass* and *Yorkshire Fog*, specimens of which they would see here and there around them—was by no means deficient in herbage, yet it was very bitter and unpalatable; so much so that when it was very plen-

tiful it was found necessary to add salt to the hay in order to induce horses and cattle to eat it. In some of the northern counties he had seen fields consisting almost entirely of this undesirable grass; and, through ignorance of the varied characters of grasses, it was allowed to flourish without check, there being, he feared, a very prevalent idea among farmers that one grass was as good as another, though this was one of the most unfortunate conceptions that had ever taken hold of the bucolic mind. Other grasses, again, such as the *Hair-grass*, which they saw growing on the margins of the meadows, and the equally common *Quaking-grass*, were by no means devoid of nutriment; but their habit was too sparse, and their herbage too scanty, to make them valuable fodder grasses or hay plants. Yet others, such as *Barley grasses*, for which he was glad to say the soil of those meadows was too stiff and moist, and the small *Reed-grass*, were decidedly objectionable, because of their sharp, brittle awns, which pierced and irritated the gullet of the animals that ate them. Poisonous grasses, like the *Darnel*, were fortunately not common, and he did not feel sorry that he had been unable to show them a growing specimen on the College farm. But even with respect to the good useful grasses, there were many important points to be remembered, especially those connected with the time of flowering. They had noticed that such excellent grasses as *Foxtail*, *Cock's-foot*, *Rib-grass*, *Dog's-tail*, and *Sweet Vernal*, had now done flowering, while others, such as the *Timothy-grass*, or *Cat's-tail*, were yet young.

The time for cutting a field of grass, weather permitting, should be determined in accordance with the generality of grasses found in it. The best time was just when the majority of the grasses were in full flower. Up to that time there was abundant nutritious matter in the leaves and stems, but after that period there was a steady migration of these nutrients to the upper parts of the plants for the ripening of the seed. The same thing occurred in *Wheat*, *Barley*, and *Oats*, where they knew the straw was of little value, because the object of the grower was to get as much nutriment as possible into the grain, and this became rich and nutritious at the expense of the straw. He then called attention to the "swishing" sound with the scythe made when passing through a bundle of succulent grasses, and compared it favourably with the harsh sound noticeable as it cut down the sedges at the water's edge. The sedges were very silicious, and worthless as food. Grass, when cut, contained about 70 or 80 per cent. of water; but well-saved hay had only about 14 or 15 per cent.; so that in drying the grass lost between 55 and 65 per cent. of its weight, and they would notice how heavy the fresh-cut swathe appeared to be in the process of "tedding" now as compared with the weight on the fork a few days afterwards. Haymakers were frequently interrupted by rain—and as this year was proving no exception to the rule, it was very probable they would be—but the amount of injury to the prospective hay would entirely depend on the way in which they turned it during the time of curing. He showed them that growing grasses were covered with a thin coating of waxy matter, which was very noticeable in cereals, especially *Wheat*, and this was really a waterproof coat with which the grasses furnished themselves. If, in turning and tedding the grass, they used it gently, and not violently, the waterproof coat would not get broken, so that any rain that fell during the first few days would do no harm, as it would simply moisten the outside of the prostrate plants, but would not penetrate into and wash out the valuable and nutritious constituents.

The sweet odour of the hayfield only became apparent in the latter stages of drying; and this peculiar and delightful fragrance, due to what was known in organic chemistry as coumarine—a vegetable substance which also gave its perfume to the *Tonka*, or *Tonquin Bean*, and in which it was first discovered. The agreeable odour of fresh hay was due to the coumarine present in the *Sweet Vernal-grass* (*Anthoxanthum odoratum*), which was a native of the *Hampshire Downs*, and of which the *Southdown* and *Hampshire Down* breeds of sheep were very fond. It was not a luxuriantly growing grass—the herbage, indeed, being rather sparse, but if only for its sweet smell it should be encouraged in all hayfields and pleasure grounds. They would remember his having drawn their attention to this grass some weeks before, when it was in its prime, and the *sweet Lavender*.

like taste left in the mouth after drawing the stem between the closed teeth. After a reference to hay-fever and the harvest-bug, the lecturer urged the students to identify carefully all the bad grasses and weeds which they found in the young hay, as during the winter months he should ask them to estimate the feeding value of store-hay rather by optical examination than by the somewhat crude test afforded by the nose, for that might get a pleasant odour from other plants than Vernal-grass; as, for example, the Meadow Sweet, or Queen of the Meadow, which they saw growing in the watercourses.

After the lecture, which occupied upwards of an hour in delivery, the students and Professor stripped to their shirts, rolled up their sleeves, and proceeded with the actual work of haymaking, at which they remained some four hours. "*Field*," July 24.

COLONIAL GARDENS.

JUDGING from the extracts published in your issues of May 15 and 22, just to hand (June 18), from the address delivered by Mr. Dyer before the Royal Colonial Institute, that gentleman has done a great service to Colonial Botanic Gardens in calling the attention of the public to them, and by his powerful claim for the recognition of what may be correctly called their legitimate work, as no one who has had any experience, or has watched the development of such establishments can fail to have been struck with the tendency that exists in most English colonies to turn them into mere pleasure parks and promenades for the wealthier part of the community, especially in the tropics, while the object of being useful and instructive as well as ornamental is almost entirely lost sight of.

Residents in tropical colonies (to which I specially refer in this letter), who are mostly engaged in commercial pursuits, and who have little knowledge of botany or gardening either, have but few opportunities for forming an acquaintance with the interior mechanism of their Government gardens, and their knowledge of what they are doing for the material and lasting benefit of the colony is derived from reading the annual reports to the Government as published in the *Government Gazette*, which is sometimes copied into the local newspapers. The result of this is, that in some colonies botanic gardens are looked upon with a sort of disfavour, and the amount annually granted from the public funds for their keeping is often grudgingly given, after protests on the part of the unofficial element of the Legislative Council that the money could be more advantageously spent on public works of a more imposing nature.

Of the crowds that annually visit Kew, how few know anything of what that vast establishment has done, and is still doing, for the benefit of the whole nation, or, in fact, the whole world, and whose only conception of its use is that of a nice place for a day's "outing" and enjoyment; and even a large majority of those who know something of what it does in the way of acclimatisation view the herbarium as simply a manufactory for long unpronounceable names, and loudly declaim against public money being "thrown away" in such a manner. No better evidence of this could be afforded than in the recent ignorant and senseless demand for the opening of the gardens early in the morning; and if such a state of things exists in England, it requires no stretch of imagination to picture a worse state of things in the colonies.

Few Europeans think of remaining in a tropical country for more than a few years, and only adopt it as their temporary home with the settled object of acquiring wealth; and if any interest is taken in any pursuits outside their regular path in life it is only as a relaxation from the duties of their profession, and in these days of the electric telegraph and frequent mails their life is a very different one from the idea prevailing in England of the delightful *dolce far niente* they enjoy in tropical climes; when the work of consulting price-currents, shipping lists and rates of exchange is over—and that is often far into the night—they are only too glad to rest, and do not feel inclined to consider the amount of labour and thought necessary to maintain the gardens they only see on Sundays perhaps.

The work of such an establishment cannot be paraded before the general public, for while tending towards the welfare of the colony it is often by only slow and gradual steps that it is winning its way, and but few outsiders see anything of its progress while the heat and burden of the day has to be borne.

How many of the millions who have been benefited by the introduction of Cinchona into the East know anything of the patient labour and skill, as well as daring enterprise, that was brought to bear before it became an accomplished fact, to say nothing of the introduction into various colonies of Tea, Coffee, Vanilla, and numberless other commercial products of the vegetable world. It is often only after years of patience and anxiety, when the enterprise has been crowned with success, that its importance is felt, and even then few think of how it has been brought about and of those who have been the nurses of the infant enterprise, who have often by that time ceased from their labours, and the history of their work exists only in the traditions of the craft. All botanists and botanical explorers might well adopt the humble and unassuming Linnæa for their coat of arms, and one can almost imagine that the great naturalist was sensible of the kindred feeling when he chose such an apparently insignificant plant to bear his name.

I do not maintain that the scientific work to be done should form a valid excuse for a badly kept garden; certainly the public which provides the necessary money for its maintenance have a right to demand that it should be kept in as perfect order, and their own tastes and dislikes consulted to a certain extent, so far as the state of the finances will permit; but what I strongly maintain is that a fixed portion, as much as can possibly be spared of the annual grant should be set apart for scientific investigation and experiments.

How much could be done in many colonies in the way of replanting some of the land that was denuded of all its vegetation in the early days of colonisation to make way for just one crop of Gambier or Pepper, and which was then allowed to become a depot for all the troublesome weeds that can possibly exist there, and thus has caused endless trouble and expense to the colony. Then again, in how few of the colonies is the real nature of the indigenous timber trees understood? I have only to appeal to the returns that have recently been sent to the Right Hon. the Secretary of State for the Colonies on this subject, and the number of times under the heading "Botanical Name" the word "unknown" occurs to bear me out. It would be useless here to enumerate the work the staff of tropical botanic gardens has to carry out, as they will be readily apparent to any one who takes the trouble to turn his thoughts in that direction. Some blame is perhaps due to those who have the immediate control of such establishments where everything else is made subordinate to a desire for a mere flower garden, but in many cases their hands are tied by something stronger than mere fashion.

Here, I trust, I may be allowed to enter a protest against botanic gardens being immediately ruled by a committee composed of gentlemen who, however much they may be justly esteemed for their abilities in other matters, have little practical knowledge of the working of such an establishment beyond its mere routine. I do not maintain that a superintendent or curator should be allowed to follow any hobby of his own to the detriment of other parts of his work, as that is next to impossible in an intelligent community, or where the Governor or Council of a colony are careful of its interests. A committee of management of this sort is an aggravated evil when the chairman and members are often changed, which is rendered imperative when ill health compels them to seek the more congenial climate of their native country. The members of a committee are often guided, in a great measure, by the chairman; and it may so happen that one chairman has a predilection for numerous beds of shrubs, &c., studded about; the next, perhaps, prefers long sweeping lawns and clumps of trees, and has all the beds turfed over; another wishes to introduce birds and animals for the amusement of the natives, while another sees the advantage that would accrue from forming an economic garden, and the work is at once pushed on, and sums of money spent, only to be neglected by his successor, who may have some other idea of the legitimate functions of a botanic garden. I notice that in South Africa growing vegetables for sale is considered as such. I do not wish to condemn all committees, but to point out the care with which such a body should be formed, and that it should be led by an experienced man, and if possible by officials of the Government, and have a permanent policy.

Supplying cut flowers for Government House is another purpose of a botanic garden in some colonies, and perhaps there are few who can reasonably object to this; but when, "by the payment of a small sum the public are entitled to baskets of flowers every week, and seeds and plants at the discretion of

the manager," the *pons asinorum* is crossed, and illfeeling and bad discipline are sure to result. Imagine one's feelings on finding that what promised to be a successful cross between *Amherstia nobilis* and *Colvillea* had been destroyed through its being on the same branch as a showy race of the former.

Mr. Dyer has struck a note with which I am sure all interested in the development of botanical knowledge will join in harmony when he speaks of the disjointed organisation, or, rather, want of unison, in the several parts of the machinery. With Kew as its head-centre it would become a mighty power for good, and be capable of producing a great change in the status it occupies in colonial estimation for the development of the resources of the country. A botanist in the colonies is often entirely isolated from every one who takes more than a passing interest in his pursuits, and has few opportunities of communicating with his plodding fellow workers except through official mediums. The new vigour that is experienced after once meeting with a fellow worker passing through his colony must be felt to be realised, and if such a system of centralisation is established as Mr. Dyer advocates, each one, however humble his work, would feel that he had become an integral part of the great machine, and that anything that he might discover would not be lost sight of, but would be elaborated and utilised to its full extent by some other person with special qualifications for the task.

No establishment in the world has such facilities for carrying out this project as Kew, and it is to the present eminent Director and his father that we owe a debt of gratitude for what has already been done in this direction. Nearly all of the appointments in the colonies are filled by men who have at some period of their lives been their pupils, and who look on Kew as their *alma mater*; and with its present facilities for the thorough education of the colonist of the future it stands unrivalled, and long may its present staff continue to see monuments of their unflagging zeal and ability raised in Her Majesty's colonial possessions.

At the risk of being tiresome, I would venture to throw out another suggestion that I think would be beneficial if carried out, *i.e.*, that part of the *Gardeners' Chronicle* should at regular intervals be devoted to foreign correspondence, and matter likely to be interesting to those engaged in botanical pursuits in the tropics. [We have always opened our columns freely to colonial contributions, and shall gladly continue to do so. EDS.] Even from those only who have felt Kew for the tropics during the last five years, a large body of contributors could be enlisted, and the arrival of the mail with the *Gardeners' Chronicle* would be looked forward to with expectancy as bringing some news of those who have worked with us in the past. As my future lot will now be cast in the jungles of northern Borneo, I trust I may be able from time to time to send you a few notes from that quarter, where any information from other tropical workers in natural history will be particularly acceptable. *H. J. Murton, M.R.A.S., Straits Branch, late Superintendent Botanic Gardens, Singapore: Singapore, S. S., June 18.*

GRAHAMSTOWN BOTANIC GARDENS. — Professor Dyer, in his lecture on "The Botanical Enterprise of the Empire," having drawn a not over-flattering picture of the Cape Town Botanic Garden, as the chief garden of the colony, proceeds to mention the names of other public gardens of the Cape Colony, and states that the institutions in question are "all no doubt destined eventually to attain considerable importance." This, one must allow, is decidedly "faint praise."

As the Curator of one of the provincial botanic gardens of the colony, I am compelled to admit that, as a consequence of the small annual grant of money at my command, together with the fact of costly constructive works being in progress, such as dams and steam-pump, the garden under my charge is a long way from being in the condition I could wish; nevertheless, visitors from Europe and elsewhere are good enough to say that, of all the public gardens to be seen in the colony, the Grahamstown Garden is the most interesting and picturesque, and each year becoming more so.

In reference to the public utility of the Grahams-town garden, the annual reports to Parliament show that for some years past the distribution of plants thence have exceeded that of all the other South African public gardens put together; and I may also state that the nursery stock comprises, with few exceptions, every plant of use or ornament grown in the colony. *E. Tidmarsh, Curator, Grahamstown Botanic Garden.*

WOLVERHAMPTON PARK.—Some time since we furnished an illustration of the plan which gained the first prize out of twenty-seven competitors for Mr. Vertegans, of Birmingham. We now give the plan which took the second prize (fig. 31, p. 141), and which was furnished by Messrs. W. Barron & Sons, of Elvaston.

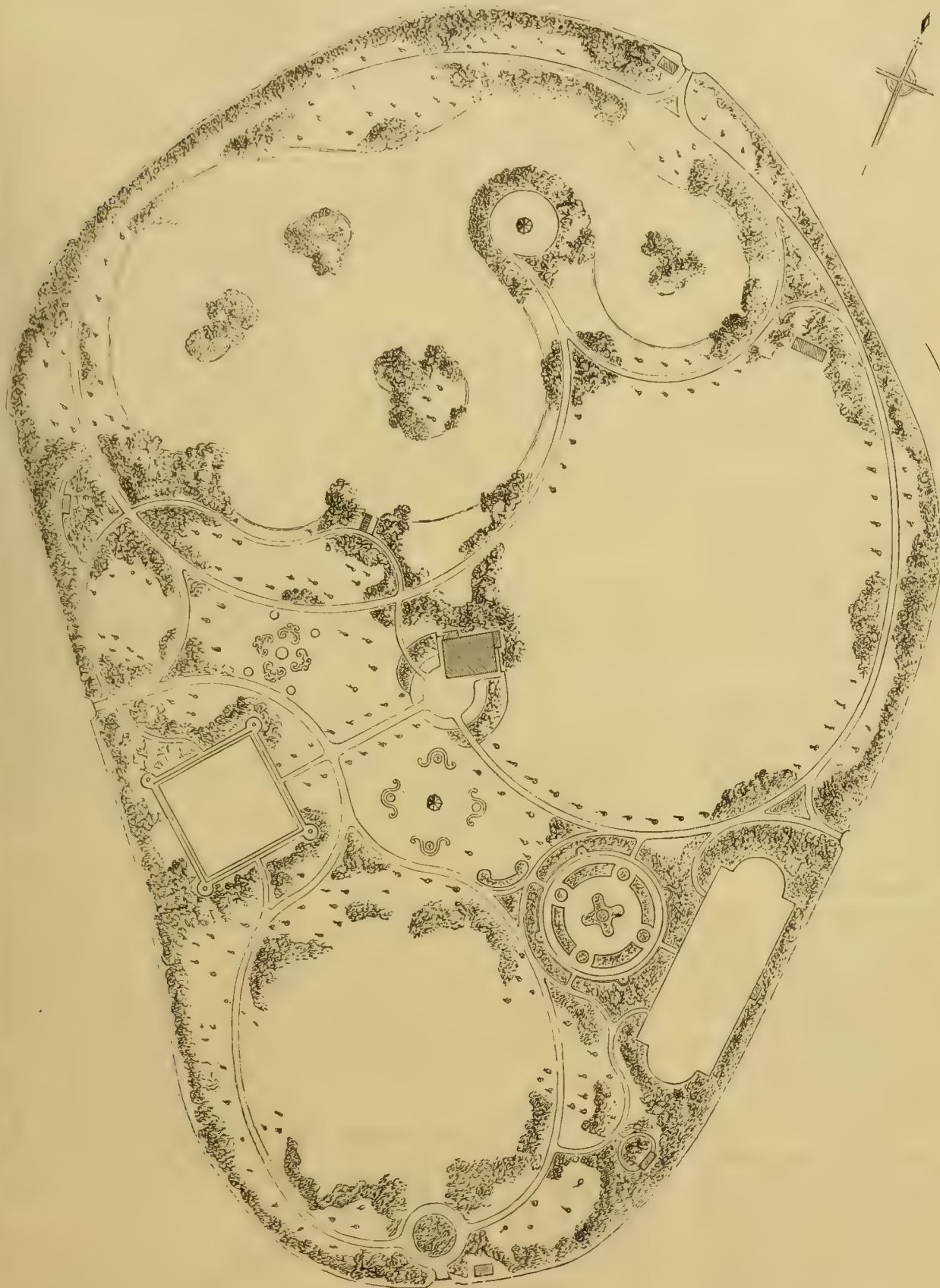


FIG. 31.—MESSRS. BARFON'S PLAN FOR THE PARK AT WOLVERHAMPTON. (SEE P. 140.)

GREENHOUSE FLORISTS' FLOWERS.

AZALEAS.—The earliest plants, if they were placed in heat after they had done flowering, will not only have completed their growth but the buds will be set for next season's bloom. The plants should be gradually inured to the open air, if they are not, as probably they will be, out-of-doors by this time; later plants must be placed out-of-doors as soon as it is seen that the flower-buds are set. Syringe freely, to keep off red-spider and black thrips; they are both very troublesome. Cuttings strike very freely at this time of the year; take off shoots of this season's growth at a joint; if they are 4 or 5 inches long they answer well; rather more than half the length of the cutting should be stripped of leaves. Drain a number of 5-inch pots, and fill them nearly full of very sandy peat, place on the surface half an inch of sand. Insert six or eight of the cuttings firmly round the sides of the pots; the cuttings will soon form plants if placed under a close handglass in a shady part of the greenhouse.

AMARYLLIS.

These plants are now passing through the season when they are considered to be very uninteresting, although to the enthusiast there is no season in the growing or resting period of their favourites when they may be said to be so. The plants are now maturing their bulbs; they want plenty of sunlight and heat for this, and to be moderately supplied with water. It will be found that the bulbs succeed best and mature most perfectly in moderate sized pots.

BOUVARDIAS.

If these plants are now making strong healthy growth they will be certain to flower freely in the late autumn and winter. Pinch the growing shoots to form bushy flowering plants. Some persons plant out their plants in the open ground. They will grow freely in such weather as we have now, and a considerable saving in watering would be gained; but I have never planted any out, and prefer to admit plenty of air or remove the lights altogether in warm weather. Keep the plants free from greenfly and mildew; red-spider also attacks the leaves.

CALCEOLARIAS.

Seed may yet be sown if this has not been already done. Instructions for this were given at p. 14. Very few persons propagate plants from cuttings, as they used to do years ago; no doubt it is much easier to raise young plants every year from seeds. If it is desirable to save any choice varieties it is best to take the cuttings now; they will form roots in a close handglass behind a wall or hedge to shade them from the sun, or they may be rooted in a hotbed from which the heat is nearly gone. Remove decayed leaves before they destroy the plants.

CHINESE PRIMULAS.

The plants are now making very rapid growth, and if very large plants are wanted for exhibition or any other purpose they must be potted on before they become pot-bound. The plants should be placed near the glass in frames, or on a shelf in the greenhouse. Those who have purchased plants of the new double varieties may be anxious to propagate them as speedily as possible; I would advise that the plants be grown on to a good size first, and let them be well dried up before taking off the cuttings. If the cuttings are full of sap when they are removed from the parent plant, they are very likely to damp off. Use very light soil with plenty of sand for the cuttings.

CINERARIAS.

The choicest varieties may yet be propagated from offsets. They must be taken off, with some roots attached. Three or four offsets may be planted round the sides of a small pot. All these plants with soft leaves succeed best in moist cool weather, and should it be hot and dry the most favourable conditions are obtained by placing the young plants in a shady place, watering the ground round about them daily. The plants are sure to do well if they are kept clean, potted on when they require it, and do not suffer for want of water at the roots. It is best not to syringe nor water the leaves.

CYCLAMENS.

The old plants have been passing through their resting period, but are now starting into growth. We

have therefore repotted them, shaking the greater portion of the old compost from the roots, and repotting into the same sized pots. We have old crowns about 2 feet in circumference, these produce an immense quantity of flowers for cutting from; but it is best to do away with some of the old ones annually, replacing them with new varieties from seed. Our seedlings of this year are now strong plants, and have been shifted into their flowering pots. We have used two parts good loam to one of peat with a fifth part of rotten stable manure. After being potted the plants were placed in a cold frame.

CHRYSANTHEMUMS.

The plants have now all been placed in their flowering pots. If it is intended to grow specimens for exhibition the growing shoots must be tied down to get them into a dwarf compact state; if this is not done early it is difficult to get them into position at all. Instructions were given as to potting at p. 14. It is quite time the permanent sticks were placed to the plants intended to produce large single blooms. The stems are growing very freely, and require strong supports. We use stout sticks, to stand 6 or 7 feet out of the ground.

FUCHSIAS.

The old specimens that flowered earliest have a tendency to cease flowering after they have produced flowers abundantly for three or four weeks; if young plants are not ready to put in their places, the old ones will flower again if they are cut back, surface-dressed, and treated to manure-water. The shoots on the young plants should be trained and tied into position just before the plants come into flower; if this is neglected some of the shoots snap off with the weight of the flowers, and it is generally a bungle to do it after the flowers are open. The young growths should hang out in nearly a horizontal position, as in this way the flowers hang down most naturally.

PELARGONIUMS.

The Show, Fancy, and Decorative sections require very similar treatment. Those that were cut down early will now have started sufficiently to be repotted. It is best to pot them as soon as they have fairly started, else they do not succeed well. Some growers recommend placing the newly potted plants over a hotbed; there is no need for this, as they start into growth immediately after repotting if they are merely placed in a pit or frame, and the lights are kept close for a few days after repotting: of course they must not be quite close, else the plants would be much injured. Shake the soil well from the roots, shortening back the fibres, and repot in smaller pots. Thus, if a plant was growing in a 7-inch pot, it ought to be repotted in one of 5 inches, so that it could be repotted again into the 7-inch to flower. In potting plants of this kind it is always necessary to study this, because if they were potted in 6-inch pots and had to bloom in 7-inch, it would not be so easy to repot them with only half an inch margin on each side of the ball. Lay the late flowering plants on their sides, to keep them from being soaked with drenching rains, and as soon as they are dried off cut them back. If cuttings were put in in May they will now be nice little plants in small pots. If the points of the shoots were pinched out, three or four eyes will have started, and the plants may now be repotted in good soil, placing them near the glass in an airy place. Let the whole collection be fumigated with tobacco-smoke, whether any green-fly is seen on them or not. Sow seed, which will now be ripe, in sandy soil, which ought just to be kept moist.

ZONAL PELARGONIUMS.

We have a good collection of plants now flowering freely in 6-inch pots, they are getting exhausted, however; we will therefore cut them down, or at least pinch them well back, and repot in rather richer soil than they were potted in when the plants were young. They will speedily make growth, and come in exceedingly well for producing flowers before the Chrysanthemums come in. If they are placed under glass plenty of air must be admitted, night and day, at present, to form nice bushy specimens. *James Douglas.*

KÆMPFERIA SP.—At Kew, a newly-introduced Burmese species of this handsome genus is now flowering in one of the stoves. At present the leaves are not more than 3 or 4 inches in height, deep green, beautifully margined with white. It seems to be near *K. angustifolia*, but the long-tubed, rosy-purple-lipped flowers resemble those of *K. Roscoeana*.

Garden Operations.

KITCHEN GARDEN.

WINTER ONIONS.—It is somewhat remarkable, but none the less a fact, that the very kinds of Onions—the Spanish section—which are noted for the tender quality of their flesh and their non-keeping properties, are those which we prefer and grow principally to withstand the variable and severe character of our winter season—which they invariably do uninjured, and afterwards yield a better return in the way of produce than any of our hardy and long-keeping English sorts. The cultivation of this particular class of Onions has for a long time past received every care and attention at my hands, in order to obtain specimens as large and perfect as possible, as well as for another equally important consideration, namely, the domestic supply. In this respect they form an important crop as being the connecting link between the preceding and current year's crops. Moreover, the white varieties, as the Queen, Early White Naples, and others like them are, on account of the purity of colour, in great request by French cooks generally, and particularly so when the preceding year's supply is nearly over, and the bulbs are becoming soft and deteriorated through starting into growth. The object in cultivation is to have a supply of these in readiness to meet the demand by the time the old stocks of spring sown Onions is exhausted, or before, and for this purpose a piece of ground on a south or east border, or on a flat, warmly placed in the open ground, should be chosen. The seed should be sown in drills about an inch deep, and in lines 12 inches or thereabouts apart, and the sorts should on this occasion include the Queen and Early White Naples. These are in my estimation the best kinds of all for the earliest crop. The next sowing, if desirable, might include some of the giant sorts of Tripoli, Madeira and Rocca, as well as the first-named varieties, and should be made about ten days or a fortnight later, and at this time 3 inches more space between the rows should be allowed. If the ground is light and friable, it should be made more compact by means of treading it over before, and if necessary this operation should be repeated after the seed is sown; this should be put into the drills rather liberally, in order to meet any deficiency which may arise from the presence of the Onion grub. This pest is sometimes very numerous, and does much mischief by its ravages amongst the plants. When the leaves of the plants are visible, the surface soil should be hoed over and kept stirred occasionally to free it from weeds, to stimulate growth, and to prevent cracking. As soon as the plants are fit to be thinned out, all superfluous ones should be pulled out and the rest left at about 3 inches apart. This will admit of every alternate one, or half the crop, being pulled whenever any green Onions are wanted. We invariably sow a line or two of this section every year at the same time that the English sorts are sown, as they bulb sooner, and therefore are fit for use earlier. More than these are not necessary, because they will not keep long after the bulbs are fully developed.

ORDINARY WORK.—We took advantage of the propitious state of the weather here last week, and lifted the major part of the forward crop of early sorts of Potatoes, which included Veitch's and Rivers' Ashleaf, Early Bird, Harry, and a few Early Lapstone Kidneys, all of which gave a very satisfactory yield of fair-sized tubers, which were free from any disease and excellent in quality. These were fully exposed to sunshine and air until the evening of each day, by which time they got perfectly dry, and were stored away for use when required. The removal of these and other early crops of Peas, Cauliflowers, &c., together with the ground from whence spent Strawberry plants have been removed, will altogether give a considerable area for other purposes, out of which, if not already done, provision should be made for winter crops of Onions, to be sown as described above; also for the beds of winter Spinach, which should be sown the first week in August, and again about ten days later. Give this subject ample room for the leaves to spread—15 to 18 inches apart is none too much for it. Other vacant portions will be required for late Celery, Leeks, Savoy Cabbage, and Broccoli. If the latter subject must of necessity be planted within the range of the kitchen garden proper, now is a good time to plant, inasmuch as that the plants will not have time to become so rampant in growth, and for this reason they are more likely to survive the effects of the winter. My experience goes far to prove it to be advantageous not to dig the ground in such rich places, but rather to clean the surface. Draw the necessary drills about 2 feet apart all ways, and then plant; under these conditions growth is made less quickly, much more sturdily, and the probability of clubbing at the roots certainly reduced, if it is not prevented altogether. It is also a good time to put out a breadth of Savoy Cabbages. These can be depended on to stand through the winter, and give variety and a useful supply of late winter stuff. From 15 to 18 inches

asunder every way will afford ample room for planting at this season. Supplementary breadths of Cabbage should still be planted to come in this autumn, and similar lots of plants of the compact little Rosette Colewort should be put out now to follow the preceding crop, and maintain a supply in due order. July 24 is a date at which rather important sowings should be made, as Cabbage for early spring use, with black-seeded Brown Cos and Stanstead Winter Cabbage Lettuce, and curled and Batavian Endive for giving the autumn and early winter supply, as well as for lifting for frame work. See therefore to these matters at once if they have been either neglected or forgotten. On or about August 8 sow Cabbage seed again; these plants will form the general crop for next year. Beware of the attacks of snails and slugs, and prevent the inroads of the feathered tribe amongst these tender plants, and prick them out as soon as ever they are fit for it. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

VINES.—Where early forced Grapes take precedence of the thick-skinned kinds that have been kept in the Grape-room, the wood should now be getting very firm and brown, if not quite ripe. If the foliage is kept clean and healthy a dry warm atmosphere by day, with an abundance of air by night, will greatly benefit the Vines, and bring about conditions likely to favour the production of compact closely set bunches, which generally colour better than others that are grown upon half-ripened wood. Pot Vines intended for the same purpose may be removed to a south wall for a time, where they can be protected from wind; or in the event of their occupying a compartment with movable lights the latter may be drawn off to an extent that will favour the healthy ripening of the foliage and proper maturation of the wood without producing a shock so often fatal to thousands of well-grown fruiting pot Vines. Early Vines that require renovating may now be taken in hand. If the roots have the run of inside and outside borders one of them may be taken out and replaced with fresh compost without running any risk as to the loss of the next year's crop. It is hardly necessary to say the work should be quickly and carefully performed, and the house should be kept close, warm, and slightly shaded until new growth sets in. Young Vines planted out this spring should be encouraged with heat and moisture until they have filled the space allotted to them. A free lateral growth suits them best, the object the first year being the formation of roots and a few well-ripened buds near the base for pruning back to. The sudden changes from dull wet weather to bright sunshine are very trying to Vines in all stages of growth, particularly to Muscats, Lady Downe's, Alicantes, and other late kinds still liable to scald; they are also unfavourable to the preservation of ripe Grapes, which soon lose colour where fully exposed. Under these trying conditions, where it is necessary to keep black kinds for any length of time after they are ripe, a little shade drawn over the roof on bright days will be of great service, provided the wood and foliage are not deprived of the benefit of light when the sun is off the roof, but where this cannot have daily attention, tanned pitchard nets may be thrown on loosely, as they do not exclude too much light, neither do they require removal until after the Grapes are cut. Give every attention to Vines now swelling off heavy crops, and see that internal borders do not want for tepid liquid at the mean temperature of the house. All that the external borders require this season is good mulching with rotten manure, and the heavy falls of warm thunder-rain will keep the roots well supplied with generous food. If the Grapes are well advanced, and hard forcing is unnecessary, give an abundance of air through the early part of the day; close with sufficient sun-heat to raise the temperature of the house to 90° in the afternoon, and give a little night air. Keep the house well supplied with ammonia by the introduction of fresh horse droppings, little and often, and ply the syringe on all stems, walls, and other spaces every evening where it can be used without spotting the Grapes. A dry May followed by extremes of wet and cold having been favourable to the rapid spread of spider, the application of sulphur to the pipes in addition to close observance of the above details may be necessary to its destruction; but where it can be taken in time the use of the sponge should not be neglected. *W. Coleman.*

PINES.

The constitution of Pine plant is naturally hardy, and the character of the growth so stubborn that it defies with impunity the attacks of any insect pests to which other subjects of a more tender habit become an easy prey; in fact, Pine plants are almost invulnerable in this way, but in other respects this is not altogether the case, because the excremental disfigurement produced by some kinds of insects, as the brown and white scale, or mealy-bug, is so detestably filthy, that it not only mars the appearance of the fruit, but makes it naturally uneatable until it is removed, and even then it depreciates its value

considerably. Seeing, therefore, the results which follow the presence of these pests, the utmost caution should be exercised to keep the plants free from contact with others that are infested with them, as if they once establish themselves remedial measures are not of much account. The latter may in some degree arrest their progress; but in order to completely annihilate them the best and surest method is to burn the plants altogether, and after this to thoroughly cleanse the structure and everything movable, and re-start with another lot of clean plants. Much danger might oftentimes be avoided in this respect if more care was observed in the selection of subjects for cultivation in close proximity to Pine plants; contagion would oftentimes thereby be averted. The spare room in these structures here are chiefly occupied by Cucumbers, Melons, Tomatos, French Beans, and fruiting Strawberry plants at their respective seasons; if these subjects are raised in a proper way no insect which in the ordinary way infest them will be at all detrimental to Pine plants. When Pine pits or houses are utilised in this way it is imperatively necessary to give them a thorough cleansing at least once in every year, and for this purpose the surface matter of beds, borders, &c., should be removed, and after the place has been well washed the parts requiring it should be lime-whited or painted as may be necessary. Of course convenient times must be selected for this work, but as far as practicable seasonable periods should be made available to do it. These plants are now in full growth, and every care as to watering, airing, and syringing should be accorded with promptness as required. *G. T. Miles, Wycombe Abbey.*

ORCHARD HOUSE.

The trees in the early house will require such treatment as their condition may demand. If they have been kept clean and healthy the leaves will still be green and plentiful on them; if they have been attacked by red-spider the branches may be nearly denuded of leaves. In the first place the ventilators of the house may be kept rather close to obtain a good heat by day in order to ripen the wood; but if there are very few leaves, and the few that remain are dropping off, much heat would be injurious rather than otherwise. I would rather place them out-of-doors, and take precautions to prevent the roots being soaked with heavy rains. Should there be any scale on the wood at this season it spreads very rapidly; the best plan is to wash it off with strong soapy water. Aphid, if it should appear, must be destroyed in the same way, if the house cannot be fumigated. The mid-season fruit is just on the ripening stage in the late house; the early fruiting varieties are being gathered. The best plan is to look over the trees once a day, and gather all the fruit as it ripens. Remove it carefully from the trees, and place it on some soft material in flat-bottomed baskets; clean moss is as good as anything. Handle the fruit gently, and do not remove it from the baskets until it is required for use. The fruit keeps better in a cool place where the air is not too freely admitted at this season. We admit plenty of air by day now that the weather is so warm, the ventilators being kept open a little both at the top and sides of the house at night. When the fruit is nearly ripe its quality depends very much upon the quantity of water applied to the roots. The soil ought to be kept moderately moist, for any excess of dryness, or too much water, will spoil the flavour. Pears are also ripening. We used to grow the Beurré Giffard for the very earliest, but have turned it out owing to its not being worth room in an orchard-house. Our earliest this season are Souvenir du Congrès, Williams' Bon Chrétien, Beurré d'Amanlis, and Beurré de l'Assomption. It will not do to allow either of these varieties of Pears to hang on the trees until they are nearly ready to drop off—it is best to gather it a day or two before this. The Williams' variety especially has a peculiar flavour which is not liked by some persons, but this is not found if the fruit is gathered some time before it is ripe. Some of the early varieties of Apples are very useful gathered from pot trees in the orchard-house. The Kerry Pippin and the Early Strawberry are both ripening now, and make a very nice addition to the dessert. *J. Douglas, Loxford Hall.*

ORANGE TREES IN POTS.

There is very much of the same treatment during the summer months, so that it will be sufficient to state that the temperature must be kept up by shutting up the house early in the afternoon, and not opening the ventilators too freely by day, for, as the nights have been rather warm, we have let the fires go out while the weather continues as it is. Still, even under these circumstances, the temperature seldom falls below 65° at night, and that only for a few hours before the sun rises. The temperature may rise to 90° after the house has been shut up, and it is maintained to 70° or even 75° up to 10 P.M. very frequently. See that insect pests are kept from them, and in cases where the trees are well furnished with fruit swelling, surface-dress and give manure-water occasionally. *J. Douglas, Loxford, Ilford.*

PLANT HOUSES.

ORCHIDS.—Now that we are passing through (as regards the flowering of these plants) the dull season, we shall do well to keep our eyes open, and see what is now flowering really worth adding to a collection. Commencing with *Aerides*, there are at least three now in bloom which should be in every collection—these are *A. quinquevulnera*, *A. affine*, and *A. suavisimum*. The first-named, which is one of the very finest *Aerides* known, has never been anything but rare, good plants of it being even now scarce and costly. This species delights in heat and moisture, and like all other *Aerides* is satisfied with crocks, charcoal, and sphagnum, for its roots to grow in, or rather the main portion, for not one of these purely air plants keep long in health if every one of their roots are buried in any material whatever. Those plants of *A. quinquevulnera* which were imported last spring, and have made roots in the crocks and charcoal, should now be mossed up. These plants are almost certain to push flower-spikes, but pinch such off, which will relieve the plant from a severe strain, and thus give it a fair start. *A. affine*, which must not be confounded with the stubborn and short-spiked *A. roseum*, is a grand *Aerides*, which throws long, many-branched spikes of rosy-purple flowers. As unhealthy plants of this species are met with far more often than healthy ones, it must be classed amongst those plants difficult to do thoroughly well. The great trouble is to keep it free from the disfiguring black spot, which I believe is entirely brought about by growing the plant in too close and hot an atmosphere, combined with too much moisture at the roots during the winter months. After trying our plants of this species in a great many different places we found the centre bed of the Dendrobium-house suit them best; the conditions of this house are, more air with a little less fire-heat than the Phalaenopsis division, but which runs up high at times with sun-heat. *A. suavisimum* will not take rank with the two *Aerides* named; this species is very sweet-scented even for an *Aerides*. It is of a free-growing disposition, and will succeed well in any ordinary stove or East Indian-house. *Burlingtonia candida* is another charming Orchid now flowering; its pendulous white flower-spikes are very elegant and deliciously scented. Unfortunately its beauty does not last for more than five or six days, but when at its best how very few flowers indeed can match it as a spray for the hair. This plant delights in a hot, close atmosphere, and should be suspended near the roof-glass; keep it decidedly moist the whole year round. Mealy-bug is often imported with this plant, and must be kept in check by syringing and cleaning. The hybrid *Cypripedium Ashburtoniae* cannot boast of bright colours, but it has the merit of throwing two good-sized blooms to every scape, is both free-growing and free-flowering, and would make an excellent exhibition plant for those who have to show Orchids during August or September. The grand *C. Veitchii* is too well known to need describing. To have it in flower at this time of the year it must be grown in the intermediate-house, which fortunately suits it far better than the East Indian-house. *Cattleya Dowiana*, which is without doubt the most handsome Orchid now in flower, is well enough known and so appreciated that every one buys it when they see a favourable opportunity. Those plants of this species passing out of flower must for a few weeks be kept on the dry side, and they will enjoy more air and light than at any other time. If kept too wet the roots do not push in the free manner necessary to recover the plant after its strain of flowering. *C. superba* will also be now sending up its flowers from the centre of the current year's growth. It is a splendid *Cattleya*, that has too often fallen a prey to the ravages of the yellow thrips, a pest that seems particularly fond of this *Cattleya*. As the young growth will stand a strong dose of tobacco smoke, it is an excellent plan to put the plants of this species in a box or frame by themselves occasionally, and give them a thorough fumigation. This plant, which succeeds best grown on a portion of a Tree Fern stem, must still receive abundance of heat and moisture. If grown in a pot or basket, chopped up pieces of Fern stem should be used instead of peat for it to root in. *Disa grandiflora* and *D. Barrellii*, the bright colours of which are now so showy in the cool-house, will of course be grown by every one who has a cold pit to spare. In the *Cattleya*-house there is not a more useful plant than the much neglected *C. Harrisoni*. Every one who sees this plant in flower pronounces it to be really beautiful, which it certainly is. Such soft rose-tinted flowers as this *Cattleya* possesses are far from common. The many-flowered spike of *C. Leopoldi* is not only handsome on the plant, but it would go a long way amongst cut flowers. As a table plant where high vases are used, *Dendrochilum filiforme* would at this moment, with its pendulous, slender racemes, be very charming. This plant should be grown the whole year round in the coolest end of the East Indian-house. Give it well drained peat and sphagnum, and keep it moist continually. *J. C. Spyers, Burford Lodge.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, August 2

Artisans' Show at South Kensington. Cottagers' Exhibition in the Botanical Gardens, Old Trafford, Manchester. Mansfield Horticultural Society's Exhibition.
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ACRY has gone forth from many places that the School Boards are exacting too much from their compulsory pupils, and that a great deal that is taught is of no practical use to pupils in enabling them eventually to gain a livelihood. No doubt there is some truth in this, and many boys especially would be none the worse for commencing the training for their several callings a little younger than the law at present permits. This concession might be made on the condition that those taking advantage of it should attend evening classes established for the purpose. But this is not the place to discuss the whole question, and we intend restricting our remarks to one particular branch of knowledge—we mean a knowledge of plants. We do not propose that botany should be taught in any school whatever, though a little of it could do no harm, and might possibly in many instances do a great deal of good in widening the powers of observation, and in laying the foundation of a taste for pure pleasures. There should, however, we think, be some provision for teaching a useful knowledge of plants, a knowledge of the plants grown in the fields, kitchen garden, or orchard, a knowledge that will enable a person to distinguish edible plants from poisonous ones, and so on. In order to show how necessary it is that something should be done, we need only call attention to the case of poisoning reported at p. 20 of the last volume of the *Gardeners' Chronicle*. In this case a farmer's family partook, on Christmas Day, of Monkshood roots, instead of Horse Radish. All of the members were seriously affected, and the wife, in spite of medical aid, succumbed. In order to show the benefits to be derived from a knowledge of common plants and how to grow them, we have only to call attention to an article on "Cottage Gardens" which appeared in the same number of this journal as the above, beginning at p. 9.

We are fully aware of the many difficulties in the way of giving practical instruction in these matters, but practical it must be, if it is to be serviceable. It seems almost beyond belief that in a farmer's household roots of the deadly Monkshood should have been mistaken for Horse Radish. When this is the case, what must be the degree of ignorance among persons less favourably situated for getting knowledge of such things? Excepting a very few in other classes of the community, our experience leads us to believe that farm-labourers know more about the properties of plants than any other class. In a purely agricultural district the most conspicuous of the common wild poisonous plants are known to be such by tradition, and the older children are warned against allowing the younger ones to pluck the "Lords and Ladies," &c. But this is a very superficial knowledge; few of them we believe would recognise the roots, which are as deleterious as the tops, and we remember an instance of two children, who knew "Lords and Ladies" by their flowers, who were fatally poisoned through eating the roots.

To obtain some idea of the amount of knowledge of plants, both useful and noxious, possessed by persons whose pursuits are neither botanical nor cultural, we have lately put questions to persons of various ages and conditions; and the answers generally went to show, that for educational purposes we want something very different from our large botanical establishments. It would do no good to record the extraordinary answers received in many cases; but if any one doubts the truth of our statement let him do the

same thing, always confining himself to common things.

We have frequently alluded to the foundation and progress of school gardens in Continental countries, and we have advocated a trial of them in this country. Of course it would be quite impossible to have a garden

useful plants, and the very commonest ornamental ones. Botanical names might be altogether ignored; and if children merely learnt to distinguish the plants by their exterior characters alone a great deal would be gained. On the Continent, however, they have in some instances proceeded considerably beyond this



FIG. 32.—DOUBLE RIBES. (SEE P. 145.)

attached to every school, or even to more than a very small percentage of the purely country schools, at least for a very long time to come. But where a school garden would be the most useful there it could most easily be established. Drawings and models of natural size might be used in the absence of fresh specimens of the plants themselves. The scope of the subject should be limited to native plants, cultivated

point. We have lately received a pamphlet* on this subject by MAX KOLB, Curator of the Botanic Garden at Munich, wherein the author gives an account of what has already been done in this direction in Bavaria, and sets forth his ideas of how school gardens should be formed and maintained, according to the scope

* *Der Schulgarten, dessen Nutzen und Einrichtung.* Von MAX KOLB. Stuttgart: Ulmer. 1880.

and purpose of the same. Designs for gardens of different sizes, together with suitable selections of plants, and a general enumeration of plants for school gardens, constitute the bulk of Mr. KOLB's pamphlet. He also alludes to the school gardens of other countries, especially of Belgium and Sweden, where the chief object is instruction in practical operations, rather than in the properties of plants. In Sweden, accord-

bridge, was good enough to send us the specimen from which the accompanying illustration (fig. 33) was taken.

— *RIBES SANGUINEUM FLORE-PLENO*.—Early in spring we look for the pretty blossoms of what is sometimes called the Flowering Currant, but as all Currants flower the name is not particularly appropriate. The *Ribes sanguineum* was introduced, if we mistake not, by DOUGLAS, from the north-

FELT surrounded by an *immortelle*. In life he did his part in supporting the national horticulture, it was fitting that his memory should be honoured in this way at this national *fête*.

— MODELS OF GRAFTING. — In one of the cases in the Brussels Exhibition we lighted upon a number of illustrations—actual grafts—showing the various methods of grafting. Where in practical England could we find any such collection? They were more instructive than any woodcut illustration would be. A young gardener might pass through many nurseries and gardens ere he saw at one glance such an instructive display.

— STANDARD PLANTS OF *GNAPHALIUM LANATUM*.—This plant, which we only see in this country as a bedding plant, is capable of other and very effective usage. At Brussels the other day we met with a lot of these plants in pots or small tubs, some grown as standards, others as pyramids 3 to 4 feet high, clothed to the base with foliage. We regret that we were unable to ascertain the name of the exhibitor, but we thank him for showing what extremely effective use may be made of a plant of easy cultivation. For the decoration of rooms, corridors, recesses, &c., nothing could be better.

— STANDARD HYDRANGEAS.—Another thing was worth notice at Brussels, we allude to standard Hydrangeas. Two or three of these were shown with a clean stem, 2 to 3 feet high, and a fine bushy head of flowers.

— STANDARD EURYAS.—Yet another standard—only this time a pyramid—was shown by Madame HELLEBUYCK & SONS, of Ghent. It consisted of a well-grown plant of *Eurya latifolia* fol. var., and was a very striking object.

— DRIED FLOWERS.—By far the best dried flowers we have ever seen, so far as retention of colour is concerned, were those shown at the Brussels Exhibition by M. VANDERBORCHT-MINNE, 36, Rue du Berger, Ixelles, Brussels. A similar exhibit was made at the Congress by M. CORNÉLIS, Pharmacien, of Diest, Belgium. We do not know the secret, but it is presumably connected with the "bouchons desiccateurs," with which the bottles were closed. The colours of various Orchids, Vandas, *Cypripediums*, &c., of *Cinerarias*, of *Cactus*, of *Begonias*, &c., were almost perfectly preserved, the form also, but the tissues were thin and shrunk.

— "VULGAR ERRORS."—It is odd and not a little disappointing to see how people go on harping on old exploded prejudices. The recent committee of the House of Commons on the Potato disease affords an example. The committee is reported to have upheld the exploded fallacy that varieties die out. Properly fixed and properly cared for, they do not die out. The old Ashtop Kidney is as vigorous now as ever under proper cultivation, but it has been displaced by Myatt's Prolific and other sorts.

— *ASTER TOWNSHENDI*.—This splendid Aster is now in fine condition in the herbaceous collection at Kew. It grows from 3 to 4 feet in height, and bears a profusion of beautiful bright violet-blue flower-heads 2 inches or nearly 3 inches across. It is a native of the Rocky Mountains of Colorado, and first flowered in this country two years ago. A good figure is given in the *Botanical Magazine* for 1879, tab. 6430. There seems but little doubt now, however, that this fine plant is hardly specifically distinct from *A. canescens*, but is merely a fine form of that species.

— *HYPERICUMS* AT KEW.—Amongst the dwarf St. John's Worts now flowering at Kew the most distinct and striking are *H. orientale*, *H. olympicum*, and *H. empetrifolium*. The first is an Eastern species, with primrose-yellow flowers. It grows about 1 foot in height, is of neat habit, and very floriferous. *H. olympicum*, another oriental species, has rather large glaucous leaves, and flowers almost as large as those of the common Tutsan, *H. calycinum*; this, too, is only about 1 foot high. *H. empetrifolium*, a native of the Mediterranean region, forms a pretty neat dwarf bush, with foliage resembling that of our native Crowberry, *Empetrum nigrum*, and branching panicles of small bright golden-yellow flowers.



FIG. 33.—*PYRUS SALICIFOLIA*.

ing to official returns, there are at the present time nearly 2000 school gardens.

— *PYRUS SALICIFOLIA*.—This beautiful spring flowering hardy tree is not so much known as it deserves to be. It is a native of Siberia, long since introduced into gardens, and has linear-lanceolate, finely saw-toothed leaves, hoary on the under surface, and dense corymbs of white flowers. The tree does well in town gardens, though its hoariness is apt to become grimy! Mr. LYNCH, of the Botanic Gardens, Cam-

western part of the American continent, and it has already produced many varieties, among which the double-flowered form, with very dark flowers (fig. 32), is to be preferred. It is a hardy shrub, which should find a place in every garden, small or large, suburban or rural. The gradual passage of bud-scales into leaf-stalks is very interesting in these plants.

— JOHN VERSCHAFFELT.—It was touching to see at Brussels, in the midst of a group of hardy Conifers, the name of JEAN NUYTENS-VERSCHAF-

— THE PHYLLOXERA AND THE BERNE CONVENTION.—As may be seen from the report in another column, the special subject for consideration at the Brussels Congress was the best method of modifying the terms of the Convention of Berne, so as to protect the interest of the Vine growers without unnecessarily injuring other branches of horticulture. The Berne Convention, of course, only applies to the European States that have bound themselves by its terms. Some of our colonies have adopted regulations even more stringent and absurd. We had occasion to allude to this lately, in speaking of the measures taken at the Cape of Good Hope, and have now before us the record of another glaring case of stupidity, in which a gentleman at Cape Town had some New Zealand Ferns sent to him from South Australia. On arrival at Cape Town the Tree Ferns were stopped by the authorities, and only after much worry was the proprietor permitted to send the Ferns to England. If Tree Ferns are to be stopped for fear of the Phylloxera, what is there that should not be stopped? Clothes, especially boots, should be interdicted, and immigrants should have their heads carefully shaved and their nails cut before being allowed to land at Cape Town.

— CROP PROSPECTS IN SCOTLAND.—A correspondent travelling in the North of Scotland reports the harvest prospects in that quarter as being very promising. The Potato and Turnip crops are very fine—the best, the growers say, that they have had for years; a fine autumn only is wanted. Mr. DOWNIE, writing from the neighbourhood of Dundee, on the 27th, remarks that he never saw the Potato looking better; and during a journey of about 130 miles from south to north he heard of no cases of disease.

— THE POTATO DISEASE.—We see from the *Journal of Horticulture*, that the Scotch Champion has—as we have always supposed it would do—fallen a victim to the Potato disease. Emphatically we say, Put not your trust in so-called disease-proof Potatoes. Moreover, we do earnestly press on cottagers, and those who have only a small Potato patch, to lift and destroy immediately any diseased plant they may see. A little careful watching and ruthless extermination of this kind may save a large proportion of a labourer's small crop. On a large scale this stamping-out process is unfortunately less practicable; but still it is disheartening to see no efforts made to prevent the spread of the disorder, and to witness the utter indifference that one man exhibits as to the welfare of his neighbour. It is quite true that not much can be done; but it is equally true that something can be done, and in the aggregate a considerable quantity of Potatoes saved.

— ST. STEPHEN'S GREEN.—On Tuesday St. Stephen's Green, Dublin, was opened to the public. At half-past 9 o'clock Mr. ROBERTS, Assistant Commissioner of the Board of Works, and Mr. DICK, Phoenix Park bailiff, received possession of the Green from Mr. SHEPPARD, under whose skilful superintendence the works had been carried out. Lord ARDLAUN had intended to have been present at the opening, but was unfortunately prevented, owing to sudden indisposition. The transference of possession was performed without ceremony of any kind, and immediately afterwards the gates of the Green were thrown open, the entrance fronting Hume Street being first unlocked. Large crowds of persons visited the Green during the day, and throughout both forenoon and afternoon crowds of children were seen playing about in all directions.

— FRUIT TREES KILLED BY GUMMING.—The effects of the last ungenial summer, and the long subsequent winter, are not entirely confined to the perishing of ill-ripened shoots, and the very general deficiency of flower-buds, for the whole effect is not at once appreciable. We have just received abundant specimens of branches of Plums and Portugal Laurel which, especially the former, have made luxuriant shoots, but which, after a time, become unhealthy, the leaves presenting an unusual aspect and ultimately dying off. After a careful examination of the Plum branches we find that the effect is entirely due to gumming. The wood is practically diseased, exactly in the same way as in more evident cases, here and there gum is oozing out, and on examining the tissues at the base of the luxuriant but

deceptive shoots, we find sufficient cause for their failing, in the diseased state of the tissues. The leaves have a peculiar glazed appearance, which we have observed in unfavourable seasons in Apricot leaves, and, what is curious, sometimes one half of the leaf is glazed while the other is green, and in the green portion there are cracks, showing the spongy tissues beneath, brown and diseased, so as to look like some leaf fungus. We have examined carefully under the microscope, the glazed and green portions of the leaves without finding the least change of structure, though the cuticle seems more inclined to shell off in one case than the other. As regards the Portugal Laurel, we merely find that the young shoots, after a time, become yellow and shed their leaves, which we believe to be the effect of previous cold. In the former case there is not the least doubt it is an unusual form of gumming, exactly in accordance with all we know of that formidable disease, which arises alike from dripping wet and unusual heat. *M. J. B.*

— THE DARWIN PRIZE.—The Midland Union of Natural History Societies, which consists of twenty-three of the leading scientific societies in the central counties, is about to issue the details of a scheme formulated by them, the object of which is to encourage and reward original research among the members, who are 3000 in number. An annual prize of the value of £10 (including a gold or bronze medal, at the option of the successful candidate), and by permission of Mr. CHARLES DARWIN, F.R.S., to be called "The Darwin Prize," will be offered for the best paper contributed during twelve months, ending March 31 each year, to the *Journal of the Union (the Midland Naturalist)*, on the subject of the year, which for 1881 is geology, and 1882 biology. The scheme is so framed as to allow, within specified limits, absolute freedom in selecting the subject of research, in order that original workers in science may be as little hampered as possible. On the obverse of the "Darwin Medal" will be a profile portrait of Mr. DARWIN, after a well-known photograph by REJLANDER. We also understand that the President of the Union (Sir HEREWALD WAKE, Bart.) has offered to the members a prize, to be called "The President's Prize," of the value of £5 in books, for the best original essay on the life-history of any one genus of insects indigenous to the Midland Counties. The essays are to be sent in not later than the 1st of May, 1881, and will be submitted to some eminent naturalist chosen by the President, whose award will be made known at the annual meeting of the Union, which will be held at Cheltenham in June next.

— THE STORMS.—A very curious circumstance occurred after the dreadful storm with which we were visited on the 10th and 12th, when 4 inches of rain were recorded—the lightning was unusually severe. Yeast seemed to have lost all its virtue, and the bakers lost whole batches of bread, because it was powerless. It is recorded that German yeast, when falling accidentally from a great height, loses its power of germinating, as is supposed, by some change in the polarity of the particles, and something similar has probably taken place here. The circumstance, at any rate, is worthy of record; it is, at least, new to us. *M. J. B.*

— THE HULL BOTANIC GARDENS.—These new and extensive gardens were opened on the 19th inst. The approach from the Cemetery Gates Station, from which the entrance is distant about 300 yards, is a road of ample breadth leading up to a handsome set of gates, supplied by Messrs. KING & CO., from the Colebrookdale Iron Works. The new gardens cover nearly 40 acres, and lying adjacent to the cemetery, with its well-grown plantations, and adjoining the railway lines, they really occupy a central space, in an area of at least 100 acres, that will be free from buildings for ever. Though the whole of the scheme of the promoters has not yet been carried out, there is sufficient accomplished to show that for long years to come a rendezvous of a highly charming character has been provided for the public of Hull. The scheme contemplates the erection of a central Palm-house, or winter garden, and adjacent buildings right and left, the whole extending about 400 feet. These have not yet been commenced, but we understand the company purpose erecting, if possible, the two end houses, each 50 feet square, and about 25 feet high, the one at the east end for the growth of tropical Water Lilies and the other for Camellias and various interest-

ing Australian plants, which can only be seen to perfection when planted out. In laying out the grounds an eye to the picturesque has been maintained, and some very pleasing effects have been obtained, especially in the irregular ground adjacent to the lake. The lake itself, which is 3 acres in extent, with its sloping banks, forms a charming feature of the gardens, and will grow both in beauty and interest year by year. Another handsome and substantial object is the orchestra, which occupies a plateau 100 feet in diameter; and the fountain from the old garden, which formed a prominent figure in the Exhibition of 1851, stands now as a central object in a large basin near the orchestra, and is in admirable keeping with the remarkably neat flower garden, which forms a semicircle below the raised terrace upon which the grand range of glass has yet to be erected. Here within this semicircle trimness and neatness reign supreme—in happy contrast to the general gardenesque character of the rest of the ground. There is as yet an absence of trees, which, of course, is unavoidable, but this is compensated for by the vast extent of broad sweeping walks which intersect the place, ample breadths of smooth cut grass, interspersed with shrubberies, which in a few years will become not only interesting from the many charming shrubs they contain, but for the variety of surface which they give by being raised considerably above the general level. Westward from the present glasshouses—which, by the way, must be looked upon, although double the extent of the glass in the old garden, as merely accessory houses for supplying plants for the decoration of the main range—is the botanical department, wherein over 7000 species of plants are arranged in beds of varying shape and size, each bed, or group of beds, presenting numerous illustrations of the various natural orders, arranged in such a manner as not only materially to assist the botanical student, but to present an attractive promenade to those who, while unable to appreciate the hard names which science has allotted to each of the individual plants, are still perfectly able to admire the beauty which the plants themselves present. The opening ceremony was performed by the ex-Sheriff, Mr. R. M. CRAVEN, President of the Hull Philosophical Society. The members of the Corporation, the Wardens of the Trinity House, the members of the Hull Board of Guardians and the Sulcoates Board of Guardians were invited to assist, and were received at the gates by the directors. In making the formal declaration of the opening of the gardens, Mr. CRAVEN congratulated the directors on the amount of work which had been done in so short a space of time. In glancing at the history of the old Botanic Gardens, he said it would be of great interest to them to know that there were a few gentlemen present who were at the opening of the old gardens—Alderman FOUNTAIN and Dr. DOSSOR. Always excepting the University towns, Cambridge and Oxford, London had the first botanic garden, Liverpool the second, and Hull the third. He advised them, in providing pleasure, not to lose sight of botanical study. He hoped by-and-by to see a lecture-hall and museum, as also a library, in connection with the gardens. In conclusion, the ex-Sheriff declared the gardens open, adding the classic words, *Gloria semper in eternum*. Mr. R. BAXTER, the Deputy-Chairman, in thanking the ex-Sheriff for conducting the ceremony, remarked that the gardens as they then appeared were an example of energy and perseverance, and would, when completed, be a credit to the town of Hull. They had already erected several greenhouses, but these were nothing to what it was intended to provide. On the embankment on which they were then met it was proposed to erect a Palm-house and other houses of the collective length of 400 feet. He further stated that, though much had been done, there was still much to be accomplished before the promoters of the Hull Botanic Garden Company would feel justified in "resting on their oars," and he asked the public to come forward and support the institution, by taking up shares, or by becoming annual subscribers. The manager and secretary is Mr. J. C. NIVEN, whose name is well known to horticulturalists. The directors intend to conduct the gardens so as to secure the fullest public patronage. They have already announced a *gala* every Monday evening during the summer months, concluding with fireworks; a musical promenade for each Wednesday evening; and on Saturdays the working-classes will be admitted at a charge of 2d. for adults, and 1d. for children.

— **BARLOW'S GIANT SWEET WILLIAMS.**—A most extensive display of these charming flowers can now be seen in the Aston Lower Grounds, Birmingham, and greatly are they admired! We are indebted to Mr. SAMUEL BARLOW, of Stake Hill House, near Manchester, for these very fine varieties, in which are to be found improved form of DEAN'S Auricula-eyed Sweet William, and HUNT'S strain also, and in many instances seedlings taking the properties of both strains. Improved form and great size have been obtained, whilst innumerable shades of colour and beautiful markings exist. A long border fronting the new range of glass is now gay with these Sweet Williams, from seed saved by Mr. BARLOW and placed in the hands of Mr. RICHARD DEAN for distribution. Displays such as this will bring the Sweet William into notice, as it richly deserves when such improved forms can be so readily obtained.

— **VIOLA BLUE BELL.**—The gardens of Aston Hall, Birmingham, like all the parks and grounds belonging to the Corporation, have liberal care bestowed upon them, and are remarkable this season for the beauty of the flower gardening. Aston Hall, the former residence of the HOTH family, is situated on an eminence overlooking the Aston Lower Grounds and surrounding country, and was opened by the QUEEN some years since as a museum and public park. Mr. EDDIN is in charge, and his flower garden arrangements, which are on an extensive scale, reflect the highest credit. But Viola Blue Bell should be seen there now in its glory—here, there, and everywhere; and what a grand thing it is! There are long rows of it, each nearly 18 inches wide, borders, patches, and groups; no other garden probably can show such an immense display of it. And what admiration it excites! "Violas for ever!" might, with much reason, be exclaimed—especially as in these gardens large masses of yellow Violas are in contrast.

— **IVY-LEAF PELARGONIUM GLOIRE D'ORLÉANS.**—This very fine and distinct variety is one of the floral treasures Mr. BARRON secured for this season at Chiswick. For its pleasing and distinct colour, of a bright pale rosy-magenta hue, much deeper than anything that has yet appeared; for the fullness of its flowers, which are medium-sized but very double; and for the marked freedom of habit which characterises this fine addition to the Ivy-leaf Pelargonium, a freedom that shows itself in connection with a close and compact habit—for these fine qualities Gloire d'Orléans excels all the double forms of the Ivy-leaf. Gardeners especially should grow it as a high-class decorative plant, and as an invaluable subject for cutting from. It was raised by Mons. FOUCARD. Mr. BARRON has a few other varieties under number that are both distinct and good, but which require to be named for purposes of identification. It is a charge sometimes brought against the Ivy-leaf Pelargonium that it is spare of bloom. It was not to be expected all the desirable qualities would come at once; but freedom has come with deepened colour and added quality, and gratitude to the raisers will be best shown by cultivating their productions.

— **DELPHINIUMS.**—Those who are fond of blue flowers will find rare illustrations of their favourite colour in the Delphinium. They give many shades of blue. In one catalogue of hardy plants published this year we have counted not less than seventy varieties, and a large proportion of these must be new, or they are somewhat highly priced. It would be an interesting study to have this collection of perennial Larkspurs growing in a bed for the purposes of comparison. It is worthy of remark that this long list does not contain one of the finest Delphiniums we have yet seen, namely, Nobilissimum, which has long, very symmetrical and handsome spikes of bloom, rich pale blue in colour, but the flowers are shot in the centres with a reddish puce. Among the newer varieties of recent introduction that are highly recommended we may mention Exquisite, cobalt-blue, suffused with rosy-lilac; Imperialis, rosy-lilac, tipped with bright blue, the centre of the flowers white, very fine; Pulcherrimum, bronzy-blue, orange and white centre; and Victory, violet, striped with reddish-lilac, white centre.

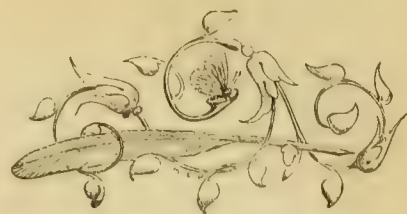
— **GOMPHRENA GLOBOSA NANA COMPACTA.**—This is the name borne by a very dwarf and compact

growing form of the Globe Amaranthus sent out by Mr. ERNEST BENARY, of Erfurt, Germany, in the spring of the present year. Mr. BARRON has a number of plants of it growing in 48-sized pots, and from 12 to 15 inches in height, and blooming as freely as one could well desire. It is characterised by a dense bushy habit of growth, and in this respect differs entirely from the type. Mr. BENARY describes the plants as attaining a diameter of 8 inches, and not exceeding 5 inches in height, but the examples at Chiswick are certainly taller; still, this might be the result of an accident of cultivation. It is something to have so dwarfed the growth of this fine old tender annual as to make it much better adapted for pot culture than before. The new form should become a favourite plant with the market growers.

— **CHANGES IN THE SEED TRADE.**—A circular has just been issued to the seed trade to the effect that the seed business hitherto carried on by Messrs. MINIER, NASH & NASH, 60, Strand, W.C., will, for the future, be amalgamated with the business of Messrs. WAITE & Co., Southwark Street, Borough, S.E., and will be carried on under the style or firm of Messrs. WAITE, NASH, HUGGINS & Co. The firm of MINIER, NASH & NASH is one of the oldest, we might say the oldest, of the seed firms in London. The most remote documentary evidence respecting the firm bears date 1781, but tradition carries the enquirer back some 200 years, when the business was carried on in an open shop on the north side of the Strand—the present south side, it is supposed, did not exist, but all was open to the river. By whom, or when the business was first established are matters not clearly known; the first names that can be traced are the MINIERs, who appear to have joined about the year 1750 to 1760. The firm have in their possession some old journey accounts, dated as far back as February, 1781, and then the business was known as that of MINIER, MASON, TEESDALE & MINIER, 63, Strand. The name of NASH was first associated with the firm about the beginning of the present century. There are many up and down the country who will learn, with something like regret, that the individuality of an old and time-honoured firm has become amalgamated with one of more modern origin, but the past will be linked to the present, in that the name of NASH will still remain in the list of wholesale seed firms carrying on business in London.

— **THE WEATHER.**—General remarks on the weather during the week ending July 26, issued by the Meteorological Office, London:—The weather was fine generally during the first two days in all parts of the kingdom, and continued so in Scotland till the close of the period. Over England and Ireland, however, the sky soon became overcast, and the weather unsettled and very showery. Thunderstorms were again experienced in different parts of the country, but were not so numerous as during the previous weeks. The temperature, except in "Scotland, W.," was slightly below the mean in all districts. No very high readings were registered, the maxima ranging generally from 75° to 77°; at Nottingham, however, the thermometer rose to 80° on the 21st, and to 79° on the 25th. The lowest of the minima occurred at most stations early on the morning of the 21st, and varied over England and Ireland from 42° to 48°. At Nairn a reading of 40° was recorded on the 25th. The rainfall was less than the mean in the Scotch districts, but more in all other places; the excess was not large in "Ireland, S." and "England, N.E.," but was considerable elsewhere. Bright sunshine was more prevalent than it was during last week, but the number of hours recorded was still rather small. The percentage of total possible duration was again greatest in "England, S.W." (48), and least in "England, N.E." (26). The wind was very light on all our coasts, and very variable in direction during the first three days, generally southerly on the 23d and 24th, and south-westerly on the 25th, while at the close of the period it circulated round a depression which lay over central England, blowing from west in the south, south in the east, east in the north, and from north in the west.

— **GARDENING APPOINTMENTS.**—The Rev. E. R. BENYON has appointed Mr. JOHN SMITH, late Gardener at Gunthorpe Hall, Norfolk, to succeed Mr. GRIEVE, whose retirement from Culford we announced last week.



Home Correspondence.

Gentiana gelida and G. septemfida.—Plants under these names are now in flower on my rockery, and very ornamental and interesting they are; but I fail to recognise any distinctive characteristics, and should be glad of information. The one called G. gelida, of which I have two or three plants which agree with one another, is a little more robust: both species make about six shoots from the root-stock, each about 8 inches long. The leaves of both are similar, growing in opposite pairs, arranged alternately at right angles to each other. G. gelida flowers at the end of nearly every shoot, bearing from six to nine flowers on each. G. septemfida is not quite so free; the flowers of both are exactly similar in size, shape, and colour, and are very durable, closing at night and in bad weather. I wish I knew how best to increase them. Mr. W. Thompson tells me it is a work of many years to raise them from seed to flowering size. The name septemfida seems to denote some specific character, which no doubt some of your readers could explain. At Mr. Ware's I lately saw on one of the rockeries some small upright single-stalked Gentians called gelida, bearing one flower. I questioned their authenticity, and the foreman assured me that G. gelida never had more than one stalk, and I cannot be sure that my names are correct. C. Wolley Dod, Edge Hall, Malpas, July 25.

Abies Hookeriana.—When lately visiting the beautiful grounds at Mayfield, Falkirk, the seat of Provost Russell, where wealth and art have combined to present gardening in some of its most lovely forms, I was much pleased to find that the late severe winter had not left such terrible marks of its ravages as in many other places I have seen. I have not time to dwell upon the manifold objects of interest which are here presented—the exceeding richness of the Golden Yews, and of the golden form of the Japanese Retinospora plumosa, which are planted here with lavish profusion but exquisite taste, was a treat to behold—But my object in writing this note is to refer to some plants of Abies Hookeriana, which are to be found along with many other choice trees and shrubs. Remarkable to the worthy Provost the great beauty of two specimens of this still comparatively rare Conifer, he replied that there was a much finer specimen than these; and so I saw, when he led me to a plant nearly 14 feet in height and 11 feet through, perfect in every branch. Are any of your readers acquainted with a finer plant than this? I cannot recall any to equal it. J. S. Gray, York.

Ficus minimus.—This pretty neat climbing plant has withstood the severe weather experienced last winter at York, when the thermometer registered 38½° of frost. It is planted at the base of a rock, and is growing in company with Cystopteris fragilis. The habit and neat foliage of this little climber or creeper always reminds me of a somewhat similar plant, but one belonging to a totally distinct family, which I have seen and much admired on the Alps of Europe, viz., Rhamnus alpinus, which is usually seen growing up the face and over the summits of huge rocks, the young tender shoots of the Rhamnus adapting themselves to all the irregularities of the surface of the rock, and so forming picturesque objects. Several times I have attempted to import plants, but unsuccessfully. R. P.

The Gardeners' Royal Benevolent Institution.—I regret to find that there should be any doubt as to the rights of ten-guinea members or life subscribers, and I have great satisfaction in affording full information on that point. In the first place, a donor of ten guineas at once becomes a subscriber for his life. Should such subscriber be a gardener, before he can claim assistance from the Institution, under rule No. 6 he must have been on the books for fifteen years at the least, and must then comply with the rules as to age, &c. In the event of his being found deserving he would be placed on the list of pensioners (upon the committee declaring a vacancy) without any election, to the total exclusion of all others who may not have subscribed so long or not at all. Should such subscriber, having been on the books fifteen years, die before being placed on the pension list leave a widow she would (upon proving to the committee that she was a widow and in neces-

situous circumstances) be placed upon the pension list, also without election. In the event of the subscriber being placed on the pension list and dying leaving a widow, she, as before, proving her case to the satisfaction of the committee, would succeed to the pension also without election. We have now on the pension list three who were life subscribers, viz., Mr. J. S., placed on the list in 1863; Mr. J. L., placed on the list in 1876; Mr. J. M., placed on the list in 1880; and one who is the widow of a life subscriber, Mrs. J. L., placed on the list in 1880. Mr. S. has been on the pension list seventeen years, and for the ten guineas he paid to the Society he has received £72. I think your readers will agree with me that this is a very good return for his investment. If your correspondent requires any further information I shall be happy, if in my power, to furnish it. *Edw. R. Cutler, Secretary, Tavistock Row, Covent Garden.*

Notes on Peas.—Peas this year, as last, have a galloping constitution, and what really shows the dwarfs are actually very tall Peas. With me William I. and Sutton's Ringleader are quite 10 feet high, although marked on the packet to grow 3 feet. Dealers should note this. The continual wet weather we are getting in July is certainly favourable to their growing to a great height. At this time (July 26) we have had over 5 inches of rain in this month. Unfortunately the damp weather is dead against the setting, more especially the Marrow Peas. In a season like this Peas are very sportive, some of them hardly like themselves. With me my Telegraph is showing the light variety called Telephone more plentifully than usual. I am told by Mr. Keetley that he has proved that the green variety frequently changes to the white, but that the white never changes back to green. I have not proved this sufficiently to be positive on the subject, but we might take Mr. Keetley's word for that. I am puzzled to know why the change of colour should improve the flavour, as Mr. Fish and a few others assert; for my own part I maintain, if they are of the same age when tasted, the flavour will be six of one and half-a-dozen of the other. Messrs. Carter have not told us yet from what source Stratagem sprang, but it has repeated itself over and over again in the gardens here. Telegraph is constantly dwarfing itself, but as I am no lover of dwarf Peas I have never pushed them forward, for the simple reason that I have not a great deal of ground to devote to Peas, and I can grow as many on a tall row as I could on three dwarf ones. Messrs. Carter have done well to bring this Pea to the front, for as a dwarf it has no equal, both in size and productiveness. More than this, Messrs. Carter have the same chance of selecting the white variety of Stratagem from the green, and we may have Stratagem white and Stratagem green, for such they are. If any of your readers are growing Stratagem, they will find they have the two colours. Last year the produce of one seedling Pea broke into nearly twenty different sorts. The same thing I have noticed again this season, and later on I will let you know how they behave. When Peas are growing too high the tops should be taken off; it strengthens the haulm, and ensures a succession of Peas. *William Culverwell, Thorpe Perrow, Bedale.*

The Onion-fly.—I have read with interest your correspondent "O."s communication on the ravages of the Onion-fly. I observe that "O." attributes the extent of the ravages partly to the use of the same piece of ground for two years consecutively, and partly to the use of guano. As to the use of guano I can say nothing, having no experience of it, but I hardly think that the use of the same piece of ground for two years running can be the cause of the ravages of the Onion-fly, for at this moment I have a very healthy crop of Onions—Improved Banbury White Spanish, White Spanish, and mixed—and yet this is the third season in which the same piece of ground has been used for an Onion bed. The ground is of a light, almost crofty, soil, of comparatively slight depth, for the spade in digging almost strikes on the rock below. The manure used came straight from the midden, without any preparation, just as it had been put there from the stable and byre; but in addition to this soot was plentifully dug into the ground. No Onions could not look healthier than they do to-day. Can any one tell me whether any success has been arrived at in growing the Portugal Onion in the United Kingdom? Last year some friends sent me a few very large Portugal Onions—one of these I kept through the winter, and planted it in the spring, it has now every appearance of seeding freely on five stalks. There are two more, which I doubt coming to anything. I should like to know what have been the results of growing Onions from seed in this manner. Whilst I am entirely free from any loss in my Onions, I am afraid that I shall lose every Carrot. They were looking first-rate three weeks ago; they have been carefully kept clean by hand-weeding; but they are going off as fast as they can, turning yellow, and on pulling up any that seem

affected they come away quite easily, as if they had no hold on the ground. There is a small discoloration on the side, and on cutting the Carrot across it is found to be partially hollow. I cannot detect any insect. I have not heard of the Potato disease here yet. Both field and garden Potatoes look very fine. *J. A. C., Northfield, Amman, July 25.*

Southwood's Select Hardy Flower List: July 24:—

Acantholimon venustum
Achillea aurea
Aconitum Napellus:
 " var. bicolor
Actinella scabra
Anthem. Biehersteini
Antirrhinum asarina
Aquilegia chrysantha
Adenophora coronata
 " stylosa
Arenaria Ledebouriana
Ajuga alpina
Allium cernuum
Anagallis Morrelli
Alyssum spinosum
Anchusa incarnata
Androsace carnea
 " Vitalina
Anemone decapetala
 " rivularis
 " sylvestris
 " narcissiflora
Arenaria juncea
 " maritima
 " rosea
Asperula cynanchica
 " azurea setosa
 " odorata
Aster ramosus
 " dumosus
Astragalus armeniacus
 " Hypoglottis
 " narbonensis
Bellium miniatum
Borago laxiflora
Brodiaea coccinea
 " congesta
Calliprora lutea
Calopogon pulchellus
Campanula alpina
 " carpatia
 " fragilis
 " frigida
 " germanica
 " isophylla
 " lactiflora
 " pusilla
 " Tenorei
 " Waldsteiniana
Catananche corymbosa
Centauria stricta
Claytonia sibirica
Corydalis coccinea
 " alba
Coreopsis auriculata
Coronilla ibérica
 " libanotica
 " varia
Delphinium cashmirianum
 " formosum
Dianthus deltoideus glaucus
 " tymphrestus
 " sylvestris
Edraianthus dalmaticus
Epilobium Dodonæi
Erigeron glabellus
 " alpinus
Erodium cicutarium
 " romanum
 " macrorrhizon
 " Reichardi
Erpeton reniforme
Eryngium Bourgati
Erythraea Centaureum
Francoa appendiculata
Funkia corymbosa
 " spatulata
 " Fortunei
Gaillardia aristata
Galega persica
Gentiana gelida
 " septemfida
 " bavarica
Geranium argenteum
 " cinereum
 " nodosum
 " Endressi
 " striatum
 " sanguineum
 " lanceastrineum
T. D. H.

Figs.—I send you a few Figs and leaves from a good-sized and apparently healthy tree. Can you tell me why the fruit drops off, instead of ripening? Thinking it might be owing to drought, we have this summer given it a weekly drenching. It bears a good deal of fruit, but there are very few that look now as if they meant to come to good. The tree stands on a steep hill-side, facing south, among other trees. *H. Stirling, The Crag, Falmouth.* [The foliage is very fine, but the fruits are all deformed, and not set. Can any correspondent supply a reason? Eds.]

Bees Poisoned by the Foxglove (Digitalis purpurea).—This summer I have had a large quantity of Foxglove plants, cultivated varieties, very beautiful in bloom; at the same time a quantity of Canterbury Bells, growing near them, and in flower. I was much struck to find that a great number of the working bees were lying dead in the flowers of the Canterbury Bell. Day after day I watched with much interest the movements of the bees, and found

that after they had fed for some time on the flowers of the Foxglove they became stupid, and after leaving the Foxglove they went into the flowers of the Canterbury Bell, and, as a rule, died shortly after. Query—Did they die from the poison got in the Foxglove alone, or did it depend upon their coming in contact with the flowers of the Canterbury Bell? I could not find any dead bees on any other plant, or on the ground near by. *Alex. Paterson, M.D., Fernfield House, Bridge of Allan, July 27.*

Lilium giganteum.—This noble Lily has for some years stood out unprotected in the garden at Gordon Castle, Fochabers, the fine estate of the Duke of Richmond and Gordon in Banffshire. It stood the severity of last winter, and several plants are now beautifully in flower. This may prove it to be harder than many imagine, for Banffshire is far north, and the frosts are at times very severe. Mr. Webster has raised several seedlings, which are planted in different parts of the gardens, and they all stand unhurt. It is a noble plant, and in suitable places would be very ornamental. *A. O.*

Campanula Waldsteiniana and C. Tenorei.—Of these two Campanulas it would be difficult to say which is the better. Both are dwarf, compact in habit, and beautiful. The comparatively large, erect-flowered, and exceedingly floriferous character, gives to the former a noble and charming appearance; the graceful, one-sided, panicle cymes, arching to the ground, of proportionately long, pendent, purple-blue flowers, the latter give an impression of modesty. In one it excites a feeling of sympathy, which probably has its origin in some remote idea of rivalry, as the two patches of plants grow within a few yards of each other. Both succeed well in a mixture of limestone grit and loam—C. Waldsteiniana on the south side of a slight mound, C. Tenorei on the north, although I do not think they are so very nice as to soil and position. *T. D. H.*

Clematis lanuginosa.—Notwithstanding the many fine varieties of Clematis that have been raised and distributed during the past few years, the species above named is quite unrivalled for the great beauty and substance of its magnificent flowers, the colour of which is of a rich delicate azure-blue, and the size as large or larger than that of any variety extant. It is one of those real good things discovered and sent home by the late Mr. Fortune, who found it growing on the hills of Che-kiang, from whence it was transmitted to Messrs. Standish & Noble of Bagshot, who sent it out some thirty years ago. In its native habitat it grows in strong soil and climbs about among dwarf bushes, on which it supports itself much after the manner of the Travellers' Joy, by coiling its leaf-stalks around any branches they come in contact with. There is no doubt this grand Clematis has had much to do with the parentage of many of the others, but as there must be two to breed from in a work of this kind to obtain new sorts, the progeny resulting through the cross comes midway, as may be seen in the seedlings partly resembling it having fewer petals, instead of six broad massive ones overlapping each other, which is a leading characteristic in C. lanuginosa. Jackmanni and most of the popular kinds have but four [five or six], but what many of them lack in form they make up for in freedom of flowering, as at certain seasons they are masses of bloom, and are really most valuable for planting on that account. Desirable as they may be, however, no garden of any extent should be without the one mentioned at the head of this note, and which if placed to train up the front of a red-bricked house or wall, shows off to great advantage. To grow it well and strong, it should have loose deep sandy soil, heavily manured, and when making its young shoots and carrying its flowers plenty of water or sewage, which will keep it in fine health and vigour. Were it only evergreen instead of deciduous it would be quite an acquisition in any conservatory, and as it is naturally an early bloomer, it may be had for use in such structures in pots, for which purpose it is the best and most effective of any. *J. S.*

Potato Crossing: Snowflake Crossed by Mr. Fenn.—I beg to inform you that I crossed Snowflake with one of my discarded seedlings three years ago. It was a thing I had set myself to do, amongst many others, in Potato culture, and it became a struggle of years to do it, on account of the paucity of blossom on Snowflake, in addition a deficiency of pollen. Thus it happened—The season after I came to Sulhamstead Snowflake produced some blossom; testing the stamens upon my thumb-nail I, to my great joy, detected a few globules of pollen, which I instantly applied to the pistils of a prepared spike of flowers on one of my seedlings, which was growing in the test-bed near at hand. The infinitesimal quantity of pollen might have led some to doubt of its effecting a purpose. I watched the result for the swelling of the seed-berries most intently. In about forty-eight hours I observed one lifting itself up into the face of day,

and my work of years was accomplished. Such a berry! It grew to become the size of a Walnut, and produced about fifty seedlings in 1878. I selected ten varieties only from these last year, which I have now growing under probation, several of them showing unmistakable signs of being the result of a Snowflake cross; and I do hope three more years will decide a few of them to be of first-rate excellence, and they have certainly hitherto withstood the disease. Now I have told you that Snowflake is already "caught," still, let me say to our young and enthusiastic fertilisers—Onwards! There is a great deal more enterprise required; but I would urge our younger Potatoists to go on independently with their work, and trust to Providence and their own strong aims; at any rate, this is the plan I have adopted during a good long lifetime, without fear or favour. The "noble tuber" (he who coined that word is lately gone to his rest—dear kind friend, W. F. Kaeleyll: peace to his manes) seems to be taken in hand, too, just now in very high quarters. Well, my work with the Potato is nearly

South Africa, whence it was introduced by Mr. Bull, to whom we are indebted for the accompanying illustration (fig. 34). The plant is no unworthy companion for *S. pulcher*.

The Potato Disease.—There are some things in life we would rather not see if it were possible to avoid them because they are so unpleasant, and the Potato disease is one of them. Shutting one's eyes, however, to its existence will not check its progress when once it has commenced its destructive operations in Potato breadths. Reports from several diverse districts at the same time show that there is no wave of fungoid air sweeping over the earth, but that the disease starts into life here and there without system or arrangement, and that in a similar way it shows itself a few days later perchance in some other districts until the whole of our Potato crops are more or less affected. I found the first evidence of its existence here on the 20th, a small patch of Ashleaf Kidneys showing the fatal spot. The piece was at once lifted and the haulm cleared away, but no diseased tubers

— Although we have had frequent thunderstorms, and just such weather as generally ushers in the Potato disease, I am glad to be able to report that up to the present (July 24) I have not yet seen a spot of it anywhere in this district. This affords great reason for congratulation and thankfulness, as it will be remembered that at this time last year the dreaded murrain had spread over the whole country, causing the leaves and haulm to be a rotten fetid mass; and it is very rare indeed, even in the most favourable summers, that we pass beyond the middle of this month without seeing unmistakable symptoms of the plague spot, which so rapidly spreads and eats up the tissues. Not only are Potatoes perfectly free from the dire scourge that has afflicted them for so long a time past, but the plantations of them everywhere are looking remarkably well, better indeed than I ever remember, for whether in garden or field it is all the same—robust tops with foliage of that dark deep green which betokens good health. If one only looks among the rows and examines the soil it is easy to see that there are plenty of tubers



FIG. 34.—*SENECIO SPECIOSUS*.

done—I fear it will be quite so in another three years' time: but by then I shall have achieved all the work that I formerly set myself to do in regard to the esculent. Here the air on Sunday was surcharged with electricity; at night the storm burst over us, lasting a deluge. Yesterday I narrowly scanned my crops, unfortunately to find a small patch singled out in their midst—an early variety sent to me from a friend on trial—stricken badly with the disease. Of course their tops were drawn bodily out of the ground forthwith, and *non est*. [Would that all would do as you did. EDS.] Nor is there further cause up to this writing for me to complain, however much I stand in fear. My seedlings are dwindled down to about fifty varieties; they are very promising and very good. We have splendid weather to-day, and I hope to "top-up" my hay-rick! *Robt. Fenn, The Cottage Farm, Sulhamstead, near Reading, July 27.*

Senecio speciosus.—This, as described by Mr. N. E. Brown in our columns for November, 15, 1879, is a very handsome half-hardy species, with a thick, fleshy root-stock, and oblong lanceolate pinnately-lobed viscid leaves. The flower-heads are of a beautiful bright purple colour. The plant is a native of

were found. As it had not then spread into other kinds, these were left untouched, the warm dry weather apparently holding it in check. On the night of the 25th there was a heavy rainfall, and during the ensuing day it was not difficult to find here and there evidences of the disease on the under foliage, that which was the least vigorous. This evidence was confined to no particular kind, but was shown here and there more or less. A week of dull weather will no doubt spread it or show that it has spread itself far and wide. If the weather should be warm and dry no great mischief may be done. I have, however, more dread of muggy white mists at night than of steady warm rains. The soil here will absorb many showers without becoming too moist. I still cannot agree with the recommendation to set to work at once and rush up the tubers. Scarcely a single kind has yet well set the skin, and it is far better, both to ensure table quality and keeping, that this process should take place in the soil. There is amongst Beauty of Hebron, Early Rose, and others of that family of Americans, some evidence of what many mistake for disease, but this rust it is most probable is but a legacy of weakness left in the plants by the late spring frosts. *A. D.*

swelling fast, as the earth about the roots is cracking in all directions, and if a plant is lifted as a test it yields the most satisfactory results. All this is very cheering for the country, and especially for the poor cottager, who, like the farmer, has suffered much of late, as the harvest in the allotment has been but a poor one, and the failure must therefore have made a great difference in his miller's account for the keep of himself, family, and pig. Although we so greatly lamented the wet of last season, and the low temperature attending it, surely they were blessings in disguise, for the two combined must have destroyed the *Peronospora* and sweetened the ground[?], or we should not now have the prospect we have, as not only is the Potato crop in every way satisfactory, but Wheat, Barley, roots and vegetables of all descriptions, are most luxuriant, and promise to yield an abundant return. At one time Potatoes appeared to be running too much to top, but fortunately a spell of sunshine with a few dry days checked this tendency and turned the energies of the plants in a more profitable direction. In a week or so, with the skins a little more set, early sorts will be fit for lifting, but if the disease keeps off they will be better in the ground where they are till the haulm ripens. *J. S.*

— After a very heavy thunderstorm on Sunday night (July 25) I found the Potato haulm considerably knocked about, and in one spot the disease was to be seen spreading rapidly; the variety which suffered most was Myatt's Ashleaf. In taking the crop up to-day (July 27) it was found that the disease had made its appearance in three sorts—Lee's Hammersmith, Myatt's, and Rivers'. Out of about 10 bushels taken up to-day we have only found four bad ones. Veitch's Improved Ashleaf does not appear to have suffered at present; Late Rose is looking remarkably well. I may mention this variety kept us going for a considerable time last season, when all the other varieties were a mass of rotteness. Magnum Bonum had not a diseased tuber among them last year, and they appear to be doing better still this season; the tops are quite 4 feet high, and look the picture of health, as also do the Scotch Champions. In the allotment gardens in this neighbourhood the disease is most alarming. I may mention that the soil here is rather wet and heavy, and that the variety grown by the cottagers is chiefly Early Rose. *G. Merritt, Kimpton Hoo, Welwyn, Herts.*

— I think the following news of the appearance of the Potato disease this season may interest some of your readers. On Saturday, the 17th inst., I noticed the first spots on the Early Rose; the next to show spots were the Myatt's, then Early Ashleaf and Mona's Pride, and other early kidney varieties. By the 23d the Early Rose were all black in leaf and stalk, and the other early sorts showed some black leaves; but did not seem to be getting worse at all rapidly. On the 27th I noticed a few spots on the Regent kinds, but none on the Champions or the Magnum Bonums. The latter variety I have grown ever since they were introduced, but have never yet seen a diseased tuber, though I hear an occasional one has been found by other growers. I have had as much as 2 tons per acre bad of the Champions growing by the side of Regents having 4 tons bad. Heavy rains continue to fall, and if one had tried to produce weather for inducing disease more suitable than that we have had for the last fortnight could not have been devised. If hot weather now comes, with the land like a swamp, the prospect is a very bad one. *John Fryer, Chatteris.*

The Irish Distress and the Potato Crop.—Will you permit me to utter a word of warning? I have tried to do so through the daily papers, but they are so full of Dr. Tanner and his fast and other weighty matters as to have no space to devote to the saving of the food of a starving people. From remarks in Parliament and in the Press it seems that prospects in Ireland are brightening. The weather is fine, corn and green crops are promising, stock are healthy, grass plentiful, and the Potato crop there, as here, magnificent. The gratifying result is, that relief committees are being dissolved, and prosperity and plenty seem about to return to the Sister Isle. All this is what every one desires; but a moment's thought reveals the startling fact that these bright visions are based on something less secure and less stable than stubble. If the Potato crop continues sound all may be well; should it not, all will soon be worse than ever. It is too readily taken for granted that it is safe. The Scotch Champion and Magnum Bonum were distributed by the thousand tons for seed, on the assumption that they were all disease-proof. Never, perhaps, was such a bold deduction made from such a slender basis of fact. No doubt in many localities they suffered less than others, but no greater mistake can be made than to take for granted that they will prove disease-proof in Ireland. My advice and my warning is simply this—Do not believe in the disease-proof properties of these or any other Potato. Treat all alike. Watch for the disease as earnestly as the shipwrecked mariner watches for a flag at sea or for land. The moment it appears pull up the whole of the tops, and if possible cart them off the land and burn them as soon as possible. This is much more quickly done than the only alternative to checking the disease—lifting the crop at once. Either method will check the disease, and save the crop, so that it will keep sound—provided always, however, they are adopted in time. After the insidious disease has once reached the tubers, neither pulling up the tops nor lifting the bottoms are any security. It is like locking the stable door after the steed is stolen, or, rather, like barring our houses with the burglar inside. The germs of the disease are already in the tubers, and will develop themselves into sheer rotteness. The Government has with much labour passed measures of relief, and what is called for shortness a Disturbance Bill for Ireland; another Disturbance measure is needed to shield Ireland from starvation. A small army of inspectors should be despatched under Commander Worthington Smith to watch the Potato fields, give warning of the disease, and disturb every holder out of his lethargy and faith that the Potatoes are best left to their fate. Left to their fate, the Potatoes and the

people also may perish. Dishauled or lifted between the interregnum of time afforded between the disease spotting the leaves, specking the stem, and hitting the roots, the crop is safe and sound as if no disease were abroad. Every peasant in Ireland, as well as Britain, should not only know, but be prepared to act on this fact, as it is surely alike the duty of the Government and the Press to make it universally known. In conclusion, I may add that I practise what I preach. Since the 20th our Potatoes are watched with the most scrupulous care, and hardly a day has passed without some variety, as it reaches the disease stage and gets spotted with the disease, being lifted or having the tops drawn at once. *D. T. Fish.* [We entirely endorse your practice. Eds.]

Failure of a Peach Crop.—We have a large Peach tree in our early house which bloomed well and set a good crop of fruit, which all started swelling off well for some time until they became the size of blackbirds' eggs, when they began to drop off repeatedly until the number on the tree was reduced to about fifty. These continued swelling for a time, when one by one they became diseased in the same way as the enclosed specimen. When examined the stone appears to have burst, and the skin of the kernel is quite brown, and the inner part nothing but a watery substance. In this manner they continued dropping off until we had only six or seven remaining on the tree, and of these, although they ripened off a fair size, not one had a sound stone. This tree was planted by my predecessor under the name of Crawford's Early, but it is more like Grosse Mignonne; anyway, it has grown well, and last year made some good healthy wood. The tree has been well attended to all through the season, still we have failed to secure a crop of fruit. We have a young tree of the Diamond Peach in another house that set a splendid crop of fruit, but when they became about as large as Hazel Nuts they, too, began to fall off, and only left about twenty-four fruit on the tree, which covers about 72 feet of wall. In the same house we have Bellegarde carrying a good crop of fruit, also a Barrington. I have had some little experience in the culture of Peaches, &c., but never before have I witnessed anything of this kind. When these marks first appear in the fruit they are about the size of a No. 4 shot and quite black. As they increase in size they become brown and damp, and after a few days become withered and fall off. Can any of the readers of the *Gardeners' Chronicle* help me out of the difficulty? *J. Lane, The Gardens, Oakley Park, Suffolk.* [We suspect that "gumming" is the cause of the mischief. Eds.]

The Rose Season of 1880.—Take the Teas out of any Rose season, and it must be shorn of much of its beauty. The Teas were all crippled—three-fourths of them killed—and hence a good bloom of Teas was impossible. Hence one of the greatest difficulties of the exhibitor this year was to fill his Tea stands. In many cases it could not be done, in others it had better not have been attempted, so beggarly was the display of Teas. A series of mild winters, joined to wild and baseless theories of acclimatisation, which is a mere philosopher's stone—I beg pardon, mare's nest—no plant being ever made harder than its original constitution by any power of man—has well-nigh destroyed most of our Tea Roses. Because the winters were mild for a time cultivators became venturesome, with the result of losing their Tea Roses by the thousand. A very small amount of protection also suffices to save Tea Roses. Perhaps there are no better modes or materials than a handful of dried Fern fronds, or a few boughs, or a piece of Russian mat, or bit of old sack. Dwarf Tea Roses may have their stems earthed up with a little dry soil, sawdust, cocoa-fibre refuse, or such-like substances. Such simple means of protection would have saved most of the Tea Roses that were crippled or killed last season, and added their delicate beauty and plenty to the Rose harvest of this summer. Roses were later than usual this year, and they also suffered much from the dashing rains of June and July. Perhaps there were fewer perfect flowers than we generally have. Caterpillars and grubs were also busy; possibly, so many Roses being killed and weakened by the winter, the grubs were more concentrated on that account, and seemed to do more mischief. May was also rather cold, as well as exceptionally dry, which checked growth and thus limited the range of the feeding quarters of the grubs. But notwithstanding these drawbacks the Rose harvest was brilliant, though unusually limited alike in regard to time and quantity. Many of the older Roses were also at their best—for example, Général Jacqueminot, Charles Lefebvre, Jules Margottin, and Charles Lawson were hardly exceeded by any of the more modern varieties. Baroness Rothschild, Beauty of Waltham, Duke of Edinburgh, A. K. Williams, Thomas Mills, and La France were also at their very best this year. The dark Roses, such as Prince Camille de Rohan, Sultan of Zanzibar, and Black Prince have also burned less than usual. Golden Roses have likewise done well.

The Maréchal was not quite so large as we have seen it, but Triomphe de Rennes, Boule d'Or, Céline Forestier, and Solfaterre have been fine. Never either has that most useful of all Roses, Gloire de Dijon, been finer, especially in bud and half-opened flower; it seems a pity that this grand Rose should ever advance beyond that stage. The dripping flowering season has been favourable to a good clean vigorous growth, which promises well for a good autumnal harvest of Roses. Not a day should now be lost in picking off the old flowers or seeds, and thus preparing the tree for a fresh start. This is all that should be done at present. Many years' experience proves that the cutting back of Roses in summer severely is a mistake; it sacrifices time as well as strength, and very often results in a late growth of wood that has little or no chance of ripening before winter. By merely cutting off the dead flowers now the young flowering shoots will push near the extremities of the branches; the whole can then be cut back to the old and well ripened wood at the winter pruning. This is also a good season to top-dress Rose beds and borders with a good top-dressing of soot, guano, or deodorised night-soil. Such powerful aids to growth so opportunely given never fail to add greatly to the beauty, fragrance, and size of the autumnal Rose harvest, which promises exceedingly well this year. *D. T. Fish.*

Apiary.

THE coming of a swarm of bees into a garden is by the old ladies of both sexes regarded as a good omen. Probably, if the bees remain, it is so far an omen of good luck that the owner of the garden is the richer in their possession. A few days since a strong swarm paid my garden a visit, and liking the position did not depart. On the previous day they came along the highway, having, it is believed, travelled several miles, and turning into a neighbour's garden settled on the overhanging branch of a tree, and in an excellent position for hiving. My neighbour, however, failed to find the needful house-room, and the next day, after twenty-four hours' patient waiting, the bees again took wing, this time passing over the wall into my garden, where the little scouts on the look-out for a lodging soon found a hive, the inhabitants of which having lost their queen had dwindled down to a mere handful. Into this ready-furnished lodging the swarm entered, and seem to be entirely satisfied with their abode. It is all very well to say that "A swarm in July is not worth a fly," especially in such a case as this, as the bees are working with marvellous energy; and being a strong stock, will no doubt fairly furnish themselves with a store of honey for the winter. If they do this, they will be worth 10s. at least, and thrice as much next June, if by that time they should have given off two or three swarms. Loss of queens is a common complaint amongst bee-keepers, and is more largely attributed to the cold moist nature of the previous summer than to the severity of the winter. Where so many stocks have been killed or have died out, the honey harvests of the present year must be greatly lessened; but those who are favoured with good strong stocks should find that the warmth and sunshine now enables the bees to gather sweets freely. *A. D.*

Natural History.

THE STARLING.—Is the starling a non-fruit-eating bird? It is generally believed to be so. I would like to state the following, which came under my notice some three years ago:—At Dunbeath Castle, the seat of R. Thomson Sinclair, Esq., in Caithness-shire, the gardener, Mr. Mackie, had one morning put air on his vinery about 10 o'clock, and when working in his potting-shed about an hour afterwards he could not understand what was the cause of the unusual noise that he heard, and going round and looking through the glass, to his astonishment he found the vinery swarming with starlings, tearing away at his Grapes. I called at the place a few days afterwards, and I could not see a single bunch that had escaped them; in fact, many of the bunches were literally torn to pieces. This bird is increasing very rapidly, and if it shows the same propensity that it did at Dunbeath Castle, it may be a sad matter for others some fine morning. I have been led to give the above from the great number of letters that have appeared in the Scotch papers lately, on what is considered fruit-eating and non-fruit-eating birds. I hope some of your numerous correspondents will give their experience on the above. *John Donnie.* [We are not over-happy when we see starlings at work on our Morellos! Eds.]

THE BELGIAN NATIONAL
HORTICULTURAL EXHIBITION.

WHEN writing last week the arrangements of this fine Exhibition were still incomplete, no catalogue or list of awards had been published, and in many cases no tickets or labels were attached to the plants. A day or two altered all this. The plants were rearranged so as to show to greater advantage the noble groups of M. Ghellinck de Walle, Madame Legrelle d'Hanis, M. Albert van den Wouwer, of MM. Linden, Van Houtte, and others. Very noble these groups were, but it is not necessary to dilate upon them further than to express a longing that at our "big shows," together with our fine stove and greenhouse plants and pot Roses, we could have such glorious backgrounds of foliage plants. As it is, we must give the palm to Belgium for these princes of the vegetable world. We doubt not, nevertheless, that were sufficient encouragement awarded we could hold our own very well. On the other hand there was nothing in Brussels to compare with the gorgeous specimen stove and greenhouse plants that we are accustomed to see year after year. A good deal was done to diversify the monotony of green alluded to last week, by the judicious arrangement of Pelargoniums and tuberous Begonias, while the foliage Begonias made foregrounds for the Cycads, Aroids, and Tree Ferns, than which nothing could have been finer either in form or colour. The receipt of the prize list enables us to supplement the remarks of last week with some additional particulars. According to the interesting introduction to the catalogue, written by M. Morren, there are over five hundred nursery establishments (without counting, we presume, those of small extent). Ghent alone comprises 135, while Brussels follows with 64, Liège with 49, Bruges 32, Antwerp 16, the other principal towns being less distinctively horticultural in their commerce. It is therefore not surprising that the greater part of the honours of the show fell to Ghent. The syndicate of Ghent nurserymen seems to have had, amongst other things, the good effect of binding the nurserymen into one league for the common good; thus we noticed that the exhibits from Ghent, from whomsoever sent, had each a ticket with the arms of Ghent and the word "Gand" prominent thereon. The importance of the town as a horticultural centre was thus at once made obvious to those who were not aware of it before. Ghent took the lead also in the discussion of the Phylloxera question, to which we shall hereafter refer.

Among the Prix d'honneur a "diplome" of excellence was awarded to M. J. Linden, of Ghent. A glance at our note of last week will suffice to show that this was well earned. M. Linden filled one entire court of the Exhibition with his plants, and he showed elsewhere magnificent groups of Palms, of Cycads, of Aroids, of miscellaneous plants. One of the most interesting things in the Exhibition was the group illustrating the history of plant importation in Belgium since 1830. The plants were small, but they were noteworthy, as illustrating an amount of personal research in distant lands and of zeal that few or none could surpass. As a historical document, which is sure to be of interest, we append the complete list of those of M. Linden's introductions shown on this occasion:—

"*Alocasia zebrina*, fies Philippines, 1863.
Anguloa Clowesi, Colombie, 1843.
Anguloa Ruckeri, Colombie, 1844.
Anguloa uniflora, Colombie, 1843.
Anthurium crystallinum, Linden et And., Colombie, 1873.
Anthurium Dechardi, Linden et And., Colombie, 1878.
Anthurium magnificum, Linden, Colombie, 1865.
Anthurium regale, Linden, Pérou, 1866.
Aphelandra aurantiaca, Lindley, Tabasco, 1841.
Aphelandra fasciata, Linden, Colombie, 1874.
Aphelandra Sinizini, Linden, Pérou, 1876.
Aralia elegantissima, Linden, Nouvelle-Calédonie, 1876.
Aralia gracillima, Linden, Nouvelle-Calédonie, 1876.
Aralia filicifolia, Moore, Nouvelle-Calédonie, 1877.
Aralia spectabilis, Linden, Nouvelle-Calédonie, 1878.
Aristolochia Duchartrei, And., Colombie, 1869.
Artocarpus grandis, Linden, fies Philippines, 1854.
Begonia rex, Putzeys, Assam, 1864.
Bignonia ornata, Linden, Rio Negro, 1867.
Campylobotrys argyroneura, Linden, Mexique, 1850.
Campylobotrys refulgens, Linden, Mexique, 1861.
Campylobotrys regalis, Linden, Mexique, 1860.
Cattleya aurea, Colombie, 1873.
Cattleya bogotensis, Linden, Colombie, 1865.
Cattleya chocoensis, Linden, Colombie, 1874.
Cattleya Eldorado, Linden, Rio Negro, 1874.
Cattleya gigas, Linden, Colombie, 1873.
Cattleya quadricolor, Linden, Colombie, 1866.
Cattleya Trianae, Colombie, 1865.

Cattleya Wagneri, Venezuela, 1853.
Ceroxylon andicola, Humb., Colombie, 1843.
Cespedesia Bonplandii, Pl., Colombie, 1878.
Chamerops stauracantha, Mart., Tabasco, 1841.
Cissus Lindenii, Ed. And., Colombie, 1871.
Cochlostoma Jacobianum, Koch, Ecuador, 1867.
Cocos Weddelliana, Brésil, 1865.
Cuphea emicans, Pl. et Linden, Mexique, 1856.
Curmeria picturata, Linden et And., Colombie, 1873.
Cyanophyllum magnificum, Linden, Mexique, 1858.
Cyathea (Cibotium) princeps, Linden, Mexique, 1860.
Cypripedium Schlimii, Colombie, 1850.
Dichorisandra musica, Linden, Pérou, 1867.
Dieffenbachia imperialis, Linden, Pérou, 1874.
Dieffenbachia latimaculata, Linden, Colombie, 1873.
Dieffenbachia Parlatoei, Linden, Colombie, 1875.
Dion edule, Linden, Mexique, 1849.
Disteganthus scarlatus, Linden, Para, 1863.
Dracena Casanovei, Linden, Vanicoro, 1874.
Dracena gloriosa, Linden, fies Salomon, 1873.
Dracena lutescens striata, A. Verschaf., 1873.
Dracena neo-caledonica, Linden, Nouvelle-Calédonie, 1876.
Dracena Reali, Linden, fies Salomon, 1874.
Encholirion corallinum, Linden, Brésil, 1864.
Eucharis amazonica, Linden, Pérou, 1836.
Ficus dealbata, Linden, Amazone, 1869.
Fittonia argyroneura, Linden, Pérou, 1868.
Fittonia gigantea, Linden, Ecuador, 1871.
Fourcroya Lindenii, Jacoby, Colombie.
Iresine Lindenii, Van Houtte, Pérou, 1869.
Kentia Balmoreana, ile Lord Howe, 1872.
Kentia Lindenii, Nouvelle-Calédonie, 1875.
Kentia Luciani, Linden, Nouvelle-Calédonie, 1877.
Kentia robusta, Brong. et Gris., Nouvelle-Calédonie, 1878.
Lelia superbiens, Mexique, 1842.
Libonia floribunda, Koch, Brésil austral, 1863.
Lindiera rivalis, Benth., Tabasco, 1841.
Lycaste Skinneri, Chiapas, 1842.
Maranta sp.
Masdevallia candida (tovarensis), Linden, Venezuela, 1842.
Masdevallia chimera, Rchb. f., Colombie, 1873.
Masdevallia coccinea, Linden, Colombie, 1853.
Masdevallia elephanticeps, Rchb. f., Colombie, 1876.
Masdevallia Lindenii, Rchb. f., Colombie, 1870.
Masdevallia Trochilus, Colombie, 1873.
Massangea Lindenii, Linden, Pérou, 1872.
Odontoglossum brevifolium, Ecuador, 1867.
Odontoglossum coronarium, Colombie, 1851.
Odontoglossum Hallii, Ecuador, 1846.
Odontoglossum hastilabium, Colombie, 1849.
Odontoglossum luteo-purpureum, Colombie, 1873.
Odontoglossum nereum, Colombie, 1843.
Odontoglossum Pescatorei, Colombie, 1851.
Odontoglossum Phalenopsis, Colombie, 1854.
Odontoglossum triumphans, Colombie, 1854.
Odontoglossum vexillarium, Colombie, 1870.
Oncidium cucullatum, Colombie, 1851.
Oncidium macranthum, Pérou, 1867.
Oncidium Phalenopsis, Ecuador, 1867.
Oncidium serratum, Ecuador, 1866.
Oncidium superbiens, Colombie, 1873.
Oncidium tigrinum (Barkeri), Mexique, 1862.
Oncidium zebrinum, Linden, Colombie, 1868.
Oreopanax dactylifolium, Linden, Mexique, 1859.
Oreopanax peltatum, Linden, Mexique, 1858.
Oreopanax platanifolium, Linden, Mexique, 1858.
Pandanus elegantissimus, Linden, ile Diego-Rodriguez, 1853.
Pandanus Pancheri, Linden et And., Nouvelle-Calédonie, 1857.
Peperomia resedæifolia, Linden et And., Colombie, 1871.
Philodendron calophyllum, Brong., Guyane, 1874.
Philodendron daguense, Linden et And., Colombie, 1874.
Philodendron gloriosum, Linden et And., Colombie, 1877.
Philodendron Lindenii, Wall., Ecuador, 1866.
Phyllotenuum Lindenii, And., Colombie, 1873.
Philodendron Melinonni, Brong., Guyane, 1868.
Phalenopsis Schilleriana, fies Philippines, 1862.
Pinicectitia (Beaucarnea) tuberculata, Mexique, 1839.
Pritchardia filifera, Linden, Arizona, 1870.
Pritchardia macrocarpa, Linden, fies Sandwich, 1874.
Pritchardia aurea, Linden, fies Sandwich, 1878.
Pteris tricolor, Linden, Indo-Chine, 1860.
Rogiera gratissima, Linden, Chiapas, 1867.
Ronngbergia Morreni, Linden et And., Colombie, 1876.
Sanchezia nobilis, Linden, Pérou, 1871.
Selenipedium caudatum, Chiriqui, 1852.
Selenipedium Roelzii, Colombie, 1873.
Sobralia dichotoma, Lindley, Colombie, 1842.
Sphaerogyne imperialis, Linden, Pérou, 1871.
Stevensonia grandifolia, Séchelles, 1861.
Theophrasta imperialis, Linden, Brésil, 1847.
Thyscanthus rutilans, Colombie, 1853.
Tillandsia Lindenii, Morren, Pérou, 1867.
Tillandsia tessellata, Linden, Brésil, 1873.
Uropodium Lindenii, Lindley, Venezuela, 1846.
Vriesia Glaziouana, Ch. Lem., Brésil, 1868.
Zamia Lindenii, Regel, Ecuador, 1875."

It is to be regretted, on the score of patriotism and historical retrospect, that M. Linden was the only exhibitor in this class, and, indeed, in five classes having the same object in view, only one exhibitor besides M. Linden obtained an award, viz., M. De Smet. The two Diplomas of Honour for amateurs were awarded to MM. van den Wouwer, of Antwerp, and M. Ghellinck de Walle, of Wondelghem. The group of Palms, Tree Ferns, Cycads, &c., shown by the former was one of the most magnificent

things in the Exhibition, while the Cycads of M. Ghellinck de Walle, if better known to English visitors to the Ghent shows, were none the less admirable. The corresponding Diplomas of Honour of the first-class were awarded to MM. De Smet, d'Haene, and Van Houtte, of Ghent; Jacob-Makoy, of Liège; while those of the second class went to MM. Dallièrre and A. Van Geert, both of Ghent. As to the other prizes it is impossible for us to mention them all; suffice to say, that for miscellaneous flowering plants M. Tryman, of Antwerp, took two medals for new plants since 1877; MM. Van Houtte and Jacob-Makoy took 1st and 2d prizes respectively for twelve new plants introduced since 1878; MM. Linden, A. Van Geert, and Jacob-Makoy, obtained respectively 1st, 2d, and 3d prizes for a single Orchid in flower; M. Ferdinand Massange obtained a Silver-gilt Medal for *Cypripedium Haynaldianum*. For the splendid miscellaneous groups of fine-foliage plants, Palms, Cycads, and the like, the prizes went to MM. van den Wouwer, Linden, and Van Houtte; and for smaller collections of similar character to M. d'Haene, Van Mieghem, de Saegher, and Wanauvre. For thirty stove variegated plants MM. Linden and Van Houtte were honoured with 1st and 2d awards, and for a smaller collection M. d'Haene. The prizes for Marantas were awarded to Madame Legrelle, to MM. d'Haene, and to MM. Wartel frères. The prizes for thirty-five Palms went to MM. Linden and d'Haene; that for twenty-five Palms, large specimens, to MM. Ghellinck de Walle and Van Houtte. Other prizes for these plants were gained by M. d'Haene, A. de Craen Longhé, Moens, and van den Wouwer, Jacob-Makoy, A. Van Geert. The prize collections of Cycads were shown by MM. Ghellinck de Walle, van den Wouwer, Madame Nuytens-Verschaffelt, A. Van Geert, De Beukelaer, and De Smet. Aroids were shown by Madame Legrelle d'Hanis and M. Linden. Orchids were alluded to last week, but we may now say that for the collection of twenty-five a Gold Medal of 500 francs was awarded to M. F. Massange, of Louvrex; MM. Cannart d'Hamale, Oscar Lamarche, Linden, and De Smet were also prize-takers in this department.

BROMELIACEÆ.

Bromeliaceæ, so little known in England, but which are so remarkable for the brilliant colouring of the bracts and flowers, and often for the singular markings of their leaves, were well represented. The culture of these American epiphytes is more-or-less general in Belgium. In the majority of the open classes there were eight to ten competitors. The 1st prize in the first class by universal consent was given to MM. Jacob-Makoy, of Liège, for thirty species or varieties in or out of flower. These collections contained notably a *Bromelia Binoti* resembling *Bromelia Pinguin*, Linn., but having the panicle shorter and the petals paler; a *Pitcairnia iridifolia*, in flower; *Hoplophytum giganteum*, and a new species shown under the name of *Hoplophytum Lueddemanni*, with erect and slightly bronzed leaves; *Æchmea Glaziouana*, the finest specimen of *Vriesia tessellata* we have yet seen, *Massangea musica*, flowering superbly; and a new *Tillandsia*, from Mexico and Guatemala, where it grows wild on the Cactus, and which Professor Morren has named *Tillandsia Caput-Medusæ*, from its long, cylindrical, sinuous leaves, which resemble serpents. The 2d prize was obtained by a zealous amateur of Antwerp, M. Albert van den Wouwer, of the Château de Cappelen. Among the principal plants in his collection we noticed *Tillandsia streptophylla*, *T. tectorum*, and *T. staticiflora*. In the other collections of thirty Bromeliads we noticed M. Edouard Pycke's rare *Vriesia sanguinolenta*, *Bromelia Binoti*, *Ananas macrodentes*, and *Karatas Legrellæ*. M. Moens (whose plants were very strong and healthy) showed a *Tillandsia* under the name of *T. imperialis*, and two *Hechtias*, which resemble *Dasyliirions* rather than Bromeliads. M. Buquet exhibited a *Vriesia Saundersii* in flower, M. le Notaire Beaucarne a charming *Ananas penangensis*, with numerous long leaves, edged with bright rose colour, and more distinct in character than many plants of this variety. M. vander Mersch-Mertens had a strong and handsome *Æchmea Marizæ Regiæ*. M. A. van den Wouwer obtained the prize in the 11th class for fifteen species or varieties of Bromeliaceæ. Amongst many fine plants we remarked *Vriesia Hillegeriana*. M. Desbois, nurseryman, of Ghent, who specially cultivates Bromeliaceæ, showed ten strong and well chosen plants in the 11th class, amongst them *Massangea musica*, *Anoplophytum Rolissoni*, and *Tillandsia staticiflora*. One class was for ten Bromeliaceæ in flower. This prize was briskly competed for, M. Alexis Dallièrre exhibiting *Canistrum aurantiacum*, *Chevalliera Veitchii*, and *Caraguata Zahni*. The best plants of M. Louis de Smet were, in our opinion, *Caraguata lingulata splendens*, *Quesnelia Skinneri*, and *Encholirion Saundersii*. In the collection of M. vander Mersch-Mertens we noticed *Caraguata Zahni* and a curious *Lamprococcus Laurentianus*; in that of M. François des Bois, *Lamprococcus Weibachi* produced a good effect. Amongst the miscellaneous collections there

were also various Bromeliaceæ. We note especially *Vriesia Kienasti*, obtained by MM. Jacob-Makoy from Mexico, a hybrid from *Vriesia psittacina* and *Vriesia brachystachys* obtained by M. Morren, and shown by M. Ferdinand Massange, of Louvrex. This plant is handsome and free flowering. M. Massange showed six plants flowering in one pan, which produced a striking effect. We observed a *Vriesia tessellata* with very dark leaves, shading off even to brown; and M. J. Spaë exhibited a charming specimen, which had, on the contrary, pale-coloured leaves, and which was shown by M. Buquet. But it was in the miscellaneous collections of M. Linden that we observed the most striking Bromeliads—for instance, the new *Caraguata cardinalis*, with a strong, thick flower-stem and large bracts tinted with yellow and red. We must note also *Ronnerbergia Morreniana*, a singular plant allied to *Disteganthus* and *Cryptanthus*; and, finally, *Massangea Morreniana*, with dark leaves; and *Massangea Lindeni*, of which the foliage is, on the contrary, almost translucent, and covered, as it were, with shorthand characters. These two plants are indeed most distinct in appearance.

THE CONGRESS.

Some not ill-founded objections have been raised to these meetings, that there is too much talk therein, and not enough useful work. Indeed, it must be confessed that the chief value of these gatherings hitherto has consisted in the opportunity afforded of bringing together those of like sympathies and kindred pursuits. They serve to cement old friendships and form new ones; they tend to dissipate misunderstandings, and to promote cordiality and good feeling between those of different nationalities. These are no slight benefits, even if they were the only ones, but the Congress of Brussels was set out with distinctly practical aims, and the Berne Convention, as to the Phylloxera, and the proceedings to be adopted to prevent the spread of the disaster, furnished the Congress with arguments to show that the attempt to protect the interests of one set of cultivators at the expense of all the rest is neither fair nor judicious.

The Congress was opened by an address from the President, M. Kickx, the Professor of Botany in the University of Ghent, and the Director of the School of Horticulture in that city. Professor Kickx's address took the form of a *résumé* of the progress of botany and scientific horticulture in Belgium since 1830. He alluded to the Belgian botanists, Dumortier, Charles Morren, Spaë, Kickx, Spring, without alluding to those still living. He noted the formation of the Royal Societies of Botany, the Linnean and Flora Societies, the numerous foreign travellers, the Lindens, the Ghiesbreghts, the Van Houttes, and many others; he alluded to the gardens of Brussels, of Ghent, of Liège, of Louvain; to the amateurs, M. Ghellinck de Walle, Madame Legrelle, and last, not least, to the late and to the present King. He alluded to the first national exhibition in Brussels in 1847, to the first "International" in the same city in 1864, to the horticultural Press of Belgium—the "*baromètre de l'opinion publique*," to the establishment of schools of horticulture at Ghent, at Vilvorde, &c., to the free popular lectures on gardening matters delivered annually in various towns and country places, to the reconstruction of the excellent Botanical Institution at Brussels, through the efforts of Dumortier and others. Altogether, without any ostentation or pretence, he made out an excellent case for the progress made by Belgian Botany and Belgian Horticulture since 1830.

THE PHYLLOXERA.—The meeting then buckled too to work, the first subject being broached by M. Oct. Bruneel, the secretary of the syndicate of nurserymen of Ghent, who opened the discussion as to the regulations of the Convention of Berne in a speech of singular moderation and effectiveness. While recognising the immensity of the disaster to the Vine growers and the absolute necessity of protecting them so far as possible, and the consequent obligation on other departments of horticulture to submit to some sacrifices to help their brethren, he yet contended against the injustice of legislating for one class of cultivators at the expense of all the rest. The discussion which followed was carried on by M. Le Roy, of Nancy, M. Olivier, of Oporto, M. Joly, of Paris, and Dr. Masters, who alluded to the successful issue of an action-at-law which had been brought against the authorities at Cape Town, for stopping the importation of some Beech trees, on the ground that Phylloxera might thereby be introduced—the decision of the judge being, that the authorities must prove the existence of the Phylloxera on the trees [not being Vines] before they confiscated them or prevented their entry. At subsequent meetings Dr. Regel, M. Wolkenstein, and others spoke on the same subject. This meeting was the more important, inasmuch as the speakers comprised representatives from the Vine-growing countries, whose interests are so seriously compromised by the Vine louse, as well as those from non-Vine growing countries, and whose

interests are so injuriously affected by the Berne Convention. After the special meeting to consider the Phylloxera question, a general meeting of the Congress was held, presided over by the Minister of the Interior, M. Rolin-Jacquemyns (a native of Ghent), when the following recommendations, made at the special meeting, were adopted:—

"The special committee [formed for the consideration of the enactments of the Berne Convention], starting from the principles laid down at the general meeting of the Congress [*séance plénière*] of July 23, 1880, has the honour to propose the following conclusions:—

"The Congress, referring to [*se basant sur*] the sixth Article of the Convention of Berne, expresses its desire that Art. III. of the said Convention be modified, as follows:—

"Par. I, § a. That they [plants, &c.] come from a district [*territoire*] reputed free from the Phylloxera, or from a horticultural establishment in which Vines are not cultivated or sold.

"§ b. Vines, or buds, eyes, cuttings of Vines, may not be sent except in wooden cases, perfectly closed by means of screws, but, nevertheless, easily opened for examination and reclosed.

"Plants, shrubs, and various other products of nurseries, gardens, greenhouses, stoves, shall be securely [*solidement*] packed. They may be forwarded in the ordinary manner adopted in commerce."

No modification is proposed in the other paragraphs of Art. III. The committee, moreover, proposes that, "A speedy [*prochaine*] international meeting of the Convention of Berne be held, and that a committee composed of horticulturists of all European nations be heard there as a matter of right [*à titre officieux*]."

The other subjects of discussion included the formation and maintenance of lawns, in which our Belgian friends, if we may judge from the state of the Royal lawns at Laeken, have a good deal to learn. The discussion was carried on by M. Nieprach, of Cologne, Dr. Regel, of St. Petersburg, M. Marchal, of Brussels, MM. Westmael, Max Kolb, &c.

On the question as to the best method of teaching botany in schools M. Marchal read an interesting paper, in the discussion of which MM. Regel, Kickx, Bey, Kok-Ankersmit, and others took part.

The action of frost and the precautions to be taken against its injurious effects also engaged the attention of the Congress, and excited a discussion, in which M. de Selys-Longchamps, M. l'Abbé Baulay, MM. Laurent, Rodigas, Muller, Regel, and many others took part.

M. Von Regel opened the discussion on the culture of alpine plants, on which we shall probably have more to say on another occasion.

THE BANQUET.

At the banquet given to the members of the jury of the National Exhibition at Brussels on Saturday—at which the Minister of the Interior presided—Dr. Regel and Mr. Shirley Hibberd responded on behalf of the foreign members of the jury, the latter in a speech which happily represented the feeling of this country in respect of Belgian independence. We cannot find room for a full report of this speech, but its general purport was as follows. He said he and his friends were gratified that in the general scheme of the celebration there had been found space and time and thought for the representation of horticulture. It was one of the eloquent facts of history that the intercourse between his own land and the Continent had been greatly promoted, and always for good, by means of the trade in horticultural productions, and the industries connected therewith. As English horticulturists (and they were such to the backbone) they desired to appreciate and understand this great demonstration, and they embraced the opportunity of manifesting their sympathy with the high purposes of the national festival. Their capacity, perhaps, for various reasons, was small, but he would travesty the lines of the Poet Laureate and say, "Our knowledge is little, but our hearts are great." At all events they were deeply interested spectators of the spectacle and the event, for their own liberties had been obtained through much sacrifice and suffering, through ages of trial, and struggle, and agony. But they had learned, as every nation must learn, that a healthy conservatism has its basis in freedom, and that when a people has fully recognised this truth it is strengthened for conflict against every enemy to its peaceful enjoyment of the full privileges of citizenship. One of the poets of his own country had said:—

"Freedom's battle once begun —
Bequeathed from bleeding sire to son,
Though often lost is ever won;"

and the history of Belgian independence furnishes a magnificent illustration of the sound doctrine of Sir Walter Scott. And if he might from his high theme, once more, for a moment, think of himself and his countrymen who were present, he would say that the subject was illustrated by the agreeable re-

unions and generous hospitalities in which they had been privileged to participate, and for which they were desirous of making known their gratitude. They were, as Englishmen, deeply moved by the political and intellectual dignity of Belgium, as exhibited in this national festival, and the invitation to take part therein, as co-workers, would forever be conspicuous amongst their joyous remembrances of Brussels in 1880. They would at all events hope that the institutions and the ideas around which in affectionate sympathy they were gathered, would secure for the country a glorious future. The speech was heard distinctly in every part of the great hall, and the speaker's manner rendered it peculiarly effective.

The remarks of a Dutch journalist were invested with a peculiar significance, and his speech breathing good will and confraternity to Belgium, was received with great delight by his hearers.

The Botanic Garden of Brussels was the scene of a grand festival on the night of Sunday last. The principal attractions consisted of illuminations and music; and of the first there was a lavish display, comprising the delineation of the architecture and the details of the garden, in lines of light, with designs in coloured lanterns, and occasional outbursts of coloured fires. The members of the jury and of the Botanical Congress were entertained in the Herbarium, where there was a large and gay party, including many ladies.

On Sunday the members of the Congress were received at Ghent by the Royal Society of Horticulture, by the Syndical Chamber of Horticulturists, the Cercle d'Arboriculture, &c. Visits were made to the principal establishments, and the guests were entertained at luncheon.

Reports of Societies.

Royal Horticultural: July 27.—Colonel Trevor Clarke in the chair. Mr. Cheshire being subsequently about to lecture on bees, the Rev. G. Henslow took the opportunity to speak principally on the fertilisation of flowers by these and other insects. A basket of *Tropæolums* furnished illustrations of strong "proterandry," i.e., the stamens mature before the stigma ripens, rise up in front of the orifice to the spur, and then retire on shedding the pollen. Subsequently the stigma matures, and takes up the same position. Hence such a flower is fertilised by pollen brought from a younger one. Fuchsias illustrated the false generalisation that whether a flower be pendulous or erect the stigma will be below the anthers, so that the pollen may fall upon it. Though such an arrangement exists in the Fuchsia the flower is proterandrous, and is therefore not adapted to self-fertilisation. Moreover, when flowers are habitually self-fertilised, the anthers are placed in close contact with the stigmas, as is the case with the closed or "cleistogamous" buds of Violets. A group of Pentstemons furnished the case of a flower fertilised by bees, but which, by means of the fifth (abortive) stamen standing over the nectary, afforded an obstruction to all insects whose proboscis could not reach to the bottom of the tube, and so would not be of any assistance in pollinating the flower. The structure of *Abutilon*, *Malva sylvestris*, and *Salvia* was described as being especially adapted to insects in securing cross-fertilisation, while cleistogamous Violets and *Malva rotundifolia*, &c., were self-fertilising. The lecturer observed that the brilliant colouring of all flowers in general was due to their being adapted to insects, whilst self-fertilising flowers were inconspicuous and unattractive. Such would have been the case with all flowers had no insects ever been created. A plant of *Lygodium palmatum*, exhibited by Mr. Wilson, illustrated the peculiar climbing stems or "twiners," and the lecturer suggested that as the property of growing in a circular manner was not confined to climbers—for the apex of a Fir does the same—that it was probably a general phenomenon of plant growth but was specially utilised by plants with weak stems as a means of support.

SCIENTIFIC COMMITTEE.—Colonel Trevor Clarke in the chair. The Rev. G. Henslow exhibited a foliaceous and proliferous flower of *Trifolium repens*, and called attention to the fact that while the calyx teeth grow out into petiole leaves, stipule-like processes appeared at the top of the "calyx-tube" between the petioles, seemingly proving that the tube is really "receptacular" and not of calycine origin.—Mr. Fletcher, of Ottershaw, forwarded male cones of *Araucaria imbricata*.—Mr. W. G. Smith exhibited living plants of *Chara fragifera* from near the Lizard, Cornwall; *Allium Schoenoprasum* var. *sibiricum*, from near the Lizard; *Orobancha rubra* and *Erica vagans* also from the Lizard, sent by Mr. W. Roberts, of Penzance. Mr. Smith also exhibited a curious "Hen and Chickens" plant of the garden *Pyrethrum*. The plant also had a fasciated stem, it came from Mr. Parker's nursery at Tooting.

FLORAL COMMITTEE.—Dr. Denny in the chair. The exhibition of Carnations and Picotees, under the auspices of the Southern Section of the Carnation and Picotee Society proved the attraction of the day, the number of subjects brought before the committee being somewhat limited, as is usually expected to be the case at this season. First-class Certificates were awarded to Messrs. James Veitch & Sons for two handsome varieties of the Japanese Iris *Kämpferi*, named *Magnificence* and *Crimson King*; and for *Microstylis metallica*. To G. F. Wilson, Esq., for *Lygodium palmatum*, a beautiful and perfectly hardy climbing Fern from North America. To Mr. B. S. Williams for a plant named *Oleobachia palustris* [?], which bears a strong resemblance to *Aralia Veitchii*, but the digitate leaves are green in colour, and the plant bears a greenhouse temperature, which will render it all the more valuable for table and other decorative purposes. To the Cranston Nursery Co., Hereford, for a new H.P. Rose, named Mrs. Jowitt, a full, deep, and well built flower, of the Marie Baumann type, but rosy-crimson shaded with lake in colour, very sweet, and the plant, we should imagine, a vigorous grower. And to Mr. Noble, Sunningdale Nursery, Bagshot, for a new H.P. Rose Duchess of Connaught, a very full, bright crimson flower, with the delicious perfume of the old Cabbage Rose, and which was Certificated as a decorative variety. Mr. J. A. Wallington, of Trowbridge, received a vote of thanks for some nice cut flowers of Carnations. Messrs. John Laing & Co. exhibited a capital stand of Hollyhocks—a welcome reappearance of a fine autumn flower that has been under a cloud for the last few years, owing to the terribly destructive effects of the Hollyhock disease. Standish's Perfection Phlox, with bold cylindrical spikes of white flowers, was well shown by Messrs. Standish & Co.; and Messrs. James Carter & Co. showed a collection of double Balsams of very fair quality.

CHISWICK MEETING.—A meeting of the committee was held at Chiswick on July 20, when the following plants were Certificated:—*Begonias*: Dr. Denny, strong vigorous habit, very free-flowering; flowers of medium size, well thrown above the foliage, very pale scarlet, approaching almost to a salmon. Dr. Hogg, very strong growth; stems pale green; flowers well displayed, of a very bright scarlet, shaded towards the centre with a pale hue; very free-flowering and good. Lucy Violet, vigorous habit, very free-flowering; flowers of medium size, clear rosy-pink, shaded towards the centre of the flower. Anna Ria, strong vigorous growth, very free-flowering; flowers of medium size, pale scarlet; good. Lizzie Smith, free vigorous growth; flowers dark scarlet, with distinct magenta shade; round, medium size. Henry Webb, strong vigorous habit, free-flowering; flowers large, of good form, clear scarlet; very good. Annie Wilkie, strong habit; stems pale green; flowers large, pale scarlet, well thrown up; very good. Nellie Barron, very close compact habit, very free-flowering; flowers erect, of a beautiful dark scarlet; very fine. *Rosa grandiflora*, tall, erect habit; flowers very large, of good substance, beautiful rosy-pink. The certificates which had been previously awarded to the varieties Nellie May and A. Hemsley were on this occasion confirmed. All the above varieties were raised in the Royal Horticultural Society's Gardens. *Pelargoniums*: *Gloire d'Orléans* (Lemoine), of dwarf close habit, very free-flowering, medium, erect-growing truss, beautiful magenta-scarlet; the brightest coloured in the Ivy-leaved section. Lucie Lemoine (Lemoine), show decorative; very dwarf close growth, very free-flowering; flowers pure white, slightly pencilled at bottom of the petals; the best white. Mrs. Potten (Lemoine), show decorative; free habit, free-flowering, white, slightly shaded; distinct purple blotch on upper petal; very distinct and showy. Madame Thibaut (Lemoine), show-decorative; free, vigorous growth, very free-flowering; large compact truss, white suffused with magenta; distinct, broad, and irregular rosy margin round petals; very fine and showy. Mont Blanc (Lemoine), Ivy-leaved, white shaded pink, very free-flowering, large truss; very fine. Similar awards were also made to the two following plants on the same occasion:—*Gomphrena globosa nana compacta* (Benary), a very fine dwarf free-flowering form of the Globe Amaranth, from 9 to 12 inches high; *Oleander* *Professeur Duchartre* (Huber), flowers purplish wine-colour, beautiful shade, free-flowering, and very showy: the darkest colour of any.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. Mr. Sidney Ford, gr. to W. E. Hubbard, Esq., Leonardslee, Horsham, received a First-class Certificate for a new Melon named *Bellamore Hybrid*, a medium-sized, oval-shaped, and nicely-netted fruit, with very sweet white flesh and green rind. Mr. Ford also staged about forty dishes of Potatoes, fine in size, and very clean in sample. Mr. Stephen Castle, West Lynn, Norfolk, received a Cultural Commendation for some very fine examples

of several varieties of Tomatos. A white-fleshed, netted Melon, called the Sirdar Melon of Cabul, was shown by Messrs. Hooper & Co.; and Messrs. Thos. Rivers & Son exhibited a number of orchard-house trees, Cherries, Apples, Pears, and Plums, carrying fine crops of fruit, also fruit of a number of varieties of Cherries. Henson's seedling Gooseberry, an old variety, medium-sized, round hairy red, was well shown by Messrs. Charles Lee & Son; and a number of new Peas came from Chiswick, Mr. Gilbert of Burghley, and Mr. H. Eckford, gr. to Dr. Sankey, Sandwell Park, Cheltenham.

Carnation and Picotee (Southern Section).—The difference between this season and last as regards the Carnation and Picotee is very marked indeed, showing conclusively that there is more than two weeks' difference in earliness this season as compared with last. It was necessary in 1879 to push on the plants with a little heat to get them in flower by August 12—this year they have not been pushed on in any way, in fact they have been retarded all through, and the bloom was just past its best on July 27: it was at its height on July 20. Taking the show as a whole, it was not so good as last year, but there were many good flowers exhibited, and fewer bad ones than usual. E. S. Dodwell, Esq., the veteran grower, of Clapham, was not in such good form; his flowers were very much past their best, he having to cut nearly all side-blossoms. Mr. Turner, too, although he showed some magnificent Picotees, had not "hit the day" with his Carnations, which were certainly past, although he exhibited some very superior plants in pots, well flowered. Mr. Douglas, another of the principal exhibitors, was rather better than last year, but most of his flowers were side-blossoms, the Loxford collection being at its best on the 20th.

Coming to the individual flowers and seedlings, in the first place it is always an interesting feature of the day's programme to select the premium Carnation and Picotee in the exhibition. This year the honours fell to Admiral Curzon (Easom), in Mr. Dodwell's stand of twelve, and to Baroness Burdett Coutts, a medium purple flower in Mr. Turner's stand of twenty-four, a variety with broad petals and very clear white. It received a First-class Certificate last year. There were a number of new flowers exhibited in the various classes. Beginning with the highest class in Carnations, scarlet bizzarses, Mr. Dodwell exhibited again, as last year, several promising seedlings. Of these he believes that Robert Lord is the best, but it was not so as shown—the highest honours fell to Fred; it has a good smooth petal, very pure white, and well marked. Arthur Medhurst is a larger flower, very bright in the scarlet, but not so pure white. All the above new flowers had First-class Certificates awarded to them. The 1st prize was awarded to Fred, and the 2d to Arthur Medhurst, as the best seedlings in this class. Crimson bizzarses were also good. Mr. B. Simonite had *Crimson Banner*, a very nicely-coloured flower, from Warrior, crossed with Lord Milton. Master Fred, exhibited by Mr. Dodwell, but not raised by him, was also very distinct, and had a good petal, the markings broad and well defined. Mr. Simonite's flowers gained the 1st prize in this class, and Mr. Dodwell's the 2d, as the best seedlings; and each of them received First-class Certificates. Another flower shown in this class was Thomas Moore; very richly coloured, the purple and crimson both bright; it is evidently raised from Albion's Pride. Pink and purple bizzarses are still scarce, and the one placed highest on the list would by some fanciers be placed in the crimson; it is named *Squire Llewelyn*, and was raised by Mr. Dodwell from Albion's Pride, is rather like that flower, but much superior in width of petal; it received, and well deserved, a First-class Certificate. Princess Beatrice is a light, chaste flower, sent by Mr. Turner; this received the 2d prize as the best seedling, the 1st prize going to *Squire Llewelyn*. Purple flakes were not worthy of notice as compared with the old varieties: Mr. Dodwell received the 1st prize for a seedling, Thomas Bower, and Mr. Douglas the 2d for a sport, Freedom. Scarlet flakes were good, two varieties being selected for First-class Certificates: *Figaro* (Abercrombie), exhibited by Mr. Turner—it has beautifully rounded, well-marked petals; and John Ball (Dodwell)—this is a promising flower, but, as shown, rather lacked pureness, though the petals are well formed and markings good. *Figaro* and John Ball gained the seedling prizes in the order of their names. Mr. Dodwell exhibited a distinct sport from Admiral Curzon, which he thinks better than either, but it was not so as shown. Rose flakes were not so numerous, but Mr. Turner exhibited one named *Jessica*; it was a very good flower, but thought by the judges to be too much like Sybil. This gained the 1st prize as a seedling, and another, named Mr. Matthews, from Mr. Dodwell, the 2d.

Passing to the Picotees we found no good seedling red edges, but in the purple edged class Baroness Burdett Coutts received the 1st prize, and Clara

Penson the 2d in the light edged class, both from Mr. Turner. They were certificated last year, and described at p. 217 of vol. xii. In the heavy edged class Mrs. Chancellor, which has been exhibited before, was again shown very fine by Mr. Turner; it gained the 1st prize in this class, and Tinnie, from Mr. Dodwell, the 2d. This last is a very promising full flower, though rather rough as shown. In light red edges Mr. Dodwell obtained both the prizes, the 1st with Miss Girton, a promising flower which may come of a brighter colour in the North, and the 2d with Ethel Daisy, a flower so much resembling Mr. Turner's Ethel as to be mistaken by some for it. In the heavy edged class only one flower was shown, but it is a good one; and was much better than it was exhibited last year. Its name is *Constance Heron* (Turner); there are only three decent flowers of this colour—*Juliana*, *Rosy Queen*, and *Obadiah*, but it is sufficient to say that this is better than either. Mr. Turner received a First-class Certificate and the 1st prize for it as a seedling. It is not necessary to again make any comment on the old flowers—that was done at p. 217, to which those interested must be referred. Neither in the class for yellow Picotees nor in that of the selfs were any new flowers shown of sufficient merit to receive any distinguishing mark.

The prizes were awarded as follows:—

CARNATIONS.—Twenty-four blooms, not less than twelve distinct varieties.—1st, E. S. Dodwell, Esq., 11, Chatham Terrace, Larkhall Rise, Clapham, with Ben Simonite, scarlet flake; Rifleman, crimson bizzare (two blooms); Thomas Moore, crimson bizzare; John Bull, scarlet flake (two blooms); Robert Lord, scarlet bizzare; William Murray, crimson bizzare (two blooms); John Keet, rose flake; R. Holliday, crimson bizzare (two blooms); J. D. Hextall, crimson bizzare; A. Medhurst, scarlet bizzare; a crimson bizzare seedling; Admiral Curzon, scarlet bizzare (two blooms); Florence Nightingale, purple flake; and a scarlet flake seedling; a scarlet flake sport from Admiral Curzon; Squire Meynell, purple flake; Dr. Masters, pink and purple bizzare; George Rudd, scarlet bizzare; and Unexpected, pink and purple bizzare. 2d, Mr. James Douglas, gr. to F. Whitbourn, Esq., Loxford Hall, Ilford, with Isaac Wilkinson, crimson bizzare; Earl of Stamford, purple flake (two blooms); Campanini, scarlet bizzare; John Keet, Falconbridge, pink and purple bizzare; Dreadnought, scarlet bizzare; Lord Lewisham, Juno, purple flake; Admiral Curzon, Sybil, rose flake (two blooms); Sarah Payne, pink and purple bizzare; J. D. Hextall, crimson bizzare (two blooms); Crimson Banner, crimson bizzare; Mayor of Nottingham, purple flake; Sportsman, scarlet flake; Unexpected, Albion's Pride, crimson bizzare; Mars, scarlet bizzare; Miss Nightingale, Clipper, scarlet flake; and John Simonite, crimson bizzare. 3d, Mr. Turner, with Mary Ann, rose flake; Ajax, Jessica, Albert Chancellor, crimson bizzare; President, purple flake; Sybil, Rifleman (two blooms); James Carter, rose flake; Flirt, James Taylor, pink and purple bizzare; William IV., scarlet flake (two blooms); Florence Nightingale (two blooms); Princess Beatrice, Diadem, Faust, Figaro, Admiral Curzon (two blooms), and Lady Peel, purple flake. 5th, Mr. H. Hooper, Bath, with Edward Crane, Admiral Hornby, Ajax, Lady Curzon, Superb, John Keet, Duke of Grafton, Rev. J. T. Boscawen, Falconbridge, and Rosalind. The 4th prize was not awarded.

Twelve blooms, dissimilar.—1st, E. S. Dodwell, Esq., with Master Fred, Hewett, pink and purple bizzare; Robert Lloyd, Squire Llewelyn, John Keet, Admiral Curzon, a lovely bloom, which subsequently was proclaimed the premier; Sarah Payne, a purple flake sport; John Ball, a seedling crimson bizzare; Rifleman, Thomas Moore, Florence Nightingale, and Mrs. Tomes, purple bizzare. 2d, Mr. Douglas, with William Spoor, Earl of Stamford, James Taylor, Sybil, John Keet, Sarah Payne, James Cheatham, crimson bizzare; James Merryweather, a pink and purple bizzare sport; Sportsman, Lord Lewisham, Crimson Banner, and Mary Ann. 3d, Mr. J. Hines, Ipswich, with James Merryweather, Eccentric Jack, crimson bizzare; Sarah Payne, James Douglas, purple flake; Ajax, Sybil, Sportsman, James Taylor, Admiral Curzon, J. D. Hextall, Sir Joseph Paxton, and Clipper. 4th, Mr. J. Matthews, Wandsworth Road, [flowers not named]; 5th, Mr. John Buxton, Manor Street, Clapham, with J. Harland, pink and purple bizzare; Clipper, Sarah Payne, John Keet, Mercury, scarlet bizzare; J. D. Hextall, Purity, pink and purple bizzare; Mars, Dan Godfrey, scarlet flake; Albion's Pride, Lovely Ann, and Eccentric Jack. 6th, Mr. H. Catley, Bath, flowers not named.

Six blooms, dissimilar.—1st, Mr. A. Medhurst, with Admiral Curzon, Sarah Payne, Mrs. Tomes, Colonel North, pink and purple bizzare; Squire Meynell, and John Bailey, scarlet flake; 2d, Master H. Matthews, with John Bailey, Unexpected, Sarah Payne, Admiral Curzon, J. D. Hextall, and Rifleman; 3d, Dr. Abercrombie, Cheltenham, with Rosalind, rose flake; Ajax, Florence Nightingale, Lord Milton, crimson bizzare; a scarlet flake seedling, and Albion's Pride.

Single specimens: Scarlet bizzarses.—Mr. Turner 1st, with Admiral Curzon; Mr. Dodwell 2d and 3d, with Fred; 4th, with Admiral Curzon; and 5th with Arthur. Crimson bizzarses.—Mr. Douglas 1st and 2d, with Rifleman; Mr. Dodwell 3d, with a seedling; Mr. Douglas 4th and 5th, with Rifleman and Jenny Lind. Pink and purple bizzarses.—Mr. Turner 1st and 4th, Mr. J. Hines 2d, and Mr. Douglas 3d, with Sarah Payne; and Mr. Turner 5th, with James Taylor. Purple flakes.—Mr.

Douglas, 1st, 2d, and 3d, with Earl of Stamford; Mr. Turner 4th, with Osmond; and Mr. Dodwell 5th, with a seedling. Scarlet flakes.—Mr. Turner 1st, with Jupiter; Mr. Douglas 2d, with John Bailey; Mr. Dodwell 3d, with a seedling; Mr. Douglas 4th and 5th, with Sportsman. Rose flakes.—Mr. Dodwell 1st, with a seedling; Mr. Hooper 2d, with Sybil; Mr. Douglas 3d, with John Keet; Mr. Dodwell 4th, with a seedling; Mr. Douglas 5th, with John Keet.

Premier Carnation, selected from the whole exhibition, a remarkably correct flower of Admiral Curzon, shown by Mr. Dodwell in his 1st prize stand of twelve.

PICTEES.—Twenty-four blooms, not less than twelve, dissimilar.—1st, Mr. Turner, with Her Majesty, light purple; Dr. Abercrombie, heavy red; Lady Salisbury, light rose; Constance Heron, heavy scarlet; Clara Pen-son, light purple; Baroness Burdett Coutts, light purple; Lucy, light rose; Zerlina, heavy purple; Brunette, heavy red; Lady Carrington, light rose; Mrs. Albert Chancellor, heavy purple; Princess Mary, light red; Lady Boston, light rose; Mrs. Payne, light rose; J. B. Bryant, heavy red; Royal Visit, heavy rose; Rev. J. B. Camm, heavy purple; and Louisa, medium rose. 2d, Mr. Douglas, with Royal Visit, Brunette, Mrs. Payne, Mrs. Bower, light red; Nymph, light purple; Zerlina, Ethel, medium rose; Mary, light purple; J. Smith, heavy red; Estelle, light rose; Alliance, heavy purple; Jessie, light purple; J. B. Bryant, Princess of Wales, heavy red; Mr. Douglas, medium purple; Thomas William, light red; Edith Dombrain, heavy rose; and Minnie, light purple. 3d, Mr. Dodwell, with Tinnie, heavy purple seedling; Ethel, Edith Dombrain, Jessie, Royal Visit, Zerlina, Miss Gorton, light rose; Alliance, Mrs. Payne, Mrs. Dodwell, heavy red; Medina, heavy purple; Dr. Epps, heavy red; Novelty, bizarre edged; Lizzie Jones, heavy purple; Minnie, Norma, heavy red; Ann Lord, light purple; Fanny Helen, heavy rose; and Mrs. Summers, heavy purple. 4th, Mr. J. S. Ware, Tottenham, with Mrs. Rayner, heavy rose; Beauty of Cheltenham, heavy purple; Royal Visit, Rival Purple, heavy edged; Mrs. Ingleton, heavy purple, Beauty of Plumstead, light rose; a seedling light purple; Red Braes, heavy purple; Fanny Helen, Flower of the Day, heavy scarlet; Edith Dombrain, Mrs. Niven, heavy purple; a seedling, light rose; Chanticleer, heavy purple; Mrs. Keynes, light red; Thomas William, Mrs. Fordham, heavy rose; and Isabel, heavy purple. 5th, Mr. H. Hooper, with Lord Rosedale, heavy red; Mrs. Fordham, Novelty, Morning Star, medium scarlet; J. B. Bryant, Malvina, light rose; Mary, a seedling, light purple; Isabella, heavy rose; Mrs. Pelley, heavy red; Estelle, Alliance, Grand Duchess, light purple; Lady Louisa, heavy rose; Mrs. Tatton, light purple; Gaiety, heavy red; Beauty of Bath, light rose; a seedling, light purple; Penelope, heavy red; and Waverley, heavy rose.

Twelve blooms, dissimilar.—1st, Mr. Douglas, with Brunette, Thomas William, Zerlina, Rev. F. D. Horner, medium red; Mrs. Payne, Miss Williams, light rose; Mary, Edith Dombrain, Norfolk Beauty, heavy purple; Nymph, Ethel, and Norma. 2d, Mr. Dodwell, with Tinnie, Edith Dombrain, Mrs. Payne, Alliance, Minnie, Mrs. Dodwell, Novelty, Ethel, Mrs. Matthews, heavy purple; Lady Louisa, Fanny Helen, and Lizzie Tomes. 3d, Mr. J. Matthews, flowers not named. 4th, Mr. Hines, with Rev. J. B. M. Camm, Mrs. Payne, King of Purples, Miss Williams, a light red seedling; Princess of Wales, Clara, light red; J. B. Bryant, Fanny Helen, Mary, Alliance, and Lady Louisa. 5th, Mr. J. Buxton, with Zerlina, Ethel, Mrs. Dodwell, Edith Dombrain, Victoria, light rose; J. Smith, Thomas William; a seedling, light purple; Miss Horner, medium rose; Violet Douglas, light purple; Princess of Wales, and Alliance. 6th, Mr. H. Cattley, flowers not named.

Six blooms, dissimilar.—1st, Mr. A. Medhurst, Priory Road, S.W., with Edith Dombrain Alliance, Mrs. Dodwell, Thos. William, Zerlina, and Miss Lee, medium rose, 2d, Master Harry Matthews, Miss Lee, Alice, Mary, Mrs. Lord, Annie Ellen, heavy rose; and J. Smith. 3d, Dr. Abercrombie, with Beauty of Cheltenham, Victoria, Mrs. Alcroft, Lady Louisa, and two seedlings, heavy red and medium rose.

Single specimens: red heavy-edged.—Mr. Douglas 1st, 2d, and 4th, with Brunette, and 3d with J. B. Bryant; and Mr. Turner 5th, with J. B. Bryant. Red, light-edged.—Mr. Douglas 1st, 2d, and 3d, with Thomas William; Mr. Hooper 4th, with Grand Duchess; 5th, Mr. J. Hine, with Clara. Purple, heavy edged.—Mr. Douglas 1st, with Zerlina; Mr. Turner 2d, 3d, and 4th, with Mrs. A. Chancellor; and Mr. Dodwell 5th, with a seedling. Purple, light edged.—Mr. Turner 1st and 2d with Her Majesty; 3d, with Clara Pen-son; and 4th, with Baroness Burdett Coutts; and Mr. Dodwell 5th, with Ann Lord. Rose and scarlet edged.—Mr. Turner 1st, 3d, and 5th, with Mrs. Payne; 2d with Royal Visit, and 4th with Fanny Helen. Rose, light edged.—Mr. Turner 1st, with Mrs. Alcroft; Mr. Hine 2d with Mrs. Alcroft; Mr. Hooper 3d and 5th, with Beauty of Bath; and Mr. Turner 4th, with Lucy. Yellow grounds.—Mr. Turner 1st, with Miss Abercrombie; Mr. Douglas 2d, with Princess Beatrice; Mr. Turner 3d, with Lady Bid-dulph, 4th with Meteor, and 5th with Lightning.

The premier Picotee was a grand bloom of Baroness Burdett Coutts, shown by Mr. Turner in his stand of twenty-four.

Selfs, Fancies, or Yellow Grounds.—Twenty-four blooms, not less than twelve, dissimilar.—1st, Mr. Turner, with Constance, Duke of Connaught, Lord Rosebery, Martial, Elegant, Harry Bertram, Zelinda, Rosa Bon-heur, Capt. Dalgety, Flirt, Mrs. Matthews, Field Marshal, Phoebe, Gem, Purple Gem, Eurydice, Elysian Beauty, and Cupid. 2d, Mr. Douglas; 3d, Mr. H. Hooper; 4th, Mr. J. S. Ware; 5th, Mr. J. Matthews. For twelve blooms, dissimilar, Mr. Dodwell was 1st, Mr.

Medhurst 2d, Mr. H. Cattley 3d, and Dr. Abercrombie 4th.

For twelve specimen plants, dissimilar, Mr. Turner was 1st, with nicely bloomed examples of Queen of Summer, Louisa, Mrs. A. Chancellor, Lothair, Her Majesty, Lady Boston, Lord Chelmsford, Mrs. Matthews, Mrs. Payne, Miss Small, Juliana, and Rifle-man; and Mr. Douglas was a good 2d with Prince of Orange, Fanny Helen, Lothair, Falconbridge, Lord Lewisham, Mrs. Niven, Cleopatra, Her Majesty, Brunette, Rifleman, Clipper, and J. B. Bryant.

Woodford: July 21.—The eighth annual exhibition of the Woodford Horticultural Society was held in the beautiful grounds of E. N. Buxton, Esq., Knight. Unfortunately the day proved thundery, the storms greatly marring the success of the under-taking, though as good an exhibition was made as any which this Society has got together. The chief of the specimen flowering and foliage plants were arranged in a very large and commodious marquee, though many exhibits, such as table decorations, cut Roses, &c., were placed into lesser ones. In the result of the competition Mr. Rumball proved victor for a collection of stove and greenhouse foliage plants (Mr. Webb taking 2d prize), as he did also with some well-grown Coleus, staging admirable examples of Firefly and Harlequin. Caladiums were well shown by Mr. Williams (1st prize); Gloxinias by Mr. Darvill, stove and greenhouse Ferns by Mr. Peters, Lycopodiums by Mr. Rumball and Mr. Windebank; Fuchsias by Mr. Simmons, amongst which were good examples of Noblesse, Wave of Life, and Encounter. The latter exhibitor also had a good specimen of *Corypha anstralis*, and of the old *Adiantum formosum*. Mr. Watt staged twenty-four cut Roses in excellent condition, and Mr. Williams twenty-four bunches of cut flowers, various.

The fruit display, though not so extensive as we have seen it, contained some of the best black Grapes seen this season, the bunches being large, well shouldered, and finished in a deep black, excellent style—Messrs. Darvill, Searing, and Grove carrying off the prizes in the same order as their names are here given.

The collections of vegetables were also numerous and most meritorious, and after a keen competition the prizes were awarded—to Mr. Grove 1st prize, Mr. Peters 2d prize, and Mr. Williams 3d prize. With Petunias Mr. Grove took 1st prize, and most tastefully arranged basket of pot plants Mr. Rumball 1st. Dinner-table decorations were best by Messrs. Fitch and Thurgood, hand-bouquets by Mr. Peters, &c.

In the classes set apart for ladies, consisting of prizes offered in the form of articles of vertu, &c., some charming arrangements were staged. Miss Buxton had a most elegant vase, made up only of white Foxgloves, Delphiniums, and Potentilla flowers; and Miss Powell a set of vases, made up with Ferns, a few white flowers, and *Nemophila insignis* only. Mrs. A. Spicer had a group of vases, consisting mainly of Ferns and grasses; Miss E. Spicer one of Roses and Palms, and Mrs. H. F. Barclay one comprising Poppies, field Daisies, and grasses, which was very effective.

The display of cut Roses was an extensive one; Messrs. William Paul & Son, Paul & Son, and Rumsey, of Waltham, all staged extensive collections. An extensive collection of cut blooms of *Pelargoniums* (Zonal) was also staged by Messrs. Daniels Bros., Norwich. Numerous other classes were fully completed for, but they call for no special remark here. *W. E.*

Royal Horticultural of Aberdeen: July 22.—This Society held its fifty-sixth annual exhibition on the Link, joining the Agricultural Society's Show, and was in every way a great success; the weather being fine and the company large. The show was opened by Lord Provost Jamieson, who was supported by J. Crombie, Esq., both making speeches alluding to horticultural matters. Specimen plants were well shown. For nine stove and greenhouse plants the Right Honourable the Earl of Aberdeen, Haddo House (gr. Mr. John Forrest), was 1st with a very nice lot, his foliage plants being very neat and finely coloured; 2d, D. Kennedy, Esq., Strichen House. For six stove and greenhouse plants J. Crombie, Esq., was 1st. Ferns were shown in numbers, and some good specimens from Devanah House (gr. Mr. Ogston) were particularly noticeable, the 1st prize falling to this lot and the 2d to Mr. Smith, gr. to the Earl of Crawford and Balcarres. Of Cape Heaths, some splendidly flowered and well grown plants from the Earl of Aberdeen took the 1st prize. Fuchsias and *Pelargoniums* were shown in numbers, the former poor, the latter very good, especially the Tricolors and Bronzes. Petunias were well shown; some nice specimens, well flowered doubles, were very attractive.

Table plants were shown in numbers, the competition being very strong. The 1st prize was awarded to John Keith, Esq. Cut flowers.—For twenty-four Roses Jas. Cocker & Sons were a very easy 1st, their flowers being very fine and well put up; they also shown several boxes (not for competition) which were greatly admired. The same firm had it all their own way with Pansies, showing some very fine blooms. They also showed several seedlings, three of which received First-class Certificates, viz., Prince of Wales, Robert Greig, and James Ewen. Phloxes, Sweet Williams, Pinks, and herbaceous cut flowers were also well shown; but the bouquets and epergne for table decoration were simply amalgamated masses of confusion.

Fruit was only fair, with the exception of Strawberries, which were extraordinary in size, good in colour, and first-rate in flavour. Aberdeen has long been celebrated

for the growth of this fruit, and its reputation was well sustained in the grand examples shown by the various exhibitors.

Vegetables were grand, some first-class collections were shown and neatly staged; also some good Potatoes, Peas, Beans, &c. The various exhibits by amateurs were very creditable, as were also those shown by the working classes—the prices offered by the Society to encourage the latter being well contested for, some very fine vegetables being shown in the various classes, as was also in the cut flowers.

The various nurserymen contributed some very choice and interesting groups, not for competition. Messrs. Cannon & Reid showed a nice collection of miscellaneous foliage and flowering stoves and greenhouse plants; some good specimen Begonias were very conspicuous. They also staged a box containing some very fine Petunias—a good strain, which received a First-class Certificate. Messrs. Smith & Sons also showed a very interesting group, consisting of stove and greenhouse foliage and flowering plants, similar to those shown by the former. Messrs. Cocker & Son also showed a grand collection, neatly arranged, consisting of stove and greenhouse foliage and flowering plants, some good Ferns, and also their new *Lobelia*, Tarbert Blue, a very free compact variety, which will be sure to become popular.

I would suggest to the committee of management that at their future exhibitions all plants, flowers, and fruit for competition be legibly named. With the exception of some shown by nurserymen not a single specimen was named. By carrying out this suggestion the public would benefit very much. The other arrangements were perfect, and reflected great credit on Mr. Rennie, the indefatigable secretary. (*From a Correspondent.*)

Newport, Mon., Horticultural.—This well managed Society held its annual *fête* on the 22d inst., and it must be highly gratifying to the committee and the indefatigable secretaries to feel that their labours were rewarded by the finest show of plants ever staged in South Wales. Unfortunately a violent thunderstorm broke over the ground about 3 P.M., and prevented many of the inhabitants of the town and neighbourhood from enjoying the rich floral treat provided for them by Mr. Cordes, a gentleman living in the neighbourhood, whose skilful gardener, Mr. Wattie, surpassed himself in carrying off the blue ribbon of the Society with his superb collection of stove and greenhouse plants—Messrs. Cypher, Cheltenham, and Tudgey, Worcester, his powerful opponents, taking 2d and 3d places with wonderfully fine plants, little inferior in size but deficient in freshness when placed beside Mr. Wattie's. Mr. Wattie had in his collection of eight a grand plant of *Allamanda Schottii*, *Eucharis amazonica*, 5 feet through, a well flowered *Stephanotis*, a large, profuse, and richly bloomed *Dipladenia Brearleyana*; a fine plant of *Erica ampullacea* obbata, and others equally well done. Mr. Cypher, a close 2d, had a noble *Ixora Williamsii*, *Allamanda Hendersoni*, and *Dipladenia amabilis*. Mr. Tudgey's fine plants included *Erica Irbiana*, *Dipladenia amabilis*, *Ixora amabilis*, and a magnificent *Anthurium* with large finely coloured spathes. For four plants Mr. Wattie again took the lead, with a well flowered *Stephanotis*, *Clerodendron Balfourianum*, a superb *Dipladenia amabilis*, and *Statice profusa* in high condition. Mr. Raffil, gr. to Lord Tredegar, was 2d with *Allamanda Hendersoni*, *Clerodendron Balfourianum*, *Dipladenia Brearleyana* and a *Rondeletia*—noble plants and well-flowered, but quite spoiled by the angular way in which they were trained.

Heaths in trebles were very nicely shown by Mr. Wattie and Mr. Cypher, who took 1st and 2d in the order named.

Ornamental foliaged plants were shown in magnificent condition by Messrs. Tudgey and Cypher, and so equally were they matched that the judges could not do otherwise than award equal prizes. Mr. Cypher had *Latania borbonica*, *Croton angustifolius*, *Cordylina indivisa*, *Thrinax elegans*, *Croton majesticus*, and a wonderful plant of *Gleichenia flabellata*, quite 6 feet through, and in splendid condition. In Mr. Tudgey's collection were fine plants of *Cycas revoluta*, *Pritchardia pacifica*, *Cycas circinalis*, *Latania borbonica*, and two beautifully coloured *Crotans*. With four plants Mr. Raffil came in 1st, his best specimen being a richly coloured *Croton Weismanni*, still one of the best for exhibition or decorative purposes; Mr. Wattie coming in a good 2d.

Major Phillips took 1st honours with six magnificent Ferns, including *Gleichenia Spelunca*, 6 feet through; *Gleichenia flabellata*, in beautiful health; *Cyathea princeps*, *Cibotium spectabilis* and *Adiantum cuneatum*—the 2d place being taken by Lord Tredegar, with smaller, but equally healthy plants. Six larger Ferns brought Colonel Lyne to the front, closely followed by E. Fowler, Esq., the former gentleman also taking 1st for four Lycopods.

Cut flowers formed a rich and highly interesting feature—E. Fowler, Esq., Lord Tredegar, and T. Cordes, Esq., taking prizes in the order named with tastefully arranged boxes of stove and greenhouse flowers, including beautiful Orchids. In the class for twenty-four hybrid perpetual Roses the best stand, sent by Cranston & Co., was disqualified, whereby the 1st prize was secured by Davison & Co.; Mr. Earl, Newport, coming in 2d. Messrs. Cranston & Co. were 1st for twelve Teas, and Davison & Co. 2d. Messrs. Cranston & Co.'s prize for twelve hybrid perpetuals was cleverly won by Mr. W. J. Grant, Hopend, Ledbury, with large, fresh, and richly coloured blooms. C. E. Stalybrass, Cardiff, took 1st prizes for stands of Carnations and Picotees; and the 1st prize for dinner-table decorations was awarded to Mr. D. Morris, Major Phillips being 2d, and Miss Getting 3d.

The fruit department was neither well filled nor represented. For a collection of six dishes Mr. Cordes stood 1st, and Major Phillips 2d. For a very nice Queen Pine, weighing over 4 lb., Mr. Cordes was also 1st. Lord Tredegar had the only exhibit in the class for Muscats, but they were indifferently coloured. Mr. Harris, gr. to G. Fothergill, Esq., took 1st honours with three very fine bunches of Black Hamburgh in good condition and fairly well coloured, the 2d place being occupied by Lord Tredegar. The best Peaches and Nectarines came from Mr. Cordes; and the finest dish of Oxonian Strawberries we have seen for many a day gained 1st prize for Mr. W. J. Grant, of Hopen, Ledbury.

Vegetables, although not numerous, were good in quality. Mr. Raffil securing the premier prize in almost every class, his collection of nine dishes being remarkably good and well shown.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JULY 28, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						Hygrometrical Deductions from Glaisher's Tables 6th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.				Degree of Humidity. Sat. = 100.	Average Direction.
July	In.	In.	.	.	.	.	.	.	.	In.	
22	29.82	+0.04	72.0	53.2	18.8	59.8	-2.5	55.5	86	{ E.N.E. E.S.E.	0.08
23	29.81	+0.03	78.5	51.9	26.6	63.4	+1.2	52.2	67	{ E.S.E. S.W.	0.00
24	29.72	-0.05	75.4	53.3	22.1	63.0	+0.8	55.1	76	{ S.S.E. S.W.	0.00
25	29.73	-0.04	77.0	52.0	25.0	62.7	+0.5	55.3	77	{ S.W. S.S.E.	0.02
26	29.76	-0.40	72.1	52.9	19.2	61.1	-1.1	58.5	92	{ S.S.W. S.S.E.	0.55
27	29.63	-0.13	75.6	54.0	21.6	63.0	+0.8	50.1	63	{ WSW	0.04
28	29.54	-0.22	72.9	57.1	13.8	61.8	-0.4	55.3	89	{ WSW	0.01
Mean	29.66	-0.11	74.5	53.5	21.0	62.1	-0.1	54.6	77	variable	sum 0.73

July 22.—Overcast and wet till 11 A.M. Fine and bright afterwards. Overcast at night.
— 23.—A fine bright day. Clear in morning, cloudy afterwards. Warm.
— 24.—A fine day, rather cloudy. Few drops of rain in morning. Warm. Nearly calm.
— 25.—A fine bright day. Warm and pleasant. Cloudy in evening. Little rain after 8 P.M.
— 26.—Generally dull, with frequent heavy rain. Fine for short time in morning. Cooler.
— 27.—Fine, partially cloudy. Warm. Little rain fell in early morning. Cloudy after 8 P.M.
— 28.—Generally dull and cloudy. Fine for short intervals. A little rain at times.

LONDON: *Barometer*.—During the week ending Saturday, July 24, in the vicinity of the metropolis the reading of the barometer at the level of the sea increased from 29.95 inches at the beginning of the week to 30.11 inches by the evening of the 20th, and decreased to 29.88 inches by the end of the week. The mean reading for the week at sea level was 30.01 inches, being 0.07 inch below that of the preceding week, and 0.05 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 78½° on the 23d, to 72° on the 22d; the mean value for the week was 73½°. The lowest temperatures of the air observed by night varied from 52° on the 20th and 23d, to 56° on the 18th; the mean value for the week was 53½°. The mean daily range of temperature in the week was 22½°, the greatest range in the day being 26½°, on the 23d, and the least 18½°, on the 22d.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—18th, 63°, +0.2°; 19th, 62.2°, -0.3°; 20th, 62°, -0.4°; 21st, 63.8°, +1.5°; 22d, 59.8°, -2.5°; 23d, 63.4°, +1.2°; 24th, 63°, +0.8°. The mean temperature of the air for the week was 62.5°, being 6.5° higher than the value for the corresponding week in 1879, and 0.1° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 154° on the 21st, 147° on the 23d, and 145° on the 18th and 22d; on the 24th the highest reading was 130°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 43½° on the 21st and 46½° on the 20th; the mean of the seven lowest readings was 48°.

Wind.—The direction of the wind was S.W., and its strength moderately strong at times.

The weather during the week was fine and warm, and the sky partially cloudy.

Thunder was heard on July 18 and 21.

Rain fell on four days; the amount measured was 0.31 inch.

ENGLAND: *Temperature*.—During the week ending Saturday, July 24, the highest temperatures of the air observed by day were above 75° at London, Leicester, Cambridge, Norwich, and Nottingham, and below 69½° at Liverpool and Bradford; the mean value from all stations was 73½°. The lowest temperatures of the air observed by night were below 48° at Truro, Cambridge, Wolverhampton, Sheffield, and Hull; and above 53° at Plymouth and Sunderland; the mean from all places was 49½°. The extreme range of temperature in the week was above 30° at Cambridge, Nottingham, and Hull, and below 20° at Plymouth, Brighton, Liverpool, Bradford, and Sunderland; the mean range from all stations was 24°.

The mean of the seven high day temperatures was above 72° at Blackheath, Cambridge, and Birmingham, and below 67° at Liverpool and Bradford; the general mean from all places was 70°. The mean of the seven low night temperatures was below 53° at Cambridge, Wolverhampton, Sheffield, and Hull, above 56° at Plymouth, Brighton, Norwich, and Birmingham; the mean value from all stations was 54½°. The mean daily range of temperature in the week was above 22° at London and Cambridge, and below 12° at Liverpool and Sunderland; the mean daily range of temperature from all places was 15½°.

The mean temperature of the air for the week from all stations was 60½°, being 4° higher than the value for the corresponding week in 1879. The mean temperature was above 62° at Brighton and Birmingham, and below 59° at Wolverhampton, Sheffield, Liverpool, Hull, Bradford, Leeds, and Sunderland.

Rain.—Rain fell on four or five days during the week at most places. The heaviest falls were at Leeds, 1.08 inch; Bristol, 0.73 inch; and Bradford, 0.69 inch; and the least falls were at Plymouth, 0.14 inch; and Sheffield, 0.16 inch. The average fall over the country was half an inch.

The weather during the week was fine and rather warm, the sky was occasionally cloudy, and thunder was heard at times.

SCOTLAND: *Temperature*.—During the week ending Saturday, July 24, the highest temperatures of the air observed by day varied from 73½° at Greenock, to 67½° at Aberdeen; the mean from all places being 69½°. The lowest temperatures of the air observed by night varied from 43° at Glasgow to 40½° at Greenock; the mean from all places was 46°. The mean range of temperature in the week was 23½°.

The mean temperature of the air for the week from all stations was 58½°, being ½° higher than the value for the corresponding week in 1879. The mean temperature was the highest at Greenock, 59½°, and the lowest at Aberdeen, 56½°.

Rain.—The heaviest falls of rain in the week were at Edinburgh, 1.56 inch, Leith 0.94 inch, and Greenock 0.92 inch; and the least falls were at Dundee 0.25 inch, and Aberdeen 0.02 inch; the average fall over the country was 0.73 inch.

DUBLIN.—The highest temperature of the air was 67½°, the lowest 42°, the extreme range 25½°, the mean 57½°, and the fall of rain 0.45 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

ANTS: *M. F. Lane*. If your soil is dry and rocky, it is likely to be poor also, and would therefore be benefited by a dressing of Peruvian guano, which will do the soil good, and drive away the ants.

BROMPTON STOCKS: *W. J. No*. Sown now, they would not flower till late next year.

CYPRIPEDIUM DOMINYX: *A. P.* The splitting of the lip into two is no very rare phenomenon.

EMIGRATION: *Ten Years' Subscriber*. Your best plan would be to apply to the principal nurserymen on your arrival.

GRAPES: *H. J. O.* If the Frankenthal (syn. Victoria Hamburg) is true to name, it can be shown as a separate variety from the Black Hamburg, being distinguished from the latter by its larger, round, hampered berries. As a question of judgment or tactics, however, we should show only one of these sorts in a class for three black varieties.

NAMES OF PLANTS: *J. W. M.* 1, *Juncus communis*; 2, *Alopecurus pratensis* (the Meadow Foxtail).—*E. Wilson*. 1, *Clematis Flammula*; 2, *Betonica rosea*; 3, *Calceolaria plantaginea*; 4, *Veronica longifolia*, var. *alba*; 5, *Dactylis glomerata variegata*; 6, *Helenium autumnale*. We do not recognise the others.—*D. P.* 1, *Deutzia scabra*; 2, *Sedum album*; 3, *Achillea rosea* of gardens; 4, *Lotus tetragonolobus*; 5, *Geranium pratense*, probably—the flowers had dropped; 6, *Veronica longifolia*.—*A. D.* 1, *Anomatheca cruenta*; 2, *Deutzia scabra*, double var.; 3, *Spiraea opulifolia*, in fruit.—*M. J.* 1 and 2,

Lastrea Filix-mas; 3, *Liriodendron tulipifera* (the Tulip-tree); 4, *Deutzia crenata flore-pleno*; 5, *Eriogonum fruticosum*; 6, *Lastrea dilatata*.—*J. Mel.* *Asarum europaeum*.—*C. & R.* *Lysimachia nummularia*.—*J. T. H.* 1, *Fraxinea sonchifolia*; 2, *Hemerocallis fulva*; 3, *Silene nutans flore-pleno*.—*C. P.* *Eria braccata*.—*G. W. M.* 1, *Epidendrum*, material insufficient; 2, probably *Casuarina sumatrana*, but send again when in flower or fruit; 3, *Athyrium Filix-femina* var. *mesembrianthemoides*.—*F. C. C. D.* 1, *Epilobium hirsutum*; 2, *Linaria minor*; 3, *Alonsoa incisefolia*.—*Alpha*. 1, *Gilia densiflora*; 2, *Tradescantia virginica alba*.—*J. H.* 1, *Lastrea Filix-mas*; 2, *L. F.-m. paleacea*; 3 and 4, *L. dilatata*; 5, *Athyrium Filix-femina*; 6, *Lastrea spinulosa*.—*R. Barrington*. *Galega officinalis*.—*Ignoramus*. *Spiraea opulifolia*.—*Subscriber*. *Stachys lanata*.

PELAGONIUMS: *Constant Reader*.—We do not know of any varieties of semi-double white Pelargoniums in commerce, unless you refer to the Zonal Pelargoniums, of which there are several good double white sorts.

PHYLLOXERA LINDENI: *C. & R.* This is a very handsome stove Aroid, with fine hastate leaves variegated with white.

INSECTS: *J. G.* Your supposed Colorado Beetle is the common Sexton Beetle (*Silpha vespillio*, Linn.), with orange transverse bars across its black wing-cases. The Colorado Beetle is almost globular, with longitudinal black lines on a yellow ground. We cannot understand what you mean by its being covered with larvae. There was not a trace of anything of the kind in the box. Were they small mites? *I. O. W.*—*W. M.* Your Peas are infested (as mine are badly) with a minute orange-coloured thrips. Pick off and burn the infested blooms and pods. *I. O. W.*—*W. H.*



FIG. 35.—LOPHYRUS PINI.

Your plants of *Pinus austriaca* have been attacked by the larvae of one of the species of feather-horned sawflies (*Lophyrus pini*), of which we reproduce a figure of the insect in its different states, from the *Gardeners' Chronicle*, 1852, p. 708 (fig. 35). Handpicking is the best remedy, the larvae being large and conspicuous objects. A strong tap on the plants would detach the larvae, which fall to the ground easily. The earth should be then well beaten flat, and the insects killed with the spade. *I. O. W.*

RASPBERRY: *E. P. D.* Your new Raspberry is of large size and good quality, remarkable for its short, broad fruit, which are juicy and full-flavoured. If, as you say, it is ten days earlier than Northumberland Fillbasket, from which it originated, we should consider it an acquisition.

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COMMUNICATIONS RECEIVED.—*H. H.* (many thanks).—*W. H.*—*J. McL.*—*E. J.*—*G. J. C.*—*T. B.*—*J. K. J.*—*H. W. W.*—*J. S. D.*—*T. F.*—*J. D.*—*J. C. F.*—*E. A. D.*—*W. R.*—*E. P. D.*—*T. M. G.*—*J. G. B.*

Markets.

COVENT GARDEN, July 29.

There has been a great falling off in the supply of soft fruit during the week, and prices have been higher. Hot-house Grapes and Peaches have been in excess of the demand, and have only been cleared at lower values. Trade quiet. *James Webber*, Wholesale Apple Market.

FRUIT.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0-3 0	Lemons, per 100	6 0-10 0
Apricots, per box	1 0-1 6	Melons, each	2 0-5 0
Cherries, per ½-sieve	6 0-12 0	Oranges, per 100	6 0-12 0
Currants, black,		Peaches, per doz.	4 0-8 0
½-sieve	9 0-11 0	Pine-apples, per lb.	1 6-4 0
Gooseberries, green,		Raspberries, per lb.	0 3-0 5
per ½-sieve	2 3-3 6	Strawberries, per lb.	0 6-1 0
Grapes, per lb.	1 0-4 0		

VEGETABLES.—RETAIL PRICES.

s. d. s. d.	s. d. s. d.
Asparagus, Sprue, per bundle .. 1 0 ..	Horse Radish, p. bun. 4 0 ..
— English, p. doz. 5 0 6 0	Lettuces, Cabbage, per doz. .. 0 6 1 6
Aubergines, per doz. 3 0 ..	Mint, green, bunch. 0 4 ..
Beans, French, p. lb. 0 6 ..	Mushrooms, p. basket. 1 6 2 0
Beet, per doz. 1 6 2 6	Onions, per bushel. 5 0 7 0
Cabbages, per doz. 1 0 2 0	— Spring, per bun. 0 6 ..
Carrots, new, bunch 0 4 0 6	Parsley, per bunch. 0 4 ..
Cauliflowers, Eng-lish, each. 0 3 0 6	Peas, English, per qt. 1 6 ..
Celery, per bundle .. 1 0 2 0	Radishes, per bun. 0 2 ..
Chilis, per doz. 3 0 ..	Small salad, pun. 0 4 ..
Cucumbers, per doz. 8 0 12 0	Spinach, per bushel 2 6 ..
Endive, per 2 doz. 1 6 3 0	Tomatos, per dozen 2 0 3 0
Garlic, per lb. 1 0 ..	Turnips, new, bunch. 0 4 ..
Herbs, per bunch .. 0 2 0 4	Vegt. Marrows, doz. 4 0 ..

New Potatos:—Jersey Kidneys, 5s. per cwt.; Round, 6s.; home-grown Pyat's, 6s.; Rounds, 4s. to 5s.

PLANTS IN POTS.—WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Arum Lilies, p. doz. 6 0 12 0	Fuchsias, per dozen 5 0 12 0
Balsams, per dozen. 4 0 9 0	Hydrangea, per doz. 12 0 24 0
Begonias, per doz. 4 0 12 0	Lilium, eximium, doz. 9 0 24 0
Bouvardias, per doz. 12 0 24 0	— auratum, p. doz. 30 0 60 0
Calceolarias, p. doz. 4 0 12 0	— speciosum, dozen 12 0 30 0
— Herbaceous, doz. 6 0 9 0	Lobelia, per dozen 3 0 6 0
Cockscombs, p. doz. 3 0 6 0	Mignonette, per doz. 4 0 9 0
Crassula, per dozen. 12 0 18 0	Musk, per dozen 2 0 6 0
— large, per pair. 5 0 10 0	Myrtles, per doz. 6 0 12 0
Cyperus, per dozen 4 0 9 0	Nasturtiums, dozen 3 0 6 0
Dracæna terminalis 30 0 60 0	Palms in variety, each .. 2 6 21 0
— viridis, per doz. 12 0 24 0	Pelargoniums, dozen 9 0 24 0
Eunonymus, various, per dozen .. 6 0 18 0	— Ivy-leaved, doz. 4 0 8 0
Ferns, in var., doz. 4 0 18 0	— Tricolor, 4 0 12 0
Ficus elasticus, each 1 6 7 6	— scarlet, per doz. 3 0 9 0
Foliage Plants, various each .. 2 0 10 6	Rhodanthe, per doz. 6 0 9 0

CUT FLOWERS.—WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Abutilon, 12 blooms 0 3 0 6	Mignonette, 12 bun. 2 0 6 0
Arum Lilies, per dozen .. 3 0 6 0	Pansies, 12 bunches 2 0 6 0
Bouvardias, per bun. 1 0 4 0	Pelargoniums, 12 sprays .. 0 6 1 0
Calceolarias, p. bunch 0 9 1 0	— zonal, 12 sprays 0 3 0 9
Carnations, 12 bun. 3 0 9 0	Phlox, 12 bunches .. 6 0 12 0
Cornflower, per doz. 3 0 6 0	Primula, double, per bunch .. 1 0 1 6
Eschscholtzia, 12 bun. 3 0 6 0	Roses (indoor), doz. 1 0 9 0
Eucharis, per doz. 4 0 6 0	— outdoor, 12 bun. 4 0 9 0
Feverfew, 12 bun. 4 0 6 0	Stephanotis, 12 spr. 3 0 6 0
Forget-me-not, 12 bunches .. 3 0 9 0	Tropæolum, 12 bun. 1 0 3 0
Gardenias, 12 blms. 4 0 12 0	Tuberose, per dozen 1 6 4 0
Heliotropes, 12 sp. 0 6 1 0	

SEEDS.

LONDON: July 28.—The seed market to-day was very thinly attended with scarcely anything doing. As regards Trifolium, the tendency of quotations is for the moment upwards. In the continued absence of French samples, enhanced rates are asked for English seed. It is thought, however, that the sowing demand will this season be much smaller than usual. The cable quotations of Canadian Clovers received this morning have not led to business. Samples of new English Trefoil, white Clover, and Rape seed are now coming forward. Imported Italian has opened at a higher range than last year. The trade for bird seeds presents no fresh feature. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

For home-grown Wheat at Mark Lane on Monday sales progressed slowly at the previous Monday's currency; for foreign Wheat prices were in some instances slightly in favour of buyers. Very little Barley was on offer, and the small amount of business done was at late prices. Choice malt realised full rates, but the trade for other kinds remained quiet. In Indian Corn the late improvement in prices was steadily maintained. Oats were quiet at late rates, and Beans and Peas were steady at full prices. In the flour trade a want of animation was apparent, but prices were without material change.—On Wednesday trade was quiet, and there was hardly any change in prices. This applies to Wheat, Oats, Maize, and, in short, all descriptions of produce. Average prices of corn for the week ending July 24:—Wheat, 43s. 6d.; Barley, 27s. 1d.; Oats, 26s. 3d. For the corresponding period last year:—Wheat, 47s. 7d.; Barley, 29s. 1d.; Oats, 24s. 4d.

POTATOS.

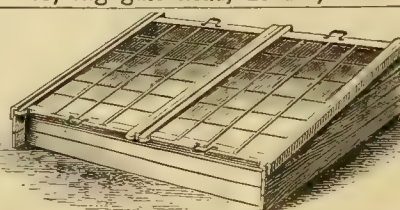
The Borough and Spitalfields Markets reports state that fair supplies were on sale, and the trade slow at the subjoined currency:—Jersey kidneys, 6s.; Cherbourg, ditto, 6s.; ditto, round, 4s.; English Regents, 5s.; ditto, Shaws, 4s. 6d.; ditto, kidneys, 6s. per cwt.—The imports into London last week were 1931 cases from Cherbourg, 250 cases from Barfleur, 234 sacks St. Nazaire, 2001 packages Jersey, 90 bags Rotterdam, 66 packages Lisbon, 50 bags Naples, 50 packages Palma, and 3 bags from Ortava.

COALS.

The following are the prices current in the market during the week:—East Wylam, 14s. 6d.; Ravensworth West Hartley, 14s. 3d.; Walls End—Hetton, 14s. 6d.; Hetton Lyons, 13s.; Hawthorns, 13s. 3d.; Lambton, 14s.; Wear, 13s.; South Hetton, 14s. 6d.; Tunstall, 13s.; Chilton Tees, 14s.; Vanes, 13s.

Government Stock.—On Monday the closing price of Consols, for delivery, was 98 to 98½, and for the account, 98½ to 98¾. Tuesday's figures were 98 to 98½ for both delivery and the account. On Wednesday Consols closed at 97½ to 97¾, and on Thursday at 97½ to 98, for both account and delivery.

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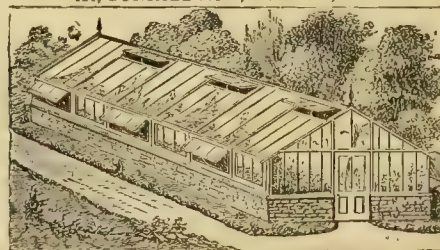
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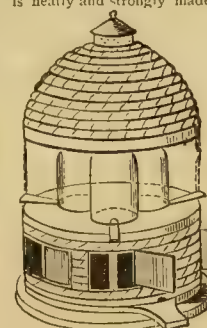
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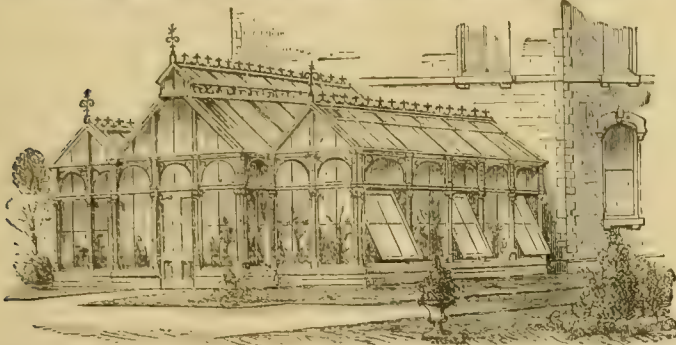
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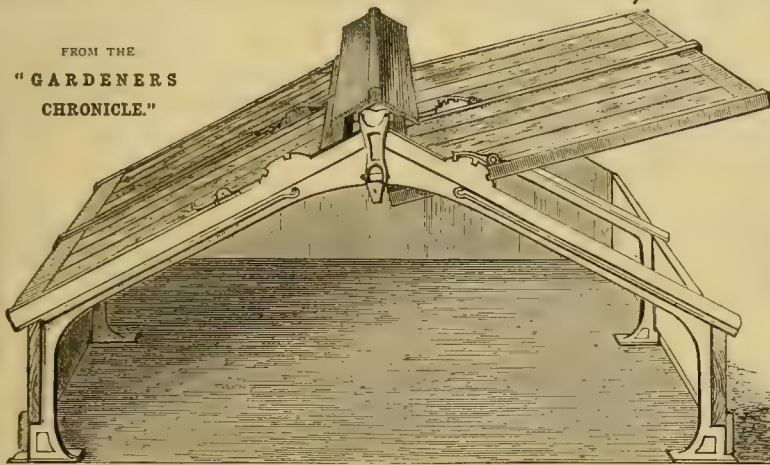
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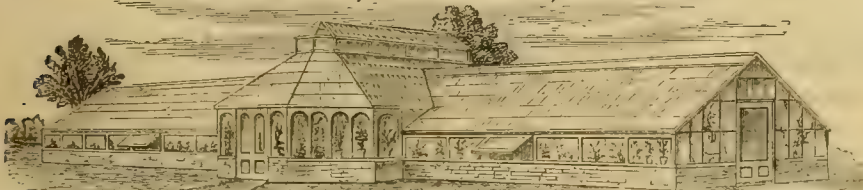
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IMPROVER, in a good establishment.—Age 22; two years' character from last situation. Willing to pay a Premium.—**X. Y. Z.**, 16, Stanford Road, Fulham, S.W.

IMPROVER.—The Rev. J. H. LATROBE-BATEMAN, St. Mary's Parsonage, Farnacloch, Ledaig, N.B., wishes to place a young man with a Gardener in South of England, where he will have an opportunity of learning his trade thoroughly. Highest recommendations.—Apply as above.

IMPROVER, in Flower and Kitchen Gardening, and to Assist in Houses.—Age 21; good knowledge of the above. Total abstinence. Eight and a half years' good character from present situation.—**W. SILLECK**, Sowton, near Exeter, Devon.

TO GARDENERS.—**MR. JARMAN**, The Gardens, Westwood St. Peter's, Thanet, would be glad to recommend a smart, active, young man, of good character, for the Kitchen or Pleasure Garden.

SHOPMAN (HEAD), or otherwise.—Age 32; seventeen years' London and Provincial experience. Has a thorough knowledge of the business in all its branches.—**OMEGA**, 5, Byfield Road, Isleworth, London, W.

SHOPMAN, or **SECOND**.—Age 25, married; ten years' experience in the Seed and Florist Trade. Understands Book-keeping. Good references.—**ALPHA**, 17, The Lawns, Hinckley.

TO FLORISTS or SEEDSMEN.—Wanted, by a young Lady, a Situation with above; five years' experience in a first-class Seed Warehouse.—**F. M.**, 70, St. Donat's Road, New Cross, S.E.

"Facts Speak Louder than Words."

The Chemist and Druggist says:—"Mr. Saville has sent for our inspection a large bundle of testimonials he has received from persons who have obtained the desired results, after using his preparation. We confess that, testimonial-hardened as we are, we could not help feeling convinced, from THEIR EVIDENTLY GENUINE CHARACTER, that Saville's Capillary Germinator has really a decided effect when the hair is falling or fallen off."



BEFORE USE.

GUARANTEED
to effect
this marvellous
change
in a few weeks.



AFTER USE.

The following is a fair specimen of the letters we are daily receiving, which prove the good qualities of
"SAVILLE'S CAPILLARY GERMINATOR"
As a Real Producer of

W H I S K E R S ,
MOUSTACHES, EYEBROWS, &c.,
And as a Complete and Certain Cure for
B A L D N E S S ,
Or for Weak, Thin, and Falling Hair.

New Chester Road, Traunerve, Cheshire, April 30, 1880.
"Dear Sir,—Will you kindly forward me another bottle of your 'Capillary Germinator,' as I have found it to be beneficial and quite capable of producing what I so earnestly desired. I shall recommend this wonderful product to all my friends and comrades. I shall be in London soon, and shall have the pleasure of showing you my capital Whiskers and Moustaches, which your preparation has to my satisfaction produced.—I remain, yours respectfully,
"W. C. MAGER."

Harmless, free from grease, nicely scented, will not stain nor injure the skin. The original of the above, with hundreds of similar letters, may be seen at any time.

Full particulars with forty testimonials sent free to any address. Of all Chemists, Perfumers, &c. Sent, carriage paid, to any address, secretly packed, with testimonials, directions for use &c., for 2s. 6d. Larger sizes, FREE, 5s., 9s., and 12s.

JOHN F. SAVILLE AND SONS,
146, Regent's Park Road, London, N.W.

Beware! Beware!!—Every genuine bottle has above title impressed in the glass. Do not be deceived into buying any imitations of this thoroughly reliable article.

DINNEFORD'S MAGNESIA.

The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for

ACIDITY OF THE STOMACH, HEARTBURN, HEADACHE, GOUT, AND INDIGESTION,
and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.

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KINAHAN'S LL WHISKY.

KINAHAN'S LL WHISKY.

Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

KINAHAN'S LL WHISKY.

Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

KINAHAN'S LL WHISKY.

Gold Medal, Paris Exhibition, 1878; Dublin Exhibition, 1856; the Gold Medal.—20, Great Titchfield Street, London, W.

HOLLOWAY'S OINTMENT AND PILLS.

Common sense, ever the best of all learning, becomes invaluable when its practice will renovate broken health, and reinstate soundness, strength, and vigour. Summer is the season for removing Coughs, Shortness of Breath, Wheezing, Asthma, and all Pulmonary Diseases, inflicted on the delicate and careless by our rigorous winters, and Holloway's remedies are means of affecting a happy transit from danger to safety. After the harassed chest has been fomented with sea water or weak brine, and dried, this Ointment should be well rubbed into the skin, both in front and behind, between the blade bones. Holloway's Pills should be taken to correct any functional irregularity; they will make each organ conform to health's requirements.

SEND FOR A PRICE LIST OF

JOHN BLAKE'S PATENT SELF-ACTING HYDRAULIC RAMS,

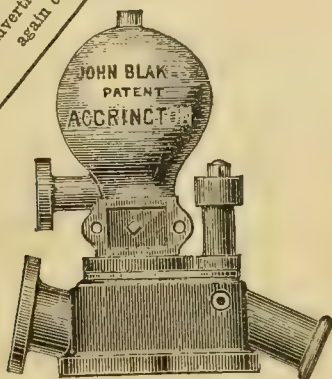
*For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions,
Fountains, Farms.*

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

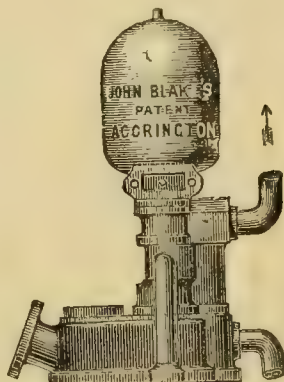
No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.

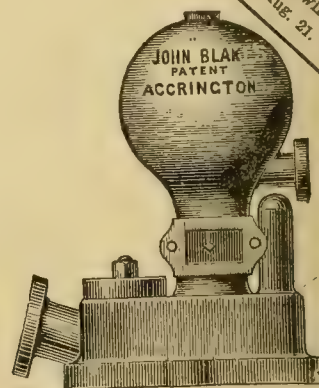
This Advertisement will appear
again on Aug. 21.



This Ram for small working falls.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 feet.



This Ram, for deep working falls, will force up one-third of the water passing through it

This Advertisement will appear
again on Aug. 21.

Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.

TESTIMONIALS.

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March 1, 1880.*—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of a tower 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

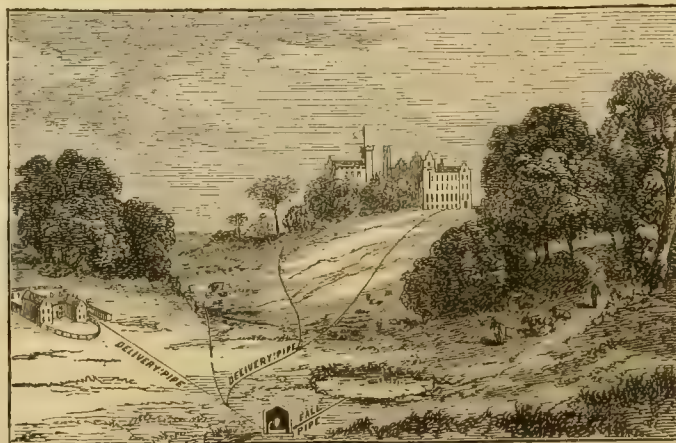
From Col. TREMAYNE, *Perinan-ar-Worthel, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons to a height of 150 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

From W. SCARTH, Esq., *Agent to His Grace the Duke of Cleveland.*—"Raby Castle, Darlington, July 16, 1878.—The Hydraulic Ram you supplied to His Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised."

From JOHN TAYLOR, Esq., *The Rocks, Bath, August 22, 1878.*—"The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 294 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height."

From Major STARKIE, *Lovely Hall, Blackburn, May 13, 1878.*—"Sir, I have great pleasure in testifying to the good qualities possessed by the Ram you erected here last year. It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December 21, 1868.*—"Sir.—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."



This view represents one Ram worked by water from a spring, and forcing it up to a Farm, Cattle Troughs, Kitchen Garden, and Mansion, all at different elevations, the highest being 444 feet, and to a distance of 2008 yards.

TESTIMONIALS.

From Capt. GANDY, *Castle Bank, Appleby, February 11, 1880.*—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 2 feet 4 inches fall it forces water 70 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

From JOHN WALKER, Esq., *Mount St. John, Thirk, February 13, 1880.*—"In reply to your enquiry I am glad to inform you that the Hydraulic Ram you fixed here in May last has fully answered my expectations, and your promises as to the quantity of water it would force to a height of 185 feet. I consider it a very good machine, and superior to one I had in use previously."

From Captain TOWNSHEND, *Wincham, February 10, 1877.*—"In answer to your enquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 600 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000."

From the Right Hon. T. SOTHERON-ESTCOURT, *Estcourt Park, Gloucestershire, September 6, 1875.*—"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful." (The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

Deanewater, *Wilmslow, November 2, 1873.*—"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. HANMER."

From Mr. THOMAS MASON, *Altham House, Colne, September 30, 1871.*—"Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & CO., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden in the said County.—SATURDAY, July 31, 1880. Agents for Scotland—Messrs. J. MENZIES & CO., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 345.—VOL. XIV. { NEW SERIES. }

SATURDAY, AUGUST 7, 1880.

{ Registered at the General Post-office as a Newspaper. } Price 5d. POST FREE, 5½d.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recom-
mends Subscribers who wish to have extra Copies of
the Numbers containing the "Select Index of Plants
from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—
1879.—October 11. 1879.—Dec. 13. 1880.—April 3.
Nov. 25. 1880.—Jan. 10, 24. May 8, 29.
Feb. 7, 21. June 19.
Mar. 29, 27. July 10.
Price 5d. each, post-free 5½d.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are
cautioned against having Letters addressed to
INITIALS, or to FICTITIOUS NAMES,
at Post-offices, as Letters so addressed are not
taken in, but are sent at once to the Returned
Letter Office.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
NOTICE:—COMMITTEES' MEETINGS.—Fruit and
Floral, at 11 A.M. GENERAL MEETING, at 3 P.M.
LECTURE by Mr. Frank R. Cheshire, at 3.30 P.M., on the
Structure of the Bee in Relation to Gathering Honey and
Pollens from Blooms, and the Secretion of Wax for Comb-
building, on TUESDAY NEXT, August 10. Admission, 1s.

ALEXANDRA PALACE,
London, N.
FLORAL EXHIBITION OF BOUQUETS and TABLE
DECORATIONS, arranged amidst groups of Tree Ferns,
SATURDAY, August 14. Prize Lists forwarded on applica-
tion. Exhibitors need not attend in person, provided due
Notice is given of the Dispatch of the Exhibits.

JOS. FORSYTH JOHNSON.
Director, Horticultural Exhibitions.

ALEXANDRA PALACE,
London, N.
THE NATIONAL FRUIT EXHIBITION, September 3,
4, 6, 7. Prize List forwarded on application. Exhibitor need
not attend in person, provided due Notice be given of the
Dispatch of the Exhibits.

JOS. FORSYTH JOHNSON.
Director of Horticultural Exhibitions.

SEVENOAKS HORTICULTURAL
SOCIETY.—THE THIRTIETH EXHIBITION OF
FLOWERS, PLANTS, FRUIT, VEGETABLES, TABLE
DECORATIONS, BOUQUETS, COTTAGE'S PRO-
DUCTIONS, &c., will be held in Montreal Park, Sevenoaks,
by the kind permission of the Right Honourable the Earl
Amherst, on THURSDAY, August 19. Schedules and
Cottagers' Prize Lists to be obtained of the Hon. Secs.,
Mr. C. J. KNIGHT, 63, London Road; and A. A. CLARK,
Linden Cottage, Mount Hurry, Sevenoaks.

MAIDENHEAD HORTICULTURAL
SOCIETY.
THE ANNUAL SHOW OF FLOWERS, FRUITS, &c., will
be held on WEDNESDAY, August 25, in the Hambletonian
Grand Hall, Maidenhead. A large number of Prizes, varying up
to £3. Special Prizes for Cut Roses from £1 to £5. Entries
Close August 18. Schedules with full particulars may be
obtained on application to the Secretary.

**ISLE OF THANET FLORAL and HORTI-
CULTURAL ASSOCIATION and COTTAGERS'**
GARDENING SOCIETY, will hold their TWENTY-FIFTH
EXHIBITION at Dane Court, St. Peter's, on WEDNES-
DAY, August 25. C. D. SMITH, Hon. Sec.
5, Brook Terrace, Margate.

SANDY and DISTRICT FLORAL and
HORTICULTURAL SOCIETY (Open Show).
The TWELFTH ANNUAL EXHIBITION OF FLOWERS,
FRUIT, VEGETABLES, CAGE BIRDS, POULTRY and
PIGEONS, will be held at Sandy, Bedfordshire, on FRIDAY,
August 27. Prizes, ONE HUNDRED and SEVENTY
POUNDS. Ten Stove and Greenhouse Plants in flower:
1st Prize, £10; 2d, £6. Schedules on application to
WILLIAM GREEN, Secretary, Sandy.

CARTERS' HOME-GROWN SEEDS.—
Paris, 1878. Awarded Five Gold Medals, being the
highest award in every competition. All other Seed competitors,
English as well as Foreign, received awards of inferior merit.
CARTERS, the Queen's Seedsmen, High Holborn, London.

Select Seeds for Present Sowing.

**CABBAGE, ONION, LETTUCE,
CALCEOLARIA, CINERARIA, PRIMULA,** as well
as all others of very superior quality.
JAMES DICKSON and SONS, 108, Eastgate Street, Chester.

Strawberries for Forcing.

H. CANNELL begs to announce that he has
large quantities of Vicomtesse Héricart de Thury,
President, British Queen, and Sir Joseph Paxton, established
in small pots, ready for immediate shifting, 12s. per 100.
Swanley, Kent.

Strawberries.

CHARLES TURNER'S Descriptive Select
LIST is now ready. Strong Plants that will fruit next
season may be had at the shortest notice.
The Royal Nurseries, Slough.

STRAWBERRY RUNNERS.—
Strong, healthy, and well-rooted, from President, Sir
Joseph Paxton, Keens' Seedling, Eclipse, Black Prince, and
other good varieties. Price 2s. 6d. per 100. Early orders
requested.
JOSEPH TREMBLE and SON, Victoria and the Castle
Nurseries, Penrith.

STRAWBERRY RUNNERS,
strong, healthy, and well-rooted, from V. H. de Thury,
President, Sir J. Paxton, Rivers' Eliza, and other good varieties.
Price LIST, &c., on application. MANUAL ON STRAW-
BERRY CULTURE, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

STRAWBERRIES.
Strong Roots for Fruiting next year, 4s. per 100.
Descriptive LIST on application.
RICHARD SMITH and CO., Nurserymen, Worcester.

HORTICULTURAL ESTABLISHMENT,
2, Porte St. Lévin, Ledeberg, Ghent, Belgium.
Director: POLYDORE VERAENE, FILS.

EWING and CO.'S Magnificent Collection
of ROSES is NOW in FULL BLOOM. Intending pur-
chasers are specially invited to inspect the stock. The Nurseries
are open to the Public on Week-days. CATALOGUES of
Roses and General Nursery Stock gratis and post-free.
The Royal Norfolk Nurseries, Eaton, near Norwich.

To the Trade only.

E. H. KRELAGE and SON, NURSERYMEN,
SEEDSMEN and FLORISTS, Haarlem, Holland.
The Wholesale CATALOGUE (No. 3474) of Dutch Flower
Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants,
for 1880-81, is now ready, and may be had free on pre-paid
application, by Nurserymen, Florists and Seedsmen.

Gardenias.

MESSRS. JOHN STANDISH and CO.
have a magnificent stock of the above plants to offer.
They may be had in all sizes from 24s. per dozen to 21s. each,
mostly set with bloom-buds. Every plant is warranted abso-
lutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

Vines for Present Planting.

JOHN COWAN, The Vineyard and
Nurseries, Garston, near Liverpool, is now offering a
splendid Stock of VINES raised from Eyes this spring, and
specially prepared for planting Vines.
CATALOGUES free. The Trade supplied.

ON SALE, at a reasonable offer, or
EXCHANGE for small GREENHOUSE PLANTS,
3 dozen Fruiting QUEEN PINES, warranted clean.
J. DAVIS, Mundford, Norfolk.

WANTED, PELARGONIUM
CUTTINGS. Must be best varieties. State price
and sorts to
JOSEPH TREMBLE and SON, Victoria and the Castle
Nurseries, Penrith.

To Farmers, Market Gardeners, and Others.

WANTED, FRUIT of all kinds. Prompt re-
turns and moderate Commission.—WISE and RIDE,
General Agents, 3, Tavistock Court, Covent Garden, W.C.

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In addition to FIVE PRIZE MEDALS awarded by the
Juris, the LEGION OF HONOUR (a superior distinction
accorded to no other English Exhibitor of Seeds) was con-
ferred on our Managing Partner, Mr. M. J. SUTTON, by
the French Government.

SUTTON AND SONS, Reading, London and Paris.

The Largest Rose Gardens in England.

**CRANSTON'S NURSERIES, HERE-
FORD.** (Established 1785.)
Descriptive CATALOGUES on application. Address
CRANSTON'S NURSERY and SEED COMPANY
(Limited), King's Acre, near Hereford.

WHITE CAPE FLOWERS.—200,000, just
imported, to be Sold cheap. Sample and price on
application.

GEO. P. DARBY, Hertfordshire Seed and Plant Establish-
ment, Watford.

JULES DE COCK, Nurseries, Ghent,
Belgium.—Specialities of AZALEAS INDICA and
MOLLIS, CAMELIAS, DEUTZIA GRACILIS, and
SPIRÆA JAPONICA, for forcing.

AZALEA INDICA, fine healthy plants, well
shaped, covered with buds, of all the best varieties in
commerce. Price from £3 4s. to £8 per 100; special price
per 1000.

L. DELARUE-CARDON, Nurseryman, 98, Chaussée de
Bruxelles, Ledeberg, near Ghent, Belgium.

CUT ROSES, of choice quality and
immense variety. Blooms and buds, 6s. per 100;
sample dozen, 1s. 3d., free.
BUDS FOR BUDDING, 200 finest varieties, same price.
W. CAUDWELL, F.R.H.S., The Ives, Wantage.

W. M. CUTBUSH and SON
beg to announce that their
GENERAL PLANT CATALOGUE
is now ready for the ensuing season, and may be had post-free
on application.
Highgate, London, N.; and Barnet, Herts.

SPIRÆA ULMARIA VARIEGATA.—
Magnificent golden variegated foliage (see the Garden, of
June 12, 1880, p. 513).
Messrs. BUDDENBORG BROS., Hillegom, near Haarlem,
Holland, offer fine plants of the above at 20s. per 100.

Begonias.

JOHN LAING and CO.'S unrivalled Gold
Medal Collection is now in bloom. Inspection invited.
Young plants, free by post, 4s. and 6s. per dozen. The "coming
flower" for Conservatory, Window Decoration, and Bedding-out.
LISTS free on application.
The Nurseries, Forest Hill, London, S.E.

DUTCH BULBS.—Cheap Route.—
Buyers when ordering should request the Growers to
consign them to
WATSON and SCULL, 99, Lower Thames Street, London,
E.C., Forwarders to all parts of the World; they will then
secure speed with cheapness.

Hyacinths, Tulips, &c.

BUDDENBORG BROS., Bulb Growers,
House Bloomsward, Hillegom, near Haarlem, Holland,
beg to announce that their WHOLESALE CATALOGUE of
the above is now ready, and will be sent post-free on application.

LILY of the VALLEY.—Fine strong Crowns
for forcing, the best quality, as known in use many
years; 40s. per 1000; by taking at least 5000, at 38s. per 1000, for
cash, carriage free to Hamburg. By taking at least 10,000, and
cash with order, carriage free to London. Early orders requested.
ROBERT NEUMANN, Erfurt, Germany.

Myosotis elegantissima.

The new Silver-edged, Blue-flowered Forget-me-not.
RODGER, McCLELLAND and CO. are
now sending out this superb Novelty for the Spring
Garden. Good plants 3s. 6d. each, 25s. per dozen. Can be sent
by post.
64, Hill Street, Newry.

To the Trade.

ENGLISH SOWING RAPE SEED and WHITE
MUSTARD.

H. and F. SHARPE have fine clean
samples of the above-named Seeds, which they can offer
at very reasonable prices. Samples and prices on application.
Seed Growing Establishment, Wisbech.

Illustrated Catalogue of Ferns.

W. and J. BIRKENHEAD, Fern Nursery,
Sale, near Manchester, beg to say that their CATA-
LOGUE of FERNS for 1880 is now ready, consisting of
eighty-four pages, containing many Illustrations, Synonyms,
Descriptions, and copious yet simple "Hints on Fern Cultiva-
tion," post-free for six penny stamps. Also, now ready, a
"SPECIAL LIST of FERNS," free on application.

FRUITING PLANTS
of PEACHES, NECTARINES, APRICOTS, and
GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS and SON, Sawbridgeworth, Herts.

BARLEY.—Seventy quarters of MALTING
for Sale, nearly new. Close to a station in a first-rate
Barley district.—Mr. TOMLINSON, Asgarby, Sleaford.

SALES BY AUCTION.

Imported and Established Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL BY AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, August 23, a consignment of Eight Cases of IMPORTED ORCHIDS, received direct from Mexico in very fine condition, together with an assortment of ESTABLISHED ORCHIDS.

Catalogues at the Auctioneers' Offices.

Habenaria maxima.

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, August 12, at half-past 12 o'clock precisely, some good plants of the extremely beautiful terrestrial ORCHID, HABENARIA MAXIMA, which produces very large white flowers, four to six on a stem, 4 inches in diameter, and deliciously fragrant. The Collector wrote:—"It is even richer than Phalenopsis grandiflora. You would go into ecstasies if you saw this Habenaria in full flower. It is simply superb." A drawing can be seen at the Sale.

At the same time will be sold some very fine plants of CATLEYA MOSSIE and its varieties, just arrived from South America, in good condition, being one of the most beautiful of Catleys, and easily grown. It is especially worthy of notice.

May be viewed the morning of Sale, and Catalogues had.

Large Importations of Mexican and Central American ORCHIDS.

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, August 12, at half-past 12 o'clock precisely, a splendid importation of MEXICAN ORCHIDS, consisting of large quantities of *Lælia majalis*, the large bulbous, free flowering variety; immense masses of *Odonoglossum citrosium* and *roseum*, *Cattleya Downiana*, a fine lot of the beautiful *Epidendrum verrucosum*, Lindley; *Odonoglossum grande*, a large quantity of *Trichopilia suavis* and *occinea*, and the splendid *Mormodes luxatum*, *Cypripedium* from Chiriqui, *Cattleya Skinneri*, a few *Pescatorea Lehmanni*, *Phalenopsis Lowii*, and *Odonoglossum pulchellum majus* and *aristaria elata*.

May be viewed the morning of Sale, and Catalogues had.

The Magnificent Collection of Established Orchids of the Right Hon. Lord Londesborough.

MR. J. C. STEVENS has received instructions from the Right Hon. Lord Londesborough, to SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, August 17, and following days, at half-past 12 o'clock precisely each day, his valuable and extensive COLLECTION of ORCHIDS, amongst which will be found fine Specimen Plants of the following rare varieties:—*Masdevallia Harryana*, Bull's blood variety; *M. Trochilus*, *M. Macura*, *M. Tovarensis*, *M. Veitchiana*, Veitch's best variety; *Lycaste Skinneri alba*, *Cattleya labiata*, summer and autumn flowering varieties; *Lælia anceps Dawsoni*, *L. purpurata*, with pure white sepals and petals and dark purple lip; *L. autumnalis*, Mr. Rucker's best variety; *L. Jonghiana*, *Cattleya exoniensis*, *C. Downiana*, *C. gigas*, *C. Warneri*, Mr. Rucker's variety; *Coleogyne cristata*, *C. cristata Lemoineana*, true *Dendrobium Falconeri*, *D. erythroranthum*, *D. Kingianum*, *Aerides Veitchii*, *Angraecum sesquipedale*, fine variety; *Saccolabium Blumei*, *Phalenopsis Portiana*, *P. casta*, *P. leucorrhoda*, *P. Lowii*, *Angraecum Ellisii*, *Pleione Reichenbachii*, *Odonoglossum vexillarium*, *O. Hallii*, *Sobraia macrantha*, Woolley's variety, &c.

May be viewed the morning of Sale, and Catalogues had.

Masdevallia Shuttleworthii.

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, August 19, a quantity of fine plants of *MASDEVALLIA SHUTTLEWORTHII*, well established, and making good growths.

May be viewed the morning of Sale, and Catalogues had.

Preston, Lancashire.

By order of the official Liquidator, and for unreserved competition, in order to wind up the Estate.

The PRESTON NURSERY and PLEASURE GARDENS COMPANY (Limited).—In Liquidation.

MESSRS. JABEZ B. JONES AND SON have been instructed to Catalogue and offer for unreserved SALE BY AUCTION, on TUESDAY, WEDNESDAY, THURSDAY and FRIDAY, August 10, 11, 12 and 13, commencing each day at 11 o'clock, the whole of the extensive COLLECTION of STOVE and GREENHOUSE PLANTS, British and Exotic Ferns, Orchids, and other Contents of the Houses; together with the HORSES, CARTS, VANS, and modern IMPLEMENTS and TOOLS, and other Effects, at the above Nurseries. The collection includes some of the finest Specimen and Exhibition Plants in the North of England, amongst which may be named a magnificent *Cycas revoluta*, 9 feet across, with 50 new fronds; *Cycas revoluta*, 7 feet across; *Phormium tenax variegata*, 6 feet by 7 feet; splendid pair of *Alboscopia capensis*, 3 feet 3 inches trunks; fine *Dicksonia fibrosa*, 2 feet 6 inches trunk; *Areca Verschoffeltii*, 8 feet high; *Cycas circinalis*, 10 feet across; *Dasyliroium glaucum* and *acrostichum*, 6 feet across; *Plectocoma Andersoni*, 12 feet across; pair of *Cyathea dealbata*, 3 feet trunks and splendid heads; *Seafortia elegans*, 10 feet high; pair of *Gleichenia flabellata*, 5 feet through; *Gleichenia semivestita*, 3 feet stems by 3 inches by 6 inches; pair *Dicksonia antarctica*, 4 feet stems; pair *Dicksonia squarrosa*, 5 feet stems; *Asplodia australis*, 5 feet 6 inches stem; *Cibotium lucidum*, 16 feet across; *Cibotium Schiedei*, 12 feet across; *Cyathea dealbata*, with 8 feet trunk; *Dicksonia squarrosa*, 14 feet trunk, &c.; specimen *Lapageria*, *Altamandas*, *Stephanotis*, *Bougainvillea*, *Dipladenias*, *Gardenias*, *Dracaenas*, *Ixoras*, &c.; specimen *Camellias*, up to 8 feet in height; specimen *Azaleas*, up to 6 feet high; magnificent specimen *Ericas*, including *E. Austriana*, *E. Lindleyana*, *E. ampullacea*, *E. obata*, *E. eximia*; fine *Phenocoma prolifera*, *P. Barnesii*, 5 feet through, &c.; Orchids in great variety; specimen Ferns, including *Adiantum Farleyense*, *A. cardiocladum*, *Davallia Mooreana*, *Thamnopteris australis*, &c.; together with the usual assortment of Plants to be found in extensive establishments of this character.

May be viewed at any time prior to the day of Sale, and Catalogues may be had from Mr. TROUGHTON, Seedsman, Preston, the Agent to the Liquidator; from Mr. TITUS THORP, Lune Street, Preston, Chartered Accountant, the Liquidator; at the Nurseries, Ribblesdale, Preston; or from Messrs. JABEZ B. JONES AND SON, Auctioneers, Preston.

Fortis Green, East End, Finchley.

Re J. H. Gent, Esq., Deceased.

WINES, PLANTS, HORSE, CARRIAGE, &c.

MESSRS. BRAY, WEBB, AND HARWOOD will SELL BY AUCTION, at the Residence of the late J. H. Gent, Esq., Fortis Green, Finchley, on THURSDAY, August 12, at 1 o'clock precisely, by order of the Executors, a Cellar of WINE, about 10 dozen, comprising Ports, Sherries, Clarets, Hocks, Champagnes, &c.; also a choice selection of PLANTS, consisting of well grown Crotons, *Dracaenas*, *Pandanus*, *Azaleas*, Ferns, Palms, *Camellias*, *Chysanthemums*, &c.; a splendid collection of ORCHIDS, *BAY GELDING*, *BROUGHAM* by Aldebert, *PAIR-HORSE BAROUCHE*, a *DOG-CART*, Sets of HARNESS, and Miscellaneous Items.—May be viewed day prior to, and morning of Sale. Catalogues obtained on the Premises, and of the Auctioneers, Messrs. BRAY, WEBB, AND HARWOOD, 14, Warwick Court, High Holborn, London, W.C.

High Field House, near Nottingham.

To COLLECTORS OF FERNS, FLORISTS, and Others. In consequence of having gone to reside in Monmouthshire, E. J. Lowe, Esq., has instructed

MR. J. M. POTT to SELL BY AUCTION, on the above Premises, on AUGUST 19 and 20, his valuable and well-known Collection of BRITISH FERNS, *CAMELLIAS*, and other Plants. The Ferns consist of about 4000 Specimens and Half Specimens, amongst which are several hundreds of the finest exhibited plants in England, which have obtained above 100 First-class Certificates from the Royal Horticultural and Royal Botanic Societies for new varieties, and several hundred First-class Prizes in various parts of England and Scotland.

Catalogues are in course of preparation, and will be duly announced in a few days.

TO BE SOLD, a NURSERY and FLORIST BUSINESS. Doing a first-class Trade in a good thoroughfare. Large House and Shop, with Greenhouses attached. Excellent opportunity for carrying on Fruit and Florist Business. Rent low. Lease 12 years.

G. C., Gardeners' Chronicle Office, W.C.

TO BE LET, a NURSERY and FLORIST BUSINESS. A most profitable Nursery. Rent only £25. Splendid hot-houses, about 300 feet of Glass. Anything grows and great demand. Fortune to energetic man. Small incoming. Messrs. GENDLE, Land Agents, 94, Queen's Road, Peckham, S.E.

To Market Gardeners and Others.

TO BE LET, on Lease or by the Year, from Michaelmas next, Large or Small Parcels of most suitable LAND for Market Gardeners. Admirably situated (for convenience of good trade, &c.) on the South Coast. Mr. GEO. LEGGETT, Estate Agent, Littlehampton.

To Lovers of Gardening.

TO BE LET, unfurnished, by order of the Executors of the late owner, a charming BIJOU COTTAGE RESIDENCE, with large Tennis Lawn and beautiful Gardens, a full-sized Billiard-room, noble Conservatory, range of Vineries, Stove and Cucumber Houses, Fernery and Pits, all modern, and in excellent order; capital Stabling and Out-offices. The property is beautifully decorated, and is especially recommended to any gentleman fond of horticultural pursuits, and seeking a thoroughly well appointed picturesque and secluded residence on a small scale, in a healthy rural district, 6 miles north of London, and 10 minutes' walk from Finchley Station.

Messrs. DEBENHAM, TEWSON AND CO., 80, Cheapside, London, E.C. (33,025).

TO BE LET, a HOUSE, with Stables, Pleasure and Fruit Gardens, a Conservatory, three Vineries, four Forcing Pits, Azalea, Orchard, Stove Plant, Camellia and Mushroom Houses, Pits, and other Buildings, situate at East End, Finchley, within one mile of a railway station and containing in the whole about 3 Acres of Land.

For particulars, and cards to view the property, apply to Mr. G. PLUCKNETT, 24, Old Square, Lincoln's Inn, W.C.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to BE DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 98, Gracechurch Street, E.C.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 68, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.

CATALOGUE post-free. Special Prices for large quantities. H. CANNELL, Swanley.

Bulbs, Orchids, &c.

THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., is now ready, and will be posted to their Customers in a few days. Also post-free, on application.

Lion Walk, Colchester.

Primulas — Primulas — Primulas.

Eleventh Year of Distribution.

WILLIAMS' superb strain, 1s. 6d. per dozen, for. per 100; package and carriage free. Extra strong plants, in 60-pots, 2s. 6d. per dozen, or in EXCHANGE for MAIDENHAIR and other FERNS.

The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

NEW GERANIUMS of 1879,

Reduced in Price.

12 superb varieties ZONAL GERANIUMS of 1879, for 6s. 12 splendid varieties GERANIUMS of 1878, for 4s. 12 very select varieties GERANIUMS of previous years, for 3s. 12 fine varieties DOUBLE GERANIUMS of 1879, for 6s. 12 best selected varieties OLDER DOUBLE GERANIUMS, for 3s. In good Plants, Post-free, from

B. W. KNIGHT, Florist, Battle, Sussex.

Notice to the Trade.

HURST AND SON have now received their SNOWDROPS, Double and Single, in splendid condition; they are extra large this season. Special prices on application.

Their Trade Bulb CATALOGUE has been posted to all Customers, any not having received a copy will oblige by informing them, and one shall be sent.

152, HOUNDSDITCH, LONDON, E.C.

Please note Alteration of Address.

ANTHURIUM ANDREANUM, Linden.

—The finest flowering New Plant of the last year. 1st Prize, Extra Gold Medal, Ghent Spring Show, 1880; 1st-class Certificate, London, April 3, 1880; 1st Prize for the Best New Plant, Brussels National Exhibition. The Press is unanimous in praising this glorious plant. (See the *Gardeners' Chronicle*, the *Garden*, *Florist* and *Pomologist*, *Revue de l'Horticulture Belge et d'Orange*, &c.)

Good nice plants, well established, and warranted of the same variety as the exhibited plant, with four to six leaves, 105s. each, 270s. for three plants.

Sent free to any part of the United Kingdom.

J. LINDEN, Royal Exotic Nursery, Ghent, Belgium.

TO BE SOLD, a small quantity of ORCHIDS, consisting of *Aerides*, *Vandas*, *Catleyas*, *Cecylogynes*, *Cypripediums*, *Calanthes*, *Phaius*, &c. Apply to GEO. SMITH, Gardener, The Street, near Chorley, Lancashire.

1880.—Dutch Bulbs.—1880.

ANT. ROOZEN AND SON, NURSERYMEN

Overveen, near Haarlem, Holland.

HYACINTHS, TULIPS, CROCUS, GLADIOLI, &c., direct from the Growers, at Growers' Prices, delivered entirely free in London, Edinburgh, Leith, Glasgow, Hull, Liverpool, Dublin, Belfast, Bristol, Plymouth, and Newcastle-on-Tyne.

Our complete and revised CATALOGUE, in English, for 1880, is now ready, and will, as usual, be handed to all Gardeners and Amateurs free on application to Messrs. MERTENS and CO., 5, Billiter Square, London, E.C., or to ourselves direct. Early Orders requested.

Collections B, C, E and F, can be had from our Agents, Messrs. MERTENS and CO., during the season, also half C and F Collections, at 10s. 6d. each, against cash payment.

ANT. ROOZEN AND SON, Nurserymen (formerly Ant. Roozen), Overveen, near Haarlem, Holland.

B. MALLER begs to invite an inspection of his very extensive stock of the following Plants, all in the best possible health and condition:—

ERICA HYEMALIS, very fine this season, and promising a profusion of bloom.

ERICAS, in variety, EPACRIS, GENISTAS, AZALEAS, choice Seedling-Tuberous BEGONIAS, CYCLAMEN, BOUARDIAS, SOLANUMS, ADIANTUM CUNEATUM, Vines, &c.

Trade LIST forwarded on application. The usual TRADE SALE will be held in SEPTEMBER. The usual TRADE Burnt Ash Lane Nurseries, Lee, N.

For Present Planting.

Please note Prices. Good strong healthy Plants, from selected seed stocks, viz.:

CABBAGE.—Enfield, Nonpareil, York, Wheeler's and Sutton's Imperial, Thousand-Head, and Drumhead Savoy, Little Pixie Savoy, &c.

KALE.—Thousand-Head and Cottage's.

BRUSSELS SPROUTS.—Scrymgeour's Giant and Matchless.

All the above plants, at 2s. per 1000, 17s. per 10,000, 75s. per 50,000.

BROCCOLI.—Early Superb White, Late White, Improved Purple Sprouting, at 2s. 6d. per 1000, 20s. per 10,000, 90s. per 50,000.

Packages included. On rail. Samples on application.

N.B. 1000 of above Plants assorted to purchaser's choice, 2s. 6d.

CAULIFLOWER PLANTS, 4s. per 1000.

EDWARD LEIGH, Norcott Farm, near Guildford.

Dutch Bulbs.

C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of free on application to

Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E.C.

Wholesale Bulb Catalogue.

WATKINS AND SIMPSON, Wholesale Seedsman and Bulb Merchants, 1, SAVOY HILL, STRAND, W.C.

Their Wholesale BULB CATALOGUE is now ready and may be had on application. Special quotations for large quantities of Lily of the Valley crowns, American Tuberoses, Double and Single Snowdrops, Winter Aconites, Spiraes, many sorts of Narcissus, Tulips, and Lilies, &c.

Garden and Flower Seeds, of best quality, for present sowing.

Autumn, Winter, and Spring Flowering Plants.

F. AND A. SMITH offer well-grown stocky examples of the following:—

NOW IN BLOOM.

5,000 Balsams	3,000 Tuberoses, American
3,000 Cockscorns	1,000 Globe Amaranthus
1,000 Heliotropes	2,000 Fuchsias

IN BUD FOR AUTUMN AND SPRING.

1,000 Acacia armata	1,000 Epiphyllum truncatum
5,000 Azalea indica	50,000 Ericas, various
5,000 Bouvardias	5,000 Exotics
5,000 Camellias	10,000 Pelargoniums
11,000 Cinerarias	5,000 Primula chinensis
4,000 Cythus	5,000 Solanums, in berry
5,000 Chrysanthemums	10,000 Zonals, various

Also large stocks of DEUTZIA, CALADIUMS, TREE CARNATIONS, CLEMATIS, CROTONS, CYCLAMEN, DAPHNE, DRACENAS, FERNS, FICUS, GLOXINIA, BEGONIAS, SPIRÆAS, PALMS, PENTSTEMONS, PHLOXES, PYRETHERUMS.

The above are mostly in 4½-inch pots, strong, and well-established. The Pelargoniums and Zonals are chiefly early sorts, prepared for forcing. The Cinerarias are also very strong, and will be in bloom in November.

VINES in pots, for planting and fruiting, &c.

30,000 PELARGONIUMS, in 2½ and 3-inch pots, for putting on for spring flowering, in all the best decorative varieties.

Prices on application, and inspection invited.

WEST DULWICH NURSERIES, LONDON, S.E.

Cheap



Orchids.

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application. Victoria and Paradise Nurseries, Upper Holloway, London, N.

THE BEST OF THE NEW GERANIUMS of 1879, in cuttings, very cheap. Denny's, Catlin's, Postans', and Pearson's Singles, and Lemoine's Doubles, thirty of the very best for 10s.; the same in plants for £1; fifty older varieties, but all new recently, for 10s.; same in cuttings for 4s.; all post-free. CATALOGUES on application.

RICHARD FANNETT, Nurseryman, Chislehurst, Sussex.

NEW ROSES in Pots.—Tea and Noisette ROSES in Pots.—CLERMATIS in Pots. INFALLIBLE MILDEW COMPOSITION. Special LISTS, with full particulars, now ready, gratis and post-free.

EWING AND CO., EATON, NORWICH.

SPECIAL OFFER OF TURNIP SEEDS. To the Trade.

TURNIPS.	Per bushel.
POMERANIAN WHITE GLOBE ..	17s.
GREEN GLOBE, special Prize stock ..	16s.
RED GLOBE ..	17s.
GREEN BARREL, fine early ..	16s.
HARDY GREEN ROUND ..	15s.
WHITE STONE or STUBBLE ..	15s.
DEVON GREYSTONE ..	18s.
GREEN-TOP YELLOW SCOTCH ..	20s.
PURPLE-TOP YELLOW SCOTCH ..	20s.
FORSYTHIAN HYBRID ..	20s.
YELLOW TANKARD ..	20s.
ORANGE JELLY ..	20s.

SWEDES.

SKIRVING'S IMPROVED ..	18s.
SUTTON'S CHAMPION PURPLE-TOP ..	18s.
EAST LOTHIAN PURPLE-TOP ..	18s.
MARSHALL'S PURPLE-TOP ..	18s.
MANGHOLM PURPLE-TOP ..	18s.
HALL'S WESTBURY PURPLE-TOP, true ..	18s.
GREEN-TOP, large and hardy ..	18s.

The Turnip crop of this year having proved a very good one, I offer as above, which will be all of crop 1880, pure, nett and fine samples, and of reliable stocks. Delivery when required. Early and large Orders are respectfully solicited.

Low Estimates for general GARDEN SEED. Orders for the coming season will be gladly furnished on application.

ALFRED LEGERTON, Seed Merchant, 5, Aldgate, E.

GREENHOUSE and STOVE PLANTS. TUBEROUS BEGONIAS, HERBACEOUS PLANTS, SEEDLING PRIMULAS, CINERARIAS, and CALCEOLARIAS for potting.

COLLECTIONS OF GREENHOUSE or STOVE PLANTS, in good named varieties, for exhibition or house decoration, at 6s., 12s., and 18s. per dozen, according to size and quality of collection; varieties omitted which purchasers possess.

CROTONS, in good leading kinds, 6s. and 9s. per dozen. **TUBEROUS BEGONIAS,** several thousands of named sorts now on sale, all from last year's bulbs, at 4s., 6s., 9s., 12s., and 18s. per dozen.

PRIMULAS and CINERARIAS, from as fine a strain as any in cultivation, 12s. post-free, 15s. 6d., 25s. for 50s. 6d. **CALCEOLARIAS,** 2s. per dozen, 15s. per 100.

All these are now in cold frames, and strong plants, ready for potting into 60's.

HERBACEOUS PLANTS—If these are planted now almost a season is gained in growth, and the plants are much stronger and better prepared for the winter than is the case when planted in autumn.

Our collection comprises almost all worth growing for garden decoration, and selections can be made for any quantities at 3s., 4s., or 6s. per dozen, of twelve varieties, 2s., 3s., or 4s. per dozen.

FUCHSIAS, HELIOTROPES, LANTANAS, SALVIAS, COLEUS, TROPEOLUMS, twelve fine varieties of any of these, all named, and including many novelties, 2s. and 2s. 6d. per dozen, 12s. and 15s. per 100.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

TRIPOLI ONION SEED. GIANT ROCCA—A fine large variety, 6d. per ounce.

LARGE LATE FLAT RED, extra.—Grown from prize bulbs, 1s. per ounce.

LARGE LATE FLAT WHITE, extra.—Grown from prize bulbs, 1s. per ounce.

Also all other kinds of Seeds for Autumn sowing.

CATALOGUES with over 500 illustrations, post-free on application to

BIDDLE and CO., The Penny Packet Seed Company, Loughborough.

NEW DOUBLE TROPEOLUM, nanum fl.-pl.—This is the finest novelty in soft-wooded plants introduced this year, and surpasses any other double variety previously in cultivation. The best idea of its merits will probably be given by a brief description of a plant now in our nursery. Age of plant from cutting, about 5 months; length of shoot, 3½ ft.; size of flower, 2 to 2½ ins. in diameter; number of flowers and buds on the plant, 127; color very dark orange-red. The petals wither on the calyx, but do not fall. Plants to flower this autumn, post-free, 1s. 6d. each 12s. per dozen.

TROPEOLUM, fl.-pl., distinct from above, colour light orange-red, 6d. each.

TROPEOLUM, Dr. Mules, one of the best dark single varieties for climbing, indoors or out, 6d. each.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers:—

PALMS, seedlings, in store pots, per 100:—*Areca alba*, 60s.; *A. madagascariensis*, 60s.; *A. rubra*, 30s.; *Chamærops exelsa* and *humilis*, 8s.; *Corypha australis*, 12s.; *Lantana borbonica*, 10s.; *Pandanus utilis*, 20s.; *Phoenix reclinata*, 10s.; *P. tenuis*, 10s.; *Ptychosperma Alexandræ*, 60s.; *Seafortia elegans*, 20s.

FERNs, in small pots, per 100:—*Adiantum cuneatum*, 35s.; *A. gracillima*, 40s.; *Cibotium regalis*, 70s.; *Dicksonia antarctica*, 30s.; *Lomaria gibba*, 25s.; *L. zamezoides*, 40s.; *Nephrodium racemosum*, 30s.; *Pteris argyrea*, 25s.; *P. serrulata cristata*, 30s.; *Dracaena indivisa*, 15 to 20 inches high, 1s. each.



Primulas and Cinerarias.

H. CANNELL has now large quantities of the above, in splendid condition, for potting and shifting on. Free by post, PRIMULAS, 1s. 6d. per dozen; in thumb pots, 2s. 6d. CINERARIAS, 1s. 6d. per dozen; in small pots, 2s. 6d. All from seed of own saving and fertilising, and therefore superior to those usually grown.

Special prices for large quantities.

THE HOME FOR FLOWERS, SWANLEY, KENT.

Strawberry Plants.—**Strawberry Plants.** **STRONG PLANTS** of the undermentioned varieties, purchaser's selection, 3s. 6d. per 100; our selection, 2s. 6d. per 100; 100 plants in forty varieties, our selection, 6s.; 500 in ten varieties, our selection, 11s.; 1000 in twenty varieties, 21s.:

Aromatic, Ananas Perpetual, Ascut Fine-apple, Avenir, Alice Maude, Auguste Neccise, British Queen, Bicolor Pine, Black Prince, Bonny Lass, Cockscorn, Cornucopia, Crimson Queen, Duke of Edinburgh, Eleanor, Excelsior, Early Prolific, Enchantress, Exquisite, Fairy Queen, Filbert Pine, Frogmore Late Pine, Grove End Scarlet, Garibaldi, Haquin, Hautbois (Myatt's), James Veitch, John Powell, Keens' Seedling, La Grosse Sucrée, Leon de St. Lannier, Lucas, Newton's Seedling, Oscar, Prince of Wales, President, Prince Arthur, Princess of Wales, Pioneer, Royalty, Sir Joseph Paxton, Sir Charles Napier, Scarlet Pine, Souvenir de Kieff, Traveller, The Countess, Victoria, Vicomtesse Hérictart de Thury, Wonderful.

Cash with order.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

LOUIS ROEMPLER, Nursery, Bel Air, St. Max, near Nancy, France.

A magnificent stock of all new and the following Plants, at lowest rates:—One Hundred Thousand PALMS, hundreds of DRACENAS, FICUS, ARAUCARIA, ADISIA, ARALIA, variegated leaves; BEGONIA, double-flowered; Roman White HYACINTHS, LILY of the VALLEY. Very first-class goods only. Importations of ORCHIDS, PALM SEEDS, and RAPHAIA, for binding purposes.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES,

KING'S ACRE, HEREFORD.

(Established 1785.)

MANY ACRES OF

ROSES NOW IN FULL BLOOM.

Intending Purchasers should visit these Nurseries before purchasing Roses for the coming planting season. 500,000 to select from.

Catalogues free.

Cranston's Nursery and Seed Co. (LIMITED).

Rose Blooms for Decoration supplied, and forwarded by the morning and evening trains.



Cuttings all over Europe by Post.

H. CANNELL begs to announce that he has large quantities of the above of nearly all Soft-wooded Plants in the best possible condition for striking, and would be pleased to quote special prices for either large or small quantities.

Dmitry, Moscow Government, Russia.—May 6, 1880.

"DEAR SIR,—The Cuttings arrived to hand per post in splendid condition, beyond all comparison to the lot forwarded per Parcels Express, although better packing than they had it has never been my lot to see.—Yours truly, W. H. HESFORD."

L. H. BEAUCHAMP, Esq., Junior Carlton Club, Pall Mall.

June 18, 1880

"DEAR SIR,—I heard last night from Pallanza, Italy, that the parcel of Geranium Cuttings had arrived, and given great satisfaction."

SAMUEL CHARLESWORTH, Esq., Casa Giacomelli, Barrie e Garibaldi, Treviso, Italy.—July 12, 1880.

"DEAR SIR,—I have received the Cuttings of Fuchsias and Coleus in good health, which have given me great satisfaction."

CATALOGUES Post-free.

THE HOME FOR FLOWERS, SWANLEY, KENT.

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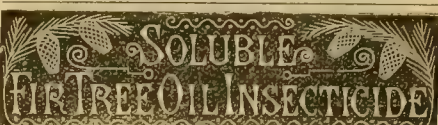
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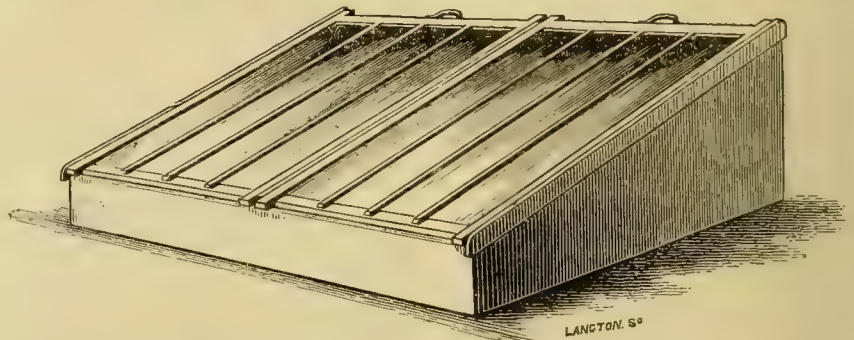
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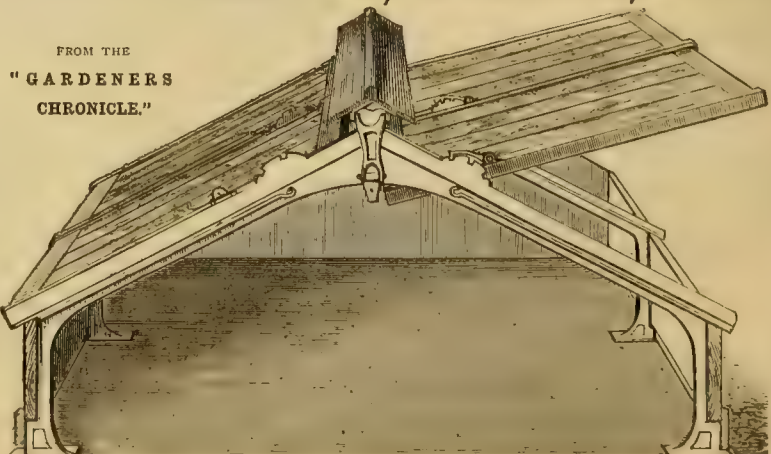
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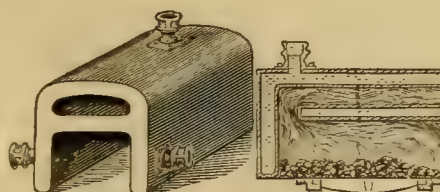
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THE

Gardeners' Chronicle.

SATURDAY, AUGUST 7, 1880.

LAKE GOSSIP.

THE purchaser of such a house as Ryd. Mount must expect the intrusion of the public upon his interesting domain. Publicity is the penalty of greatness, and it is part of the cost of living in the house once occupied by Wordsworth. I leaned over the garden gate without the least compunction, and took a mental photograph, not likely soon to fade, of a very comfortable stone house standing in its own grounds, approached by a steep, leafy road, on the right of the main road between Ambleside and Grasmere, and overlooking the upper part of Windermere, Grasmere and its pleasant pastures, the wooded hills that rise from its banks, smoothed as they are by the ornamental grounds of several good houses, and above all the bare peaks of several of the higher fells. It is a landscape to content any poet's heart for a few months in the year. A domestic poet might reside here longer, and feel himself neither "cribbed, cabined, nor confined," but not such men of passion and of action as Burns or Byron. Here, however, the Lakists lived, exposed to "the slings and arrows of outrageous Byron"—"Pond poets" he called them!—and here the *Excursion*—he called it his "aversion"—was compiled. To that extensive work the reader is referred for all that may be here omitted in reference to scenery, incident, or legend of the lake country.

The column I would fill, like a letter written home when you are travelling, should, I think, contain a little gossip. You may see the countenance of a letter reader look quite glum till the page of moral reflections and the advice comes to an end and the anecdotes begin. Most people prefer making their own moral reflections, and giving and taking their own advice, and they do not care for these things in a letter or an article. How easy it is to young tourists to be happy. Two youths travelling together with less than half the materials for happiness that some people enjoy, were among the happiest people I met. They had seen every inch of the Lake country, they said, and were returning to their usual work—mechanical, I fancy, at Leeds. "You must have spent some time in the district," I remarked. "Forty-eight hours," they replied. "This is how we did it. We went up Helvellyn on a fine day, and saw the whole country, mapped out just as Moses saw the Land of Promise." One of the prettiest walks from Grasmere is that up Easedale Vale, to the tarn above. Sir John Richardson, the Arctic traveller, retired to this vale in his later years. The tarn above is 915 feet above the level of the sea. The steep sides of the naked hills enclosing it are scored with water-courses, running with pleasant noise and echo after heavy storms. Wordsworth wrote of these streamlets:—

"Though the torrents from the fountains
Roar down many a rocky steep,
Yet they find among the mountains
Resting places calm and deep."

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Those lines were written by the poet standing on the margin of the Easedale tarn, on a spot where a small farmer from the vale below has built a hut, and vends comestibles to travellers. The farming of the tarn has proved less profitable in recent years than it had been before. The effects of commercial depression have reached this solitary place, and wet seasons have also proved a drawback. A tarn farmer makes most hay when the sun shines. Among the interesting names in the farmer's book are those of Bishop Selwyn, Dean Stanley, and Stopford Brooke.

One of the small proprietors, or statesmen, of Cumberland, lived in a queer old stone-built farmhouse below this spot—a solitary house without neighbours. One night the old man and his wife were lost in a snowstorm on the hills, and their three grandchildren were "snowed-up" in the house for three days, when they were released. Such an incident was quite a godsend for the poets, who pounced down upon the spot, like honey-bees upon something sweet, and poetised until the whole of the material had been used up clean. I sat down upon a flat stone near here, and was told that a story attached to it. It is subsequent to the poets, and has not been used up. A lady reclined on this stone, having left her carriage. On reaching home late at night, she missed a much prized watch. Dark as it was, her servant returned ten miles to the spot, and listening intently, found the watch by its ticking!

A good list of the rare plants that grow in the district might interest some readers more than stories which may not seem to them particularly romantic. In this respect Wordsworth has rendered but little help. Two flowers we may be sure blossomed in his time; he writes of them:—

"Pluck the Daisies, sister Ann;
Pluck as many as you can;
Fill your lap and fill your bosom,
But spare, O, spare the Strawberry blossom."

Homer sometimes nods, and "Wordy" often twaddles. Burns wrote of the Daisy:—

"Wee, modest, crimson-tippit flower,
Thou'st met me in an evil hour!"

That is poetry and full of feeling.

The author of *Holiday Excursions of a Naturalist* botanised this part of the country a little during a rather straight walk through it, and found at Ambleside *Veronica montana*, *Polypodium Phegopteris* and *Circæa alpina*. At Rydal he found *Saxifraga stellaris* and *aizoides*, and some rare mosses. Other plants that grow there are *Oxyria reniformis*, *Saxifraga nivalis*, *Cerastium alpinum*, *Silene acaulis*, *Alchemilla alpina*, also *Saussurea* and *Rhodiola*. In the same neighbourhood may be found *Poa cæsia*, *Carex atrata*, *Lychnis alpina*, and *Sagina Linnæi*, also *Asplenium septentrionale* and *Woodsia ilvensis*.

Mr. William Askew, jun., a fernist at Grasmere, and the son of the hospitable proprietor of the "Swan" hotel, cultivates a number of native and other Ferns, which may be obtained from him by those who require mementos of this kind.

Pursuing the road to Keswick you cross the watershed between Grasmere and Thirlmere, and have Helvellyn on your right for miles. There are alpine plants if you climb, and as you pass along you may find the creeping alpine Willow, and the rare *Grimmia Doniana* growing on the top of Skiddaw.

Another branch of natural history which may be deemed interesting refers to the natural carpet covering so large a part of Cumberland. The first prize for a pastoral farm was awarded this year by the Royal Agricultural Society to Mr. William Leathes, of Lamplugh Hall, half way between Cockermouth and Egremont, and

seven miles from the Cumbrian coast. The rainfall here reaches 50 inches annually, and the moist air from the sea has stained the carpet green. All the country is in grass, or is going into grass. The profitable cultivation of Wheat ceases conventionally at from 400 feet to 600 feet: Mr. Leathes used to grow a little Wheat at 500 feet, but he has now quite desisted, leaving the production of that grain to America and the lower levels. He grows good Oats. All his arable land and his fattest pastures lie below the Hall, which stands 600 feet above the sea. The mountains rise 1800 feet high, the highest fells in the neighbourhood lying within the boundary of Lamplugh Hall Farm. I climbed them with the shepherd, and watched the wonderful working of his three dogs, without whose aid even the Herdwicks—the mountain sheep of Cumberland—could not be maintained, and the hills would not be worth a sixpence to the farmer. The view from Fellknott includes the sea and the Lake country so far as Buttermere. The fell carpet is peculiar. Most of the hills in North Britain are clothed with heather, now purple with gorgeous blossom: these hills are quite bare. I found ripe Whortleberries, black as ink, near the top of Fellknott, but the shrub is close shaven by the sheep and the wind. The few patches of Whin are dwarf, and round as molehills from ill usage. The upper levels are fenced by stone walls or wire, the lower fields are divided by quickset fences. The Elm and Ash abound, and that tree of the hills throughout England—the Sycamore. The Gooseberry and the Raspberry were just ripening on July 31. The mountain limestone bears good grass for cattle here, as it does almost everywhere; but the fells and a large extent of the country round consist of the less productive shales and coal measures. Tall shafts are uplifted here and there, and chimneys smoke in a manner incongruous with agriculture and a fine pastoral landscape, and many shrewd country people have prospered more by farming below the surface of the earth and raising crops of coal and ironstone. E.

New Garden Plants.

DENDROBIUM CINNABARINUM, n. sp.*

A curious and very desirable introduction from Borneo, made by Messrs. J. Veitch & Sons. It has decidedly the habit of the well-known and widely dispersed *Dendrobium crumenatum*, Sw. The thin terete base of the pseudobulb expands into one thickened, clubbed, and furrowed body, thus forming a pseudobulb consisting of one joint and parts of two others. The superior parts consist of joints, which are thinner than those under the pseudobulbous part, now with branches above on the top up to four on one joint. Vestiges of scales indicate those organs whence it is most probable that oblong-ligulate leaves, as in the just-mentioned *Dendrobium crumenatum*, may have stood on some of those joints above the pseudobulbous part.

The flower is unusually striking, and makes the impression of some nice scarlet and purple moth of the *Zygenoid* group sitting on the straw-coloured twigs, which are shining like Bamboo. The general shape of the flower is that of the flower of *Dendrobium crumenatum*, but the chin is much blunter. I must add, to avoid mistakes and unwelcome private reproaches, that the fresh flowers sent by Messrs. Veitch are one-third smaller than well-developed ones of *Dendrobium crumenatum*; but I presume they

Dendrobium cinnabarinum, n. sp.—Endendrobium caule in ima basi tenui, tereti, dein in pseudobulbum incrassatum multicoatum expanso, superne iterum tenui, tereti, multiauriculato; foliis . . . floribus solitariis (raro geminis seu ternis); ovario pedicellato mentum conico-obtusum aequante; sepalis ligulatis obtusis; tepalibus spatulatis obtuse acutis; labello trifido, laciniis lateribus triangularibus apice uncinatis; lacinia antica oblongo-ligulata crispula, carinis tenuis in medio in confinio laciniarum laterali et lacinie anticae, loc. elevato, columna apice tridentata, dente mediano triangulari brevi; dentibus lateribus longioribus cum denticulo parvulo utrinque. Sepala cinnabarina. Tepala purpurea, basi ochracea. Labellum basi album, lacinia antica ochracea, intus ante apicem area purpurea, inferne antice omnia purpurea. Stigma et s. purpurea, seu purpureo-vioacea inter lacinias laterales. Columna alba. E. Borneo imp. cel. Veitch. H. G. Rehb. f.

came from buds which shrivelled owing to travelling. No doubt native flowers are equal to those of the last-named species; thus they may even be larger than those just mentioned when the plant is in its full vigour. Sepals ligulate, spatulate, blunt, of the most dazzling cinnabar or vermilion. Petals a little broader, light ochre at base, purple at the top. Lip trifid. Side laciniae short, triangular, with an extrorse, antorse, uncinata, white bristle-point. Between both three to five purple middle lines. Anterior lacinia projecting, oblong, wavy, ochre-coloured, with a purple area before the apex, and totally purple beneath at the anterior part. Column white. It is trifid at its top, with a very short middle tooth, side teeth trifid; the middle part being far longer. I am informed by Mr. Peter Veitch that there is usually but one flower on each twig, occasionally two, even three. It is said to be very beautiful, with five or six flowers at once, just reminding one of certain fine *Begonias*, being no doubt in the way of *Begonia Frebeliana*, A. DC. H. G. Rehb. f.

MILTONIA SPECTABILIS MORELIANA (Lindl.), vars. nov. ROSEA and RADIANS.

Many of us remember how a highly distinguished orchidist protested against long compound names of Orchids. They cannot, however, be avoided always. We all use Dr. Lindley's name, *Miltonia spectabilis* Moreliana, though it may be called in gardens *Miltonia Moreliana* alone. Now there came in my reach, in May and July last, two very remarkable varieties of this—rosea from Mr. B. S. Williams, Victoria and Paradise Nurseries, radians from Sir C. Strickland. *Rosea* is of a fine light rosy tint, excepting the lip, which is more purple. Only the tabula infrastigmatica and the three keels at the base of the lip are of a light yellow tint. *Radians* is of a rather warm purple; the petals and lateral sepals have white borders, which give a very elegant appearance. The lip has a strange mosaic of white yellow and purple. This is the striking colour, there being seven broad lines running over the disk and two thin ones from the disk to the apex. These radiating yellow lines run each side outwards from the three basilar keels; the tabula infrastigmatica is dark yellow, and the wings of the column are finest purple. H. G. Rehb. f.

THE ROSES AT CHESHUNT.

Now that the Rose exhibitions are over, it may not be amiss to offer a few comments on the Roses. It is unnecessary to say that the Rose, like any other flower that has been brought to a high state of perfection by the florist, is greatly influenced by the weather, and not in one way only, but in many. For instance, the present season has been a very favourable one for those that have light sandy soils to deal with, and more so in upland districts. In some districts in Essex, the Roses were at their best about June 20, and at that time the Hereford growers were also in good condition. On clay soils and low-lying districts the flowers were very late. I met Mr. Geo. Paul on July 27, and he told me that the Cheshunt Roses were then at their best. Two days after I went there, and saw them in splendid condition. The buds must have started very late this season, and the recent wet sunless weather has prevented them on the Cheshunt soil from making rapid progress until the warmer weather set in early in July. The young wood is very vigorous and hard, and a few weeks of favourable weather is now wanted to thoroughly mature it. Last winter will long be remembered as one of the most disastrous on record to the Rose growers, and however much the amateurs may have suffered, the trade growers have felt its effects still more. The standards which were budded last year, and are now in full bloom, have suffered but little. It is the standard and half-standard Briers planted last autumn, and that ought now to be ready for budding, that have suffered the most; probably two-thirds are quite dead on some quarters, and many more very sickly, so that it will not be until the autumn of 1881 that standard Roses will be scarce. People will have to purchase dwarfs, which after all are the most useful and enjoyable as bushes in the garden.

Budding is now in full operation, many acres have been done, more are still to do, and few persons are aware of the care to be exercised in the selection of buds. Many of the newly introduced Roses throw up numerous autumn growths that will not produce any flowers; on the same Roses there are a greater or less number of flowering growths, and it is only from the latter that the buds are selected, for if buds are taken from the leafy growths the same class of

shoots will be produced next season, so that it requires several seasons to get sufficient stock of some varieties that will really be autumn bloomers, and only such must be sent out. Of some popular Roses immense quantities are grown. The freest bloomer of all is La France; it is second to none as a garden Rose; grown in quite as large quantities are Charles Lefebvre, Sénateur Vaisse, Baroness Rothschild, Dr. Andry, Madame Lacharme, Duke of Edinburgh, &c.

It is only by a visit to a nursery like this that a fair comparison can be made between the new and the old varieties. Out of scores or hundreds of plants perhaps it may not be difficult to cut certain varieties in good form for exhibition, but if they are not free growers they are of little value to an amateur who has no opportunity to bud his own stocks. There is a portion of the nursery set apart for proving new Roses. Three long rows of each sort have been budded on three different stocks—the Brier, Manetti, and De la Griferaie, and as soon as it is seen on which stock the variety succeeds best that stock is preferred. The Roses raised and sent out by Mr. Bennett, of Stapleford, have been budded and are now being proved, but they seem to be too full for an unfavourable season, and are not opening well. Beauty of Stapleford seems to be the best of them. Of the newer varieties, A. K. Williams stands out prominent as a good reddish-crimson; the flowers are well formed and the petals well shaped: it is of free growth. Reynolds Hole was finer than I had seen it this year. Royal Standard is a rose-coloured variety of the globular form, but it does best in a hot season. Marie Finger was opening well, and is the best of the rosy-salmon flowers. Comtesse de Serenye is another of the light rose or peach shades, and is of very free growth. Exposition de Brie strikes me as being one of the best of the scarlet-crimson varieties, though it is not very new. Arles Dufour is rather new, and a good crimson variety. Duke of Connaught is also proving itself to be one of the best garden Roses, and its colour makes it very useful as an exhibition Rose. Mrs. Bellenden Kerr is the most useful of the white Roses, the bushes were well furnished with flowers and buds. Mrs. Laxton was very fine; it is one of the best formed Roses, though not so free as some; it does best on the Manetti.

Amongst Roses that are not so widely known as yet, Duke of Teck is a great acquisition; it is best described as a scarlet Duke of Edinburgh, and will be quite as widely grown as that fine variety. Glory of Cheshunt is the freest of all the new Roses, and will be much sought after to plant in quantities when its free-growing, free-flowering qualities are known. Mr. Paul suggests that it be planted in open spaces in shrubberies, where it could form a bush 6 feet high, and as much through. Charles Darwin is a free-growing Rose of a darkish crimson colour, which makes a nice bush for the border. No Rose is adapted for planting in borders for effect unless it makes a spreading bush. Many of the new Roses are not vigorous enough for this; others throw up strong shoots like stout Osiers, which hide the few flowers formed on weaker growths. Habit and constitution are two chief points to be considered in garden Roses.

Prince Arthur may be noticed as a fine crimson Rose, but not free enough for the border. Avocat Duviervier is one of the best deep crimson Roses for a cool season like this. Comtesse de Choiseul is a very full deep Rose of a reddish or scarlet-crimson, flowers very free from the second growth. Countess of Rosebery is a very good rosy-red variety of free growth, the flowers beautifully cupped; it is occasionally rather thin. Duchess of Bedford is a very fine free-growing rose-crimson, with a scarlet shade and imbricated petals. John Bright is one of the richest coloured Roses in the collection; crimson-scarlet in colour and free in growth. Egeria is a Rose to be highly recommended; it is one of the light silvery-peach varieties, and displaces Princess Mary, for years the best of this colour. Madame Amelie Baltet is a large globular silvery-rose variety, very free and good, but the flowers are rather thin. Préfet Limberg is one of the freest growing Roses, dark crimson, but it lacks depth of petal, though it is a fine garden Rose.

Madame Alphonse Lavallée at first sight is like Marie Baumann, but comparing it with that and Alfred Colomb it is between the two. Madame Gabriel Luizet is a large, beautiful, well formed pink flower. Souvenir de Victor Verdier stands in the front rank as an exhibition Rose, it is also of free

growth; the colour is crimson, petals broad and well formed. Jules Chrétien is not of free growth, but is a nice crimson-scarlet Rose. William Keile is much like Alfred Colomb. Madame Eugène Verdier is a good Rose, petals broad and well formed; it is one of the silvery-rose coloured varieties, of free growth, but the habit is not good. Paul Jamain much resembles Charles Lefebvre, and is a free strong growing Rose. All the above-named Roses ought to be added to the most select collections.

It will be found, I think, that the French Roses sent over in 1878-9, which can only be fairly proved in the present summer, contain some first-rate varieties. Amongst the chaff there are numerous grains of good wheat. The Rose has been brought to as high a state of perfection as any flower we have, and it is difficult to make long strides in the path of progress; but it is being done surely, if slowly, both in England and France. The foreign growers have climate in their favour, and if they do not beat their English confrères it is their own fault. It would certainly be to the benefit of all concerned if a more careful selection were made, and two-thirds of the new French Roses were discarded. *F. Douglas, Loxford, Ilford.*

SHANDON ON THE GAERLOCH.

THE seat of the late Robert Napier, Esq., the enterprising naval architect, now known as the Shandon Hydropathic Establishment, stands on the north shore of the Gaerloch, and is 25 miles west of Glasgow, and 6 miles from the beautiful watering-place of Helensburgh on the high road between Glasgow and Inverary. It has long been noted as one of the most beautiful and interesting places in the west of Scotland, both as regards situation and delightful surroundings, and as a lovely resort either in summer or winter.

From the house, and looking south, the eye takes in the richly-wooded grounds and ducal castle of Roseneath, one of the seats of the Duke of Argyll, where some of the largest Larch trees in Scotland are to be seen, as well as many other fine trees of various sorts. A little to the west stands the pretty village of Clynder, where many of the Glasgow merchant princes reside; the scenery here is rich and beautiful, and yet combines the attractions of both lowland and highland landscape. Still looking westward, and on towards Arrochar, is seen a very picturesque and mountainous region. From the windows of Shandon some of the bold peaks of the mountains are seen: Ben Vorlich, 3330 feet above the sea, forms a grand object in the distance: a small lake at the base of this mountain was the gathering-place of the clan, that took its Gaelic slogan, or war-cry, "Loch sloy, Loch sloy, Loch eluai!" which signifies "The Lake of the Host of the army;" Ben Arthur, 2400 feet—more commonly known as the "Cobbler," the naked summit of which has been thought to bear some resemblance to a shoemaker sitting at work on his stool—hence the name of Cobbler. The adjoining hills in the district are rugged in their outline, with bold projecting rocks and deep glens.

Returning to Shandon from the south the grounds are entered by a very neat lodge and handsome gate. The approach, which is of good breadth on entering, turns sharply to the left and runs in a straight line till the mansion is reached; on either side for 300 yards are two rows of shrubs—that to the right is *Laurustinus* over 7 feet high and bushy in proportion, to the left are Bay Laurels of the same size. To the south of the mansion is the flower garden proper, which is over 2 acres in extent. At the extreme south and facing the sea there is a very handsome balustrade wall, with large vases of a pretty design placed at regular intervals, and at either end of the wall are two hedges running east and west till they are lost, as it were, in the plantations, the outermost one of Thorn and the inner of Portugal Laurel, both very neatly kept. And again running along the centre is another row of large vases and figures of life size. In the flower-garden department carpet bedding is largely practised; the other figures are filled with ordinary bedding plants, Violas being largely used, as they do well in this district. Four of the principal beds are very conspicuous; round the edge and near the grass there is an edging of *Arabis lucida* variegata, and 9 inches in there is a second row of *Arabis*, with the spaces between filled with Sedums, and the centre scarlet with Violas mixed, and a row of Mangles' Pelar-

gonium for an edging; the whole combined makes a very effective bed. From the above approach the ground rises gently to the north, and to the east of the mansion there is a broad shrubby park with a winding walk outside. In this I found many fine shrubs of the rarer kinds, such as *Cupressus Fraseri*, *Cupressus Lawsoniana aurea*, *Retinospora plumosa aurea*, *Berberis Darwinii*, 6 feet in height, and many of the finer sorts of *Rhododendrons*, &c. To the north of the house there is a broad border sloping to the south, some 200 feet long and 30 broad, filled with *Kalmias* of sorts, *Azaleas*, &c.—very fine plants. East and west above this level there is a broad walk 8 feet wide, that to the west runs to the kitchen garden, and the one to the east to a large bowling green, oval-shaped, with a walk round each side that leads into the pinetum, in passing through which at intervals advantage has been taken to dam back a small river that runs through this part and form ponds—one of 200 feet long; and just above where the water falls over in a pretty cascade, very handsome rustic bridges have been constructed, spanning the deep gullies.

At this part fine views have been opened up, so that from the principal windows of the house glorious peeps into the interior of the pinetum can be had. On either side of these views *Cupressus Lawsoniana*, *Thuja gigantea*, *Thuyopsis borealis*, averaging 10 feet in height, are planted, and the effect is very beautiful. Here there are some lovely plants in a small state, such as *Retinospora obtusa stricta*, *Juniperus chinensis aurea*, *Taxus baccata elegantissima*, *Salisburia adiantifolia*. To the east of the pinetum there is a row of very fine Limes which form a background, and give excellent shelter. To the west of the row of Limes there is a drive 10 feet broad that strikes off 200 yards from the house: it is about 1½ mile in length, and runs in a fine curve round the kept ground. On either side of this drive there are many fine trees and shrubs in the very best of health. In passing along to the left, there are two very pretty ponds where *Nymphæa alba* and *lutea* seem to be at home; at the top of these ponds, on a rather high elevation, there has been formed a pretty summer-house thatched with heath. The views from this point are both varied and extensive, and the Renfrew hills are seen 10 miles off away above Greenock and on towards Glasgow, while in front along with the loch is seen the whole range of hills which divide Loch Long from the Gaerloch, and many of the high hills in Argyshire.

In the pinetum will be seen amongst others the following notable examples:—*Abies Albertiana*, several glorious specimens, from 20 to 40 feet in height; *A. canadensis*, very beautiful, 30 feet; *A. Douglasii*, several grand plants, 40 to 60 feet; *A. D. Stairii*, very fine, 5 feet; *A. obovata*, a glorious plant, 20 feet; *A. orientalis*, very fine plant, 12 feet; *A. Smithiana*, very fine, 20 feet; *Araucaria imbricata*, some grand specimens, 20 to 45 feet; *Cedrus atlantica*, a very handsome tree, 45 feet; *C. Deodara*, a very beautiful plant, in grand health, 40 feet, planted by Mrs. Napier; *C. Libani*, a very vigorous young plant, 35 feet, in the best health, planted by the late Mr. Napier; *Cephalotaxus Fortunei*, a perfectly lovely plant, 6 feet in height; *Cryptomeria elegans*, a most exquisite plant, perfect in form, 40 feet in height; *Cupressus elegantissima*, *C. horizontalis*, fine; *C. Lambertiana*, very handsome, 40 feet; *C. Lawsoniana*, first-rate tree, 20 feet; *C. L. elegans variegata*, very fine; *C. macrocarpa*, a grand example, 50 feet; *C. nutkaensis*, a remarkably fine specimen, 20 feet; *Fitzroya patagonica*, a perfect gem, 15 feet; *Libocedrus chilensis*, a remarkable specimen, 25 feet; *L. decurrens*, very beautiful tree, 20 feet; *Picea lasiocarpa*, several very fine trees, 20 to 40 feet; *P. magnifica*, a perfect gem, 18 feet; *P. nobilis*, a very fine specimen, 50 feet; *P. Nordmanniana*, very handsome tree, 50 feet; *Picea pectinata*, grand specimen, 100 feet in height, and others very fine 60 to 80 feet; *P. Pindrow*, very fine specimen, 25 feet; *P. Pinsapo*, *P. Webbiana*, splendid plant, 20 feet; *Pinus Benthamiana*, a very handsome tree, 15 feet; *P. insignis*, magnificent specimen, 40 feet, very bushy; *P. monticola*, splendid specimen, 40 feet in height; *P. ponderosa*, *Sciadopitys verticillata* (the Umbrella Pine), a remarkably fine plant, about 8 feet; *Thuyopsis borealis*, very grand, 20 feet; *Wellingtonia gigantea*, a glorious specimen, 50 feet in height, planted by Dr. Livingstone. Many magnificent examples of the following trees and shrubs may be noticed, particularly

Golden Queen, Waterer's, and Hedgehog Hollies, with various other varieties; very fine Sweet Bays, 16 to 18 feet high, uninjured by the frost; hardy Heaths, forming immense bushes 4 feet high; Cotoneasters and Gaultherias, forming a large round masses 20 feet in circumference, very fine; Arbutus Andrachne and Uredo, 6 to 8 feet high; splendid Laurels and Laurustinus, 18 feet high and as many in diameter. Himalayan Rhododendrons are very conspicuous; the foliage is very grand, and they are in vigorous health. Amongst them will be seen fine specimens of Bealii, Thompsoni, arboreum, campanulatum, barbatum, and many others. Notwithstanding the severity of the past winter, very few, if any, are injured by the frost, and these only in the slightest degree. Shandon standing on the west coast, and only a short distance from the sea, the influence of the Gulf Stream is sensibly felt; hence the extraordinary mildness of the climate in winter.

The conservatory here is a very handsome erection, 170 feet in length by 20 feet in width. In it I found some very fine plants of large size, such as Lapageria rosea, very fine; Lasiandra macrantha, 12 feet high, and covering a very large space on the roof, and flowers in great profusion from June till March; Dicksonia antarctica, fine specimens; and a vast number of Begonias, Fuchsias, Geraniums, &c. This fine conservatory is connected with the house, and being open at all times to visitors, and is largely taken advantage of. The kitchen garden is of large extent, 8 acres in all, that within the wall is in three divisions of some 3 acres. The vineries are five in number, 24 feet by 18 feet each—very fine crops in all, principally Hamburgs. The stoves are in two divisions, 30 by 12 feet each, principally filled with Ferns and Begonias of sorts suitable for table decoration. The Begonias are all seedlings, raised from seed on the place—many of them would vie with the best named sorts in commerce.

The gardener's house is situated on the north-east corner of the garden, and is in every way, both for size and convenience, a suitable residence for Mr. McLean, who so worthily fills the situation as gardener at this place. He is a thorough enthusiast in his profession, and everything under his charge gives evidence of skill and good taste. The grand collection of Coniferae here is in safe keeping under the charge of one who so highly appreciates their value. *John Downie.*

COLONIAL NEWS.

THE VEGETATION OF SYDNEY.

Nearly a century ago Captain Cook, with Sir Joseph Banks and Dr. Solander, named the district in which Sydney now stands as Botany Bay, in commemoration of the number and interest of the plants there growing, and now we have before us a catalogue of over 1300 species, prepared by the Rev. Dr. Woolls, who has based his enumeration to a large extent on the publications of Baron Ferdinand von Mueller. One hundred and twenty-seven plants are noted as naturalised, including some marked by Robert Brown as littoral in his time, but which are now firmly established far inland.

THE CAPE TOWN BOTANIC GARDEN.

Mr. Arderne, in the *Cape Times*, rebuts some statements said to have been made by Sir Joseph Hooker and Mr. Dyer as to the inadequate return made from the Cape Town garden for the plants, &c., sent out from Kew. The most important matter is the reference to the Welwitschia, a specimen of which, if we remember rightly, was sent to Cape Town some time before the plant was generally made known in Europe by the labours of Dr. Welwitsch, and in due season by the elaborate monograph of Dr. (now Sir Joseph) Hooker. Mr. Arderne, in referring to this, says:—"I believe that by the valuable specimen from the West Coast sent to Cape Town by some missionary, a reference is intended to a Welwitschia brought down many years ago by Mr. Wollaston, from Damaraland. This specimen was absolutely dead and shrivelled up to worthlessness when it was received." What would we not have given for an absolutely dead and shrivelled up Welwitschia in those days? As to its worthlessness we venture to think Mr. Arderne is hardly a competent judge, since the bulk of the monograph in question was drawn up from the examination of absolutely dead and shrivelled up specimens. Mr. Arderne agrees that a new

botanic garden is a necessity at the Cape, the present ground being only suitable for a public promenade.

HONG KONG BOTANIC GARDEN.

The collection of Cacti which has been made and is now very fairly represented, continues to thrive well. All the plants of the orders Amaryllidaceae and Liliaceae, consisting of Agaves, Yuccas, &c., which were growing amongst the Cacti, have been carefully transplanted and formed into two collections, keeping the two orders distinct.

On the sides of the walk next to the fountain terrace the trees of Grevillea robusta, the Australian "Silky Oak," have made excellent progress and now form a very effective avenue. The trees were planted when they were one year old—in 1876—and they are now about 30 feet high.

Near the fernery in the old garden a collection of Orchids indigenous to Hong Kong has been made.

Many of the more beautiful and interesting plants of this colony have been introduced to the gardens, and I am now continuing this work. The beautiful and rare Rhodoleia Champi has been propagated and introduced to cultivation during the past year. (See *Gard. Chron.* 1875, vol. i., p. 597.) Most of the species of Hong Kong Oaks are now well established in the gardens. The Hollies, of which there are six indigenous species, are being introduced.

The collection of Coniferous trees in the new garden has been partly rearranged this year. For want of more space the number of these plants cannot be increased much farther.

As is the case with the Conifers, so also the Palms have quite filled the ground which was set apart for this family, and, excepting very dwarf kinds, no more can be planted in the new garden; but as Palms are so interesting and beautiful, and such general favourites, it would be desirable to find other places for new introductions.

The fernery in Glenealy ravine, in the new garden, which was made about five years since, has succeeded admirably. During the past year nearly all of the Ferns were labelled, but I much regret that it has been found almost impossible to keep the labels in their places: they are either frequently removed and misplaced, or taken away entirely. The walk through this fernery being such a public thoroughfare between the Robinson and Caine Roads it will, I think, be better to make the fernery in the old garden the one for the labelled Ferns.

The glass-roofed Fern and Orchid-house, which has done good service, is in a very decayed condition; the material (wood) of which it is constructed is quite unfit in a climate like this, where white ants, in combination with moisture, which is requisite for the cultivation of plants, work such ruin. This house is undergoing repairs sufficient to keep it standing for a little time, but if the Government could see fit to sanction the erection of a more ornamental house in a better situation in the garden, it would, I am sure, be much appreciated by the public.

Interchanges of plants and seeds have been actively carried on with various gardens and correspondents in British Colonies, England and other countries.

The number of plants sent out was 3687, and of packets of seeds 295, to forty-eight recipients, included in sixty-eight consignments.

The contributions were 903 plants and 233 packets of seeds from thirty-one different sources; of these the principal were:—

Rhagodia hastata, the "Salt bush" of Australia, which cattle and sheep feed upon during droughts, has been introduced and planted on the hills for trial; it has grown vigorously during the past dry season, and will probably be useful in future for fodder, which is much required by cowkeepers in the dry season.

Euchlæna luxurians, a new fodder-grass, was received from Kew Gardens and grown last year. Under cultivation it grew very rapidly, and reached a height of 15 feet; but plants which were planted on the hillside and left to themselves only attained 5 feet high and were yellow and sickly. For our soil I think it is unsuited.

Another shrub, indigenous to the Canaries and called "Tagasaste" (Cytisus proliferus), is said to be much liked by goats and cattle. Seeds of it have been received from Kew Gardens, and plants raised from them have just been planted on the hills.

In consequence of the change announced by His Excellency the Governor in Council on November 6, 1879, which restored the Botanical Department to

independence and entirely disconnected it from the Survey Department, the business of this department has been much facilitated and increased in usefulness. The working of the tree planting establishment with Chinese assistants only has given me much satisfaction.

British Colonial Governments only introduce new cultures, and then, when they are shown to be profitable, expect private individuals to pursue them. This may not unreasonably be applied now to some extent to the planting of this island. There are a number of Chinese here who are anxious to do something in this way if the Government will give them the necessary encouragement. The rough outline of the scheme would be that the planters should have certain districts allotted to them, that they should plant the ground with trees—certain portions of land to be allowed them for other cultures, as vegetables, fruit trees, Pine-apples, and possibly Tea to a small extent, and that the planters should have the thinnings of the plantations for a certain number of years, say ten or fifteen, at the expiration of which the plantations, with a certain number of trees per acre in them, should be resumed by the Government. In the execution of this scheme proper rules would have to be drawn up and observed by both parties. A plan of this kind, I think, is quite feasible.

To afford more variety to the trees bordering streets and roads I planted in 1875 and 1876 trees of the following kinds, which have succeeded:—

Castanospermum australe (Moreton Bay Chestnut)	Camphora officinarum (Camphor tree)
Putranjiva Roxburghii (An Indian tree)	Ailantus glandulosa
Pithecolobium pruinosum	Quercus Harlandi (Oak)
Cedrela australis	Celtis sinensis
Erythrina sp.	Sterculia nobilis
Dryandra cordata	Swietenia Mahogany (Mahogany tree)
Bauhinia purpurea	

*Charles Ford, Superintendent, Botanic Gardens.
(Extract from Annual Report.)*

MADRAS.

The annual meeting of the Agri-Horticultural Society of Madras was held on March 29, 1880. From the report which has reached us we learn that the dry climate is such as to render the cultivation of various fodder grasses impracticable for any remunerative purposes, except perhaps in the case of Reana luxurians. Liberian Coffee may be declared a failure. Cinchonas are applied for and supplied as far as possible; C. Ledgeriana, however, the Society is unable to supply.

The East African rubber-tree (Landophia) has been received direct from Zanzibar, and is doing well. The income and expenditure of the Society for 1879 are nearly balanced, there being but a slight excess of expenditure over receipts. At the annual flower-show held on February 28, the collection of Ferns exhibited by Ambasunker Davey and by Kissnaje Davey were awarded 1st and 2d prizes respectively. The governor and various European officers contributed largely to the success of the show. The judges were Colonel Rogers, Colonel J. S. Stewart, and W. S. Vencatara Manjulu Naidu, Esq. We hope we spell the judge's name aright, but have our doubts, as a few lines lower down we find the name of a judge given as Vencatavuradarajulu Naidu, Esq., and again Vencata Vurdarajooloo Naidoo, Esq. We believe that market gardening at Bangalore, the good results of which were shown at this exhibition, owed its origin largely to the efforts of Colonel (now General) Puckle.

QUEENSLAND ACCLIMATISATION SOCIETY.

We are glad to learn that the Legislature of the colony has restored the grant to this very useful Society, which had been temporarily withdrawn.

STEPHANOTIS FLORIBUNDA.

THERE is a variety of this plant at Elvaston Castle, that bears out its name for abundant flowering to an extent I have never before seen equalled, and so far as can be judged by appearance, it is quite distinct. There are two plants, turned out in a narrow border, that cover about 45 square yards of the roof in a house wherein are grown ordinary stove plants; the flowers were literally touching each other. I saw an account that was kept of the quantity cut last year, and which amounted to 13,000 bunches, or an average of over 300 to each square yard; and this year, counting all that are in flower and coming on, the crop is quite equal, in fact the shoots seem to make few

joints that do not produce a bunch: the leaves are much smaller than usual—a circumstance which points to the variety being distinct. The same free-flowering habit is present in newly struck cuttings, even in growth made through the winter. Mr. Goodacre, each autumn about the middle of September, puts in a quantity of cuttings made from the summer's shoots, consisting of three joints each; these are placed in 3-inch pots filled with ordinary soil, and when rooted are kept on growing in the same pots through the winter. The result is that during the spring he has a quantity of plants such as represented by the accompanying illustration (fig. 36) from a photograph which, at my suggestion, Mr. Goodacre had taken. The plants as they come into bloom are sent up to the family when in London, and undoubtedly are equal to anything in

enquiring how far, and to what extent, man would be justified in altering or overturning this established state of things. The balance of power is a political phrase with which the public are now quite familiar, but its varied details and applications in social and rural economy few, or perhaps none, have yet carefully considered or mastered.

The wasp, for example, is, I apprehend, as sore a pest as the gardener has to contend with, and probably everybody hates or dreads that formidable insect. Now, although not generally known, the badger is the natural enemy of the wasp. It burrows, or rather scrapes and tears out of the ground, all the wasp-nests it can find; and so well is it up to its calling in life that in plantations, however extensive, where tolerably well-stocked with badgers, not a

inundating of the fields and gardens with wood-pigeons, which it is not too much to say do infinitely more mischief to the grain, vegetable, and fruit crops, than all the birds of prey would ever commit. We hear much about the scarcity of the skylark, and great is the sympathy justly expressed on his behalf; and I have not heard any special charge brought against him either for lodgings or board, otherwise the wail on his behalf would not be so plaintive. I may here state what I believe the cause of the present scarcity of the lark, and I do so because no one else appears to have thought of it, or assigned it as the cause. The lark, as is generally known, builds her nest on the ground, and in wet seasons, such as the last and some previous ones, very few of the young were hatched, or at least arrived at maturity. This belief as to the main, if not sole cause of scarcity is confirmed by the known circumstance of deficiency of partridges, grouse, and indeed every species of bird which nests on the ground. As yet it can scarcely be said how far the present season has proved favourable to the lark and other ground breeders, but it may very safely be inferred that there will be a very decided improvement upon last year; and one circumstance is at least manifest—there are an immense crop of sparrows, chaffinches, and most other small birds. The rook, too, has come in for its share of blame for crop destroying, and no one would seek to exculpate them from the charge, nor even say that rooks would exist if the trees were all cut down. On the other hand, rooks do a great amount of good by eating grubs and many other insects that would probably do tenfold more damage than all the evils they commit. And again, who would not (except a few omnivorous bipeds) prefer trees, with all their evil tendencies, to a nude and bleak wilderness?

Woods, too, are, and probably will be more than ever, charged with the crime of harbouring rabbits to the destruction of farm crops. Now this is an evil that can be suppressed at a much less sacrifice than that of cutting and clearing the woods. A few active polecats would do the whole work; or, failing these, the weasel would do it without fee or hire. I know an estate upon which, up to a certain period, scarcely a rabbit was to be seen, but so soon as the weasels were killed, the rabbits increased by the thousand. From all this it is not to be inferred that I advocate the primeval state of things, or wish the wild animals to have the preponderance. Far from that, I wish birds scared off the garden and corn crops, and all, both furred and feathered animals, kept in subordination; but I deprecate annihilation, or rather extirpation, of one race to the supremacy of another in many ways less subservient to man's best interests. C. Y. Michie, Cullen House, Cullen, Aug. 2.

THE WEATHER.

It would be idle to deny that the weather, up to the time of our writing (Wednesday) is such as to cause universally grave apprehensions. With agricultural prospects we may have some concern as well as farmers and farming editors; and just now, with a grand corn harvest lying at our hands, it is indeed deplorable to see the rain raining every day, and too often in terrible downpours that beat down the crops, hinder ripening, check cutting, promote rank weed growth, and is altogether disastrous to agriculture. The cup of prosperity held so enticingly and so hopefully to our lips, seems about to be rudely dashed from our hands. Gardeners as well as farmers have their interests at stake, and see with concern the constant rainfall flooding the soil, abstracting its warmth, and converting it into the consistency of clay. 'Tis true the weeds are not so abundant as last year, but where there are any they are making a growth that is almost magical. Garden crops are in danger of growing out of character, and seeds will suffer from the excessive wet and lack of sunshine. Weather that forces growth of an abnormal character not only interferes with the harvesting of seed but it checks development until a late and defective ripening season. The Pea crop just now largely maturing must again considerably suffer, as will also many other things that have made too much growth already, and need heat and drought to ripen the seed produce. Of course the chief concern is with the Potato crop. With a promise far beyond what has been seen for many years, a wide attack of the disease would be indeed a disaster. Private gardeners may withstand these things, but to those who grow for sale and live by the produce of their labours, another such Potatoes season as that of last year would be a loss indeed. Even now, compared with the condition of the crop at this time last year, things are quite rosy, and the appearance of the disease far from universal. A dry August would ripen and give us the finest Potato crop ever lifted in this country. A.



FIG. 36.—STEPHANOTIS FLORIBUNDA, ELVASTON VARIETY.

the way of successful miniature plant-growing that has ever been accomplished. T. Baines.

Forestry.

BIRDS.—At all times, but at this season of the year in particular, there are serious complaints made against small birds, on account of the damage they do to various kinds of crops—the gardener complains because they destroy his fruit, and the farmer because his grain suffers; and they unitedly combine in denouncing not only the feathered tribe, but in condemning the trees and hedges which they perch on and inhabit. Now, however audacious and impertinent—not to say unreasonable—it is on the part of the winged warblers to reap what they did not sow, and gather what they did not strew, or even of the trees to spread their boughs and branches, and send without leave their underground root-robbers to impoverish and exhaust the soil, choke and obstruct drains and water-runs, &c., yet it may be worth while

ground-nest of wasps will escape. In the woods and plantations on the Marquis of Lothian's estate in Roxburghshire I have seen the ground about August and September, in a dry season productive of wasps, literally ploughed as if pigs had been at work, and every wasp-nest destroyed. Now the badger is a comparatively harmless quadruped, living as it does principally on roots, wasp-combs, and larvæ; and although, as I can testify, they do occasionally appropriate a domestic fowl, yet this is so rare that, in all fairness to the badger, he might have more liberty to pursue his calling—a profession, by-the-by, which few, not even of the celebrated Thomas Edwards proclivities, would care about.

Wood-pigeons, again, are the choice and principal food of the hawk, and he very rarely pursues other birds when they are available; but now that that agile and beautiful bird, in all its varied species, is becoming almost extinct, the result of the incessant warfare waged against him by the gamekeeper, what are the fruits and results of the protracted campaign, and extirpation of the hawk and falcon race, but an

SELECT INDEX OF PLANTS FROM 1841 TO 1878.—(Concluded from p. 43.)

YUCCA— <i>Treeuleana</i>, 823, '70 <i>Whipplei</i>, 828, '70 fruit of, 1516, '71; 41, '72 list of, 828, 923, 1098, 1092, 1122, 1183, 1217, '70 species of, 647, vi., '76 Z ZALACCA— <i>edulis</i>, 1033, '73 (fig.) ZAMIA— <i>amplifolia</i>, 810, x., '78 <i>furfuracea</i>, 594, x., '78 <i>Lindeni</i>, 11, ix., '78 <i>Loddigesii</i>, 594, x., '78 <i>obliqua</i>, 778, vi., '77 <i>princeps</i>, 56, x., '78 <i>Roehli</i>, 779, ii., '74 <i>Sieboldii</i>, 594, x., '78 ZAMOCULCAS— <i>Boivini</i>, 779, ii., '74 <i>Loddigesii</i>, 1704, '73	ZANTHEDUSCHIA— (see <i>Richardia</i>; <i>Calla</i>) ZAUSCHNERIA— <i>californica</i>, 495, '48 ZEAL— <i>japonica albo-vittata</i>, 545, '67 ZEBRINA— <i>pendula</i> (<i>Cyanotis</i>, <i>Tradescantia</i>), 356, '55 ZEPHYRANTHES— <i>sessilis</i>, 73, '71 ZICHYA— <i>villosa</i>, 7, '43 ZINGIBER— <i>Parishii</i>, 1704, '73 ZINNIA— <i>coccinea</i>, 185, '45; 129, ii., '74 <i>Darwinii</i> x., 782, '75 <i>Roehli</i>, 1392, '72 ZIZANIA— (see <i>Canada Rice</i>) <i>aquatica</i>, 963, '65; 129, ii., '74; 18, x., '78	ZOMICARPA— <i>Riedeliana</i>, 1182, '69 ZYGADENUS— <i>Fremontii</i>, 66, ii., '74 ZYGOPETALUM— (see <i>Bollea</i>, <i>Huntleya</i>, <i>Kefersteinia</i>, <i>Pescatorea</i>, <i>Promenaea</i>, <i>Warrea</i>, <i>Warscewiczella</i>) <i>aromaticum</i>, 75, '68 (fig.) <i>Clayi</i>, 231, vi., '77; 684, vii., '77 <i>expansum</i>, <i>Rchb. f.</i>, 168, ix., '78 <i>Gautieri</i>, 762, '68 <i>lactum</i>, 1290, '72 <i>obtusatum</i>, <i>Rchb. f.</i>, 300, x., '78 <i>Rivieri</i>, 779, ii., '74 <i>Sedenii</i> x., 290, ii., '74 ZYGOSTATES— <i>Greeniana</i>, <i>Rchb. f.</i>, 988, '69 We add the following list of references, which were omitted	when that portion of the Index to which it belongs was published:— APPLE— <i>Ashmead's Kernel</i>, 68, '48 (fig.) <i>Baxter's Pearmain</i>, 84, '47 (fig.) <i>Beachamwell</i>, 20, '47 (fig.) <i>Boston Russet</i>, 133, '46 (fig.) <i>Calville Blanche</i>, 729, vii., '77 (fig.) <i>Clara Pippin</i>, 300, '48 (fig.) <i>Claygate Pearmain</i>, 4, '47 (fig.) <i>Cockle Pippin</i>, 148, '46 (fig.) <i>Court of Wick</i>, 836, '46 (fig.) <i>Court-pendu-plat</i>, 100, '46 (fig.) <i>D. T. Fish</i>, 147, '72 (fig.) <i>Dumelow's Seedling</i>, 100, '48 (fig.) <i>Early Harvest</i>, 800, '45 (fig.) <i>Early Nonpareil</i>, 820, '46 (fig.)	APPLE— <i>Foxwhelp</i>, 273, v., '76 (fig.) <i>Golden Pippin</i>, 833, '45 <i>Golden Rennet</i>, 84, '48 (fig.) list of, 230, ii., '74 <i>Loddington</i> (see <i>Stone's</i>) <i>Mannington's Pearmain</i>, 4, 24, '60 <i>Margil</i>, 116, '47 (fig.) <i>Oslin</i>, 784, '45 (fig.) <i>Padley's Pippin</i>, 36, '47 (fig.) <i>Pomme Royale</i>, 157, '47 (fig.) <i>Reinette Platte de Champagne</i>, 24, '60 (fig.) <i>Ribston Pippin</i>, 21, '45; 484, '57 (fig.) select sorts of, figured, 241, 407, i., '74 <i>Stone's</i>, 745, viii., '77 (fig.) <i>Sturmer Pippin</i>, 135, '47 (fig.) <i>The Primordial</i>, 877, '73 <i>Wormsley Pippin</i>, 852, '46 (fig.)
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THE POTATO CROPS OF 1880.

SCOTLAND.

ABERDEEN.—The Potato crop looks well in this district, and the yield is expected to be above the average. — *Balmoral, Aug. 3.*

ARGYLL.—Potatoes look very well; as do all vegetables except Carrots and Onions, which are a failure. *A. Brown, Kilmorye, Lochgilphead, Aug. 2.*

DUMBARTON.—The crop is in excellent condition, growing and flourishing luxuriantly. The Scotch Champion is extensively planted, having been a perfect success last year when other sorts, such as Victorias, Dalmahoyes, &c., were a great failure. *Alex. Scott, Auchendenan, Alexandria, Aug. 3.*

— The Potato crops are very fine about here. *James Mitchell, Camis Estean, Helensburgh, Aug. 2.*

DUMFRIES.—I have never seen Potatoes look better. Early kidneys are a good crop—tubers large in size and excellent in quality. Late ones also show well both in gardens and fields. There is no appearance of disease that I have seen or heard of in this district. *James Smart, Raehills, Lockerbie, Aug. 4.*

EAST LOTHIAN.—The early sorts in gardens are turning out a good crop, and of first-class quality. Later sorts in fields promise equally well. Fields of Paterson's Victoria at a distance resemble a field of Clover (with flower). The shaws of Champions in some fields are fully 3 feet high. Should disease keep away, it will be the best Potato harvest that has been in East Lothian for many years. *George Goodfellow, Newbyth Gardens, Aug. 2.*

FORFAR.—The large fields of Potatoes all over the county at the present time afford quite a treat. The Champions, which have been planted in great breadths, are in full bloom, and they look splendid; and on account of the earliness of the season are bound to be fine in quality. I have not experienced any disease here, but have heard of a slight attack in the neighbourhood among the early varieties. *Geo. Johnston, Glamis, Aug. 3.*

MIDLOTHIAN.—The weather during July has not been too favourable for the Potato, still up to this date the crop looks uncommonly healthy and vigorous. Disease has not yet appeared, but it may set in any day if the present close, moist weather continues. Early sorts are a heavy crop, and of first-rate quality. *M. Dunn, Dalkeith Palace Gardens, Aug. 4.*

PERTH.—Potatoes are particularly fine, and there is no appearance of disease. Champions and Magnum Bonums, of which a great quantity are grown in this locality, are unusually fine, and from all appearance will be a splendid crop. — *Donald Matheson, Meiklow, Perth, Aug. 3.*

— A splendid crop, and fine in quality. *P. W. Fairgrieve, Dunkeld Gardens, Aug. 2.*

ROSS-SHIRE.—The Potato crops never looked better than at the present time. If disease keeps off there will be a great return at lifting time. *D. Harvey, Gr., Invergordon Castle, Aug. 2.*

WEST LOTHIAN.—Up to the present time the crops are very good, both in quantity and quality. *John Moyes, Dalmeny Park Gardens, Aug. 2.*

ENGLAND.—NORTHERN COUNTIES.

NORTHUMBERLAND.—The remark made by all to whom I have spoken about the Potato crop, "that it never looked better," is, I believe, a true statement of the present appearance in this locality. Some late sorts may probably be getting more to top than one would like, more particularly when they have not been planted more than the usual distance apart. What we have been using of the Old Ashleaf Kidney and Myatt's Prolific Kidney are great crops and of average quality. It is somewhat wonderful that they are so, as the seed last season was not near maturity when taken up, and I have not had a change of seed for many years—of Lapstone Kidney for more than thirty years. This season they are really looking all I wish. As yet disease is not visible. *Robert Bowie, Chillingham Castle, Aug. 2.*

WESTMORELAND.—The Potato crop in this district never looked more promising, and the tubers of early sorts are remarkably large and fine. The disease made its appearance in the gardens here last week, and unless the weather clears up it may prove very fatal. *William Shand, Lowther, Aug. 3.*

— Early Potatoes are a very good crop, but the disease has started amongst them. Late sorts are looking very promising. *Wm. A. Miller, Underley Gardens, Kirby Lonsdale, Aug. 3.*

DURHAM.—The crops in this district never looked better; but I fear, if the present wet weather continues, disease will soon make its appearance. *J. Lyall, Wynyard Park, Stockton-on-Tees, Aug. 4.*

YORK.—The Potato crop generally is very promising. Among the early sorts in gardens the disease is showing itself. Should the showery weather we are now having continue much longer the loss will be serious. As yet the field crops are sound, but everything depends on the state of the weather during the next few weeks. *M. Saul, The Gardens, Stourton, Aug. 3.*

— Our Potatoes look well and are free from disease at present, but are making a deal of top. *Wm. Stephens, The Gardens, Endcliffe Hall, Sheffield, Aug. 3.*

— Potatoes in this neighbourhood looked well three weeks ago, but are now sadly overgrown in top, which I am afraid will half smother the crop of most late sorts. The crop of early sorts was a good average, and till now free from disease. Walking round to-day, however, I found unmistakable signs of the disease in one or more flats of Myatt's; other sorts at present appear to be free. *William Wallis, Kirby Hall, York, Aug. 2.*

LANCASHIRE.—Potatoes have made an unusual amount of top, and are looking vigorous and well. Early varieties are yielding well, and second earlies will be good if not overtaken by disease within the next few weeks. The old enemy has made its appearance in a good many places in the neighbourhood, and the weather, unfortunately, has been entirely favourable to its spreading. *F. Harrison, Knowsley, Aug. 2.*

— The Potatoes look well in the neighbouring fields, in which the Champion is chiefly

grown. We have dug some splendid samples of Veitch's Kidney, Myatt's, and Snowflake. The disease attacked the latter after the thunderstorm on July 18, and the heavy downpour on the 23d has made matters worse, for I now see traces of the disease in other kinds. *W. P. Roberts, Cuerdon Hall, Preston, Aug. 4.*

MIDLAND COUNTIES.

CHESHIRE.—The Potatoes, both early and late, look remarkably well, early sorts yielding well, but showing signs this last week of disease. *T. Selwood, Eaton Hall, Chester, Aug. 3.*

DERBY.—The Potato crops in this neighbourhood, I am happy to say, look uncommonly well up to the present time. Out of twelve varieties we grow here, early and late sorts, I have not discovered a diseased tuber, and we have been using new Potatoes since the middle of February last. *William Brown, Bretby Park, Burton-on-Trent, Aug. 4.*

NOTTS.—Potatoes are looking remarkably well so far, with a little disease amongst the early kinds. In this district later varieties, both in gardens and fields, are looking very promising for a good crop. *T. H. Sutton, The Gardens, Workshop Manor, Aug. 4.*

SALOP.—Earlies have given good returns, but the disease set in on the 22d ult. severely; we pulled off the haulm on the first appearance of spot, and hope to have saved a good proportion. Late sorts in gardens, where confined by trees, &c., are also sadly blighted. In the field crops I see the late sorts are still free, and should the weather "take up" we shall have good crops. Champion, Red Steeles, and Magnum Bonum are the principal kinds grown about here. We have had excessive rains, the fall for July being 5.49, or 5½ inches nearly. *A. S. Kemp, Haughton Hall, Shifnal, Aug. 2.*

— The crops are turning out all that can be desired in this district. The general remark has been, "I never had such a lot of early Potatoes." But within the last day or two I have heard that the blight has appeared. So far I, myself, have seen no signs of it, and I never saw Potatoes in the fields look more promising. With fine weather, there is every prospect of a very heavy crop. *James Loudon, The Quinta, Chirk, Aug. 2.*

STAFFORD.—Great complaint from the cottagers of the disease in this neighbourhood, though in my own experience in the garden here we have not found any, the tubers being very fine, clean, and looking remarkably well. The haulm on the late Potatoes I never saw so luxuriant, some I have just measured being 6 feet long. *W. Bennett, Rangemore, Burton-on-Trent, Aug. 4.*

— Never more promising up to a fortnight ago, when the disease made its appearance in the early sorts. Late sorts are still looking exceedingly well, and, should we have fine weather now, no doubt there will be a grand crop. *E. Simpson, Wrottesley, Wolverhampton, Aug. 4.*

— The Potato crop is very fine with us this season; we lie very dry, but some of my neighbours have the disease in their gardens where they lie

low. *W. Chapman, Harekney Park, Rugeley, July 30.*

—The Potato crops in this neighbourhood are looking better than they have done for years. I have seen nothing of the disease at present, but the wet we are now having so much of makes one doubt and fear. *Wm. Davidson, Sandon, Stone, Aug. 4.*

LEICESTER.—The Potato crops are very good at present, but show signs of disease in the haulm. *John Hatfield, Gr., Calthorpe Towers, Rugby, July 31.*

WARWICK.—The Potato disease is putting in its appearance in some instances, but the crop generally is looking fairly well, and the tubers are looking fine, in many instances with good crops. So far as I have seen, if the weather takes up in a few days I am in hopes we shall be blessed with a fair average crop. It looks more favourable to-day, and I trust it may continue. *D. Judd, Castle Gardens, Warwick, Aug. 4.*

NORTHAMPTON.—I think I never saw Potato crops, both early and late, look better than they did up to about sixteen days ago, when the disease made its appearance. The early kinds are infected the most. *Magnum Bonum* is free at present. The tubers of such kinds are Myatt's Prolific are very fine, and there are plenty of them. *J. Trigger, Milton, Aug. 3.*

OXFORD.—The Potatoes looked everything that could be desired until Monday, July 19, when the first appearance of the disease was seen on the leaves of Rivers' Royal Ashleaf. Since then it has made rapid progress on the leaves, and some diseased tubers have been found. The Saturday previous to the appearance of the disease we had a thunderstorm, very sultry air, and a great quantity of lightning; in fact, during nearly all the month of July thunder and heavy rain have occurred almost daily. The rainfall was nearly 5½ inches (5.48). *W. Finlay, The Gardens, Wroxton Abbey, Banbury, Aug. 4.*

—Early kinds are a remarkably fine crop, the best we have seen for years, and quite free from the disease. Those grown in the fields follow on in the same good form, and promise to be all that we could wish for. There is some indication of disease, but it is only trifling considering the heavy rainfall we have had. *J. Watson, Nuneham Park Gardens, Abingdon, Aug. 4.*

—Till within the last fortnight the haulm of the Potato looked most luxuriant and strong. But now in many places the disease is fast gaining ground. Our only chance is a speedy change to fine weather. The produce is most abundant and fine. *Thos. Buckersfield, Shirburn Castle Gardens, Tetworth, Aug. 4.*

—The crops, both here and in the neighbourhood, looked remarkably well until a few days since, when some of the early sorts began to show unmistakable signs of the disease. We at once commenced lifting them, and the crop is all that could be desired both in quantity and quality. We have seen no diseased tubers as yet. *John Greenshields, Sarsden House, Chipping Norton, Aug. 2.*

BUCKS.—The Potato crops are magnificent. I have never seen better. The principal sorts grown here are Paterson's Victoria, *Magnum Bonum*, Scotch Champion, Myatt's Ashleaf, Veitch's Ashleaf, Schoolmaster, and Snowflake. I am sorry to say that they are all showing signs of disease. We are now lifting all the early varieties. *A. Donaldson, Latimers, Aug. 3.*

—The Potato crops are splendid, and the disease has not made its appearance as yet. *J. F., Cliveden, Maidenhead, Aug. 4.*

—Potatoes look very well indeed, and yield abundantly. I have not seen any diseased yet. *Thos. Bailey, Shardloes Gardens, Amersham, July 29.*

HERTS.—Early kinds are excellent, especially Veitch's Early Prolific. The disease is now spreading fast. Out of twenty varieties which I grow none are so bad as a sort named Blue Fluke, which was the first to take the disease, and is now almost leafless, whilst the Champion by its side is as fresh as any. With that exception all varieties promise heavy crops. *J. C. Muddell, Moor Park, July 30.*

—Very good up to this time. *Anthony Parsons, Danesbury, Welwyn, July 31.*

EASTERN COUNTIES.

LINCOLN.—The Potato crop is a good one in this neighbourhood. I never recollect them being better than they are at the present time, but am sorry to say the disease has made its appearance during

the last few days; and should no warm, dry weather set in, we shall not be any better off than last season. *G. B. Tillyard, Brocklesby Park, Uleby, Aug. 3.*

NORFOLK.—Early Potatoes are an abundant crop, of good size and quality, but the superabundant haulm is a great prey to the disease, which is raging in all its fury on all varieties, more or less: American Rose and other second earlies are attacked the worst. Late sorts, late set, must be almost a failure from the disease attacking their luxuriant haulm before tuber growth to any extent had taken place. *W. Bishop, Taverham Hall, Aug. 2.*

SUFFOLK.—On the light, naturally well-drained soil of this district, and owing to the dryness of the early months of this year, Potatoes were planted under favourable conditions. They did not, however, come up very regularly, and were less vigorous in the early stage of growth than we have seen them, but with the continuance of bright weather they soon made up deficiencies, and were mostly earthed up whilst the ground was dry. In some places the tops were injured by frost as late in the season as May 18. From this date to the third week in June the favourable weather we experienced promoted free growth of the haulm, and the crop, on all sides, appeared as healthy and promising to the eye as could be desired. The first appearance of *Peronospora infestans* occurred somewhat early in this neighbourhood. On June 24 and 25, nearly nine-tenths of an inch of rain fell, and in less than a week from that time large unmistakable blotches were observed too plentifully on the leaves of different breadths of Early Rose. Since then these dreaded spots have spread far and wide, attacking the tops of Ashleaf and other kinds of Potatoes, but up to the present time very few diseased tubers have been found, and I am happy to say that the progress of the disease is very much slower, up to the present, than in some seasons, so far as the haulm is concerned. Perhaps this is owing to the ground under the tops being still comparatively dry. Such of the earlier crops as have been lifted are very prolific, the tubers being large and of good quality. With dry weather, from the present, we have still reason to hope for a good crop of sound tubers. *J. Wallis, Orwell Park, near Ipswich, Aug. 2.*

—During the past fortnight we have experienced very heavy rains in this district, and the disease has unmistakably shown itself in many places, especially in the growth; yet up to the present I have not found many diseased tubers, but I am afraid it will spread to the late kinds. All the early sorts are yielding splendidly, of fine size and excellent quality. *Jellio Mill, Rendlesham Hall, Woodbridge, Aug. 4.*

—Potatoes of all kinds are looking well, in fact I never saw them better. We are now lifting a splendid crop of Veitch's Improved Ashleaf. I have heard of the appearance of disease in the neighbourhood, but so far we have escaped. I am afraid some of the more delicate varieties will soon show appearance of it, should the frequent wet weather continue. *G. Bethell, Sudbourn Hall, Wickham Market, Aug. 4.*

—The tops of most sorts are affected with the disease, but the tubers are not much hurt yet. The crops are very good, and the tubers of large size. *Robert Squibbs, Ickworth Park, Bury St. Edmunds, Aug. 4.*

ESSEX.—The Potato crops are above the average in this locality, and up to the present date there is no disease. *D. Donald, Knott's Green, Leyton, Aug. 4.*

SOUTHERN COUNTIES.

BERKS.—The Potatoes are looking very well, and there is no disease at present. What we have taken up are of good quality, especially Veitch's Ashleaf, which I have never seen so good before. *Joshua Atkins, Lockinge Gardens, Wantage, Aug. 2.*

—Early Potatoes of the following kinds have turned out abundant and fine:—Veitch's Improved and River's Royal Ashleaf, Mona's Pride, Myatt's Prolific, and Hammersmith Kidneys. Only a very few are diseased. Later kinds are not looking very promising; the haulm is much affected, and the disease is spreading rapidly. *S. Haines, Coleshill House, Highworth, Aug. 2.*

MIDDLESEX.—The Potato crop looks well at present, and I have not observed any disease. Tubers forming fast, the haulm very tall. *Chas. Lee, Hounslow, July 30.*

—The Potato crop prospects are exceedingly good as contrasted with those of late years.

William Knight, Gr., Gordon House, Isleworth, Aug. 2.

SURREY.—The Potato crops are looking grand, and very little disease has been seen yet in this district. I have lifted all the earlier varieties, which turned out splendid; the best were Veitch's Ashleaf, Royal Ashleaf, Myatt's Ashleaf, Beauty of Hebron, Early White Kidney, Early Market Kidney, Rector of Woodstock, and Porter's Excelsior. Where close planting has been adopted there will be the greatest havoc with the disease, as the present season has been congenial to the top-growth, some of the late varieties having haulm from 4 to 6 feet long. It will be well in the future where there is room to plant from 3 to 6 feet apart. *Alfred Evans, Lythe Hill, Haslemere, Aug. 2.*

—The haulm up to the present time has been looking very well, but the disease in the tops of the Early Rose is spreading rapidly. We intend to pull the haulm entirely away, believing this to be the best way of dealing with them. We shall narrowly watch the Regents and Victorias, &c., and pull all away as soon as the spot appears. Crops are heavy. *J. Child, Garbrand Hall, Ewell, Aug. 2.*

—Potatoes are looking most remarkably healthy. I have not seen them looking so well for at least six years. *W. Denning, Coombe Lane, Norbiton, July 31.*

—All kinds at present promise to yield good crops: no signs of the blight. *Charles Green, Pendell Court, Blotchingley, July 31.*

—Early Potatoes are a good crop, and sound. Second earlies and late kinds have been attacked by the disease within the last few days, and it is spreading very fast through the whole crop. *J. Beesley, Denbies, Dorking, Aug. 4.*

KENT.—Owing to the low temperature during the winter the seed tubers made no growth before planting, consequently they come up strong, and at this time never looked better, Early Rose now turning out in great quantities, and of fine quality, although the disease has just shown itself in the haulm of some kinds. *Henry Cannell, Swanley, Aug. 3.*

—The disease showed itself here on July 24, and has spread rapidly since then. The sorts most affected are Early Bird and International. *W. W. Wood, Leybourne Grange, Maidstone, Aug. 3.*

—Potatoes are much over the average, but the blight is spreading in all directions. *Canterbury, Aug. 3.*

—Up to the present time these are in a very flourishing condition, and there is a fair promise of an abundant crop; those already lifted have been very prolific, and the quality good. The disease has shown itself in a few isolated instances, but I do not hear of its being either general or extensive at present. *John Cox, Redleaf, Penshurst, Aug. 2.*

—Potatoes have made excellent growth, and are a good crop. At present they are sound, but the fatal spot is already making its appearance, and with the heavy rains the spreading of the disease is all too probable. *R. Gray, Chevening, Sevenoaks, July 30.*

SUSSEX.—Potatoes are a fine crop, and excellent in flavour, but I regret to say that the disease has made its appearance in some gardens, amongst the mid-season and late sorts. *Joseph Rust, Eridge Castle, Aug. 2.*

—I never saw the Potato crops looking better. All the early kinds turn out remarkably fine, clean, and sound. The disease has just begun to show since the heavy rains of last week. We have had over 3 inches of rain since this day week. My advice to all here is to pull the haulm at once when the fatal spots are observed. Some will persist in cutting off the haulm. *George Breese, The Gardens, Petworth, Aug. 2.*

WILTS.—With us in the gardens the crop has been everything that could be desired—large and regular in size, crop heavy and good, and free from the disease. Those that have done best with us are Lee's Early Hammersmith Kidney, an excellent early Potato, fine in size, a good cropper, and very flowery; Myatt's Prolific and Snowflake. Our field Potatoes promise equally well, the variety most extensively planted there being Scotch Champion, an out-and-out good Potato. We also grow kidneys and American Rose in the field, to back up those grown in the garden. Within the last week or two, as might have been expected, in consequence of the heavy and frequent thunderstorms, the disease has made its appearance in the neighbourhood, principally in cottagers' gardens and allotments, and on the American Rose Potatoes,

upon the first appearance of which many of the cottagers immediately pulled up the haulm, to prevent its communicating the disease to the tubers, and this they assert they have done for several years past with beneficial results. *H. W. Ward, Aug. 3.*

— Very abundant and good. The disease has been in this neighbourhood about three weeks, but it has not spread with its usual rapidity, and it is hoped that, as the early crops are now fairly ripened, we shall not suffer seriously from it. *W. Taylor, Longleat, Warminster, Aug. 3.*

— I never saw the Potato crop looking better; there is every prospect of an abundant yield both in the garden and field. I do not remember them ever being so satisfactory. *W. Phipps, Bowood Gardens, Calne, Aug. 2.*

DORSET.—Potatoes are a fine crop, and have been looking well, but we have had heavy thunderstorms during the last fortnight, and I am sorry to say the disease has made its appearance in many places. *W. P. Leach, Bryanston Gardens, Blandford, Aug. 3.*

— The early Potato crop has not been so good for many years, but I am sorry to say that the late ones are beginning to grow out, and young tubers forming. The disease has made its appearance in the lowlands since the heavy rains. *John Saltford, Ivington Gardens, Puddletown, Aug. 3.*

WESTERN COUNTIES.

HEREFORD.—We are using Myatt's Prolific, which are very good—began July 1. There are a few diseased tubers, but not many yet. The Potato foliage is very luxuriant, and if it pleased God to avert the disease from our land I think the whole nation would have an abundant supply. The next two or three weeks will show us what we have to expect, in the meantime it is an anxious watching day by day. *Wm. Ward, The Gardens, Stoke Edith Park, July 31.*

— The Potato crops in this district are very good indeed, but the past unfavourable weather has caused the disease to appear very much, especially amongst the early kinds. The fore part of the season was very favourable to their development; the haulm I never saw grow so strong. *Magnum Bonum* seems to resist the disease more than any other kind, although Schoolmaster and Covent Garden Perfection are very fair. *Arthur Young, The Gardens, Holme Lacy, Aug. 4.*

WORCESTER.—The disease is making sad havoc all around us, and the yield of sound tubers at lifting will be very small. Thus far the Champion shows no signs of disease, and so far justifying its being termed disease resisting. *Walter Child, Croome Court, Severn Stoke, Aug. 4.*

— Early crops of the Ashleaf Kidney section have been plentiful and good, and those lifted early are keeping well. In small gardens the disease is destroying three parts of the crop. *Scotch Champions* in the fields are looking well, and so far are free from disease. *Arthur Barker, The Gardens, Hindlip Hall, Aug. 2.*

— Throughout this district the Potatoes are showing disease among all the kinds we meet; the Champion, Grampian, Myatt's Kidney, resist the disease best. Crops are abundant, and the tubers generally of great size. On heavy land they seem most subject to disease. *M. Temple, Gr. and Bailiff, Impney Hall, Droitwich, July 31.*

— Excellent crops of Potatoes, but the disease is spreading very much amongst the early sorts. Late sorts as yet are not attacked with it. *Samuel Wathen, Kingscote Park, Wotton-under-Edge, Aug. 3.*

— Very great crops, but the disease is very bad all about this part, and if the weather does not take up soon we must expect to lose a great part of them. *G. Turner, Fretherne Court, Stonehouse, Aug. 4.*

— The Potatoes in this neighbourhood are a very heavy crop, and the tubers larger than they have been for some years; but within the last ten days the disease has been spreading on the haulm, and a few of the tubers are affected, but not to any great extent as yet. *Alex. Scott, The Gardens, Sherborne Park, Northleach, Aug. 4.*

SOMERSET.—Potatoes are plentiful and good in quality in this neighbourhood. The disease has made its appearance amongst the tubers, but not to a serious extent as yet. The crops are much better than they have been for the last few years. *W. A. Beal, Cricket St. Thomas, Chard, Aug. 4.*

DEVON.—Potato crops I have never known to be better both in quantity and quality. I have not found any disease myself. Our varieties are but few, namely, Myatt's, Rivers' and Veitch's Ashleaf Kidneys, Schoolmaster, International, and Sutton's Magnum Bonum. During the past week I have heard of the appearance of the disease in the cottagers' gardens with the American Early Rose and Bresee's Climax; still it is not general. At all our exhibitions in this neighbourhood this season Potatoes have been unusually fine. *David C. Powell, Powderham Castle, Aug. 4.*

— Potatoes are splendid in crop and quality. They have not been so good for some years past. *C. Salway, The Gardens, Memland Hall, Aug. 4.*

CORNWALL.—The crop has not been so good in Cornwall for sixteen years. The western account is the same as ours (the eastern). I was judging the cottagers' Potatoes at Liskeard on Friday, and never had such difficult work to prize them, there being quantity, size, and quality. Champions have made the extraordinary growth of 5 feet, but the disease is raging now. It made its appearance about July 16, so the tubers of the late crop must be affected. *Charles Lee, Bocomnoc, August 2.*

— The crop of all early kinds has been abundant and of excellent quality; the disease is, however, now rapidly spreading. *James Murton, Tredrea, Perranarworthal, Aug. 4.*

WALES.

ANGLESEY.—The early kidney varieties are a first-rate crop, and good in quality. The later kinds are so far healthy, with a too vigorous growth of haulm, in some cases up to a man's shoulder. If the weather settles to be dry and warm the yield will doubtless be abundant. The disease is spreading rapidly amongst the earlier sorts, and if the present showery weather continues will soon show itself in the later kinds. The agricultural prospects in this island are on the whole good. Root crops are unusually promising; hay crops quite an average, and mostly got in well; grain crops look well, though late. Dry weather only is wanting to bring a good and abundant harvest. *J. F., Aug. 4.*

CARDIGAN.—Early sorts have produced good crops, very fine in quality. No disease has appeared yet. Late crops are looking very promising in the fields, but unless fine weather sets in they will be anything but satisfactory. *James Knight, Gr. to Sir M. Lloyd, Bart., Bronydd, Aug. 3.*

CARMARTHEN.—Early varieties are very good. I have had all mine lifted a week. Amongst the late sorts I have found a few slightly diseased. *Lewis Bover, The Gardens, Edwinstow, Llandilo, Aug. 2.*

MONTGOMERY.—The disease made its appearance here on July 21, after a severe thunderstorm. We at once pulled up the tops of the earlier and carted them away. I find that several cottagers in the neighbourhood have got it bad. Field and late Potatoes are looking well so far. *Wm. Lee, Powis Castle Gardens, Welshpool, Aug. 3.*

PEMBROKE.—In this district there is every prospect of the Potato crop being the heaviest that has been seen since the murrain first made its appearance. All the early crops have come out grand. The local markets are glutted with Potatoes of a good size, and clean in appearance. The quantity exhibited at the local flower shows is something astonishing, and the tubers are very clean and shapely. The disease made its appearance about a fortnight ago; but it is not very virulent this season, and so far is confined to the haulm, so that all those who planted in good time in a fairly good situation will lift a good crop of late Potatoes. Those who planted at any time, anyhow, and anywhere, will as usual have a light crop. *Geo. Griffin, Slebeck, Pembroke.*

IRELAND.

CAVAN.—The Potato crop in this and the surrounding districts never had a more promising appearance. There is a slight appearance of disease upon the early sorts, but the late varieties, especially the Scotch Champions, are as yet keeping quite free of the disease. *W. J., Aug. 3.*

DUBLIN.—A few spots of disease are showing upon our Ashleaf in the garden; tubers are large and good. Potato fields in the neighbourhood are showing great vigour, and apparently free from disease. Dry, clear weather for a little while would ensure an unusually large crop. *G. Smith, Vice-Regal Gardens, Aug. 4.*

— Potatoes look remarkably well, with an unusual amount of haulm. We have had a vast deal of rain for the past six weeks, but no appearance of disease up to this date, and should we have a dry autumn we may expect a good crop. Early varieties good, but late in ripening. *J. Eiland, Brennanstown House, Cabinteely, Aug. 4.*

KILDARE.—Until July 24 we had no appearance of the disease, but since that time Myatt's Prolific,

Early Rose, and Flounders have gone rapidly, all having been an excellent crop. The late varieties have so far escaped, and are perhaps the finest crop ever seen in this country. The Scotch Champion, which are largely planted this year, are doing remarkably well, but as yet have nothing under them; therefore, should the disease attack them, disarming would be certain ruin. I am somewhat afraid it is too late in tuberizing for this country, unless the people can be induced to plant much earlier than they do at present. *Philip Wadde, The Gardens, Moore Abbey, Monasterevan, Aug. 2.*

— The Potatoes made good growth, and looked very well till within the last week; the Ashleaf Kidney and other early sorts are getting diseased, and to-day some spots made their appearance on *Magnum Bonum*. Champions and Conquerors are all right, and finely in bloom. *J. A., Palmerstown, Straffan, Aug. 3.*

LOUTH.—Potatoes, especially Scotch Champions, are looking remarkably well; we are free from disease in the fields, but garden Potatoes are slightly touched, more especially early varieties. We have too much rain, and the farmers are beginning to complain. *Frank Fowler, Ravensdale Park, Aug. 4.*

TYRONE.—Tubers very fine and very promising, but within the last five days the fungus has played serious havoc with the tops. *W. H. Rew, Caledon Gardens, Aug. 3.*

WATERFORD.—The first signs of blight showed on Lapstone Kidney July 20. Since then Fortyfold, Paterson's Victoria, and Champions have it slightly. They are all a fine crop; but Champions want some time to grow yet. The field Potatoes never looked so fine and strong, and there is very little blight in the haulm showing yet, and that is generally in sheltered shady places. So that there is every prospect of a fine crop of good Potatoes. *G. Fairbairn, Curraghmore Gardens, Portlaw, Aug. 4.*

WESTMEATH.—The crop is excellent, both in quality of tuber and appearance of haulm. If the blight keeps off a little longer until the tubers mature a little, the produce will be much better than it has been for many years. *John Igo, Moydrum, Athlone, Aug. 3.*

WICKLOW.—The Potato crops here and the neighbourhood are very fine, and up to this date quite free from disease. *William Moore, The Gardens, Kilruddery Castle, Bray, Aug. 2.*

CHANNEL ISLANDS.

GUERNSEY.—The early Potato crop has been very large and of superior quality, no doubt the result of an exceptionally dry season, which has only been broken about a fortnight, since when we had heavy rains; which were immediately followed by signs of disease in the late crops, which were very promising, but we believe its appearance being so late will do little harm. The season may be looked upon as very good. *Chas. Smith & Son, Caledonian Nursery, Aug. 3.*

JERSEY.—The Potato crop was early and good, it is now mostly sent to market, only early kinds being grown in quantity. The disease has appeared in the later kinds. *James Pond, The Vineries, Aug. 2.*

ISLES OF SCILLY.—The crop of early Potatoes this season was above an average one, and very good both in quality and quantity. We began to dig in the open ground the last week in April Myatt's Ashleaf Kidneys (Lincolnshire seed), the round sorts following close upon them, and by the end of May most of the crop was shipped off to the markets. They were free from disease, and realised good average prices. The crop was about a week behind the average time of digging. The round sorts are now giving way to the Myatt's Ashleaf Kidneys, which realise better prices. Late crops are abundant and good, so far free from disease, but in some places a little supering since late rains. *George D. Vallance, Tresco Abbey Gardens, Aug. 2.*

PUBLIC PARK, LEICESTER.

THE illustration (fig. 37) shows the ground plan which took the first prize of 50 guineas, out of twenty-two competing plans. The award was made to Messrs. Barron & Son, of the Elvaston Nurseries, Derby, who also supplied designs for entrance gates and lodges, pavilions, band-stands, bird's-eye views, sectional drawings for groundwork, &c. The park is now in progress under the superintendence of the above firm. An unavoidable delay has, however, been caused, by the corporation having had to lower the level of the River Soar for a considerable distance below, and alongside of, to some distance above the park. This important undertaking will render the site of the park at all times dry, and above the overflow of the river, which formerly in high floods inundated the whole. The whole design comprises about 60 acres, and when completed is expected to be not only a great boon to the inhabitants, but in every way worthy of this rising and important borough.

Florists' Flowers.

DAHLIAS.—In one of her books Miss Braddon writes of "a garden where the Dahlias, which are the banners of autumn's advance guard, were flaming gaily

later, when the rain came, they leaped into a growth healthy and vigorous, that in the case of some of the earlier sorts have brought good blooms, early as it is for Dahlia flowers. On the whole, then, Dahlias have this season generally made a rapid growth, and

need to be pinched out before they grow large enough to rob the plant of its vigour; but some knowledge of the character and habit of each particular variety is necessary in order to do this with judgment. Then all misshapen and superfluous buds require removal



FIG. 37.—PLAN FOR THE PUBLIC PARK AT LEICESTER. (SEE P. 172.)

already." But we have already seen good blooms of Dahlias, and we have not reached so far on into the summer as to be already anticipating the advance of autumn. The dry weather which happened about planting-out time helped the Dahlia as it also did many other things. The roots took hold of the soil, and

are looking clean and well. In the case of plants grown for exhibition blooms no time should be lost in putting in the side-stakes for the purpose of making the side branches quite secure, as it is from these the best blooms will be gathered. The small shoots which grow from each joint of the branches

as soon as they display themselves, as no one would look for good flowers from the former.

While the weather is showery, with drenching rains falling almost daily, and several times in the day, the evening sprinklings overhead are not necessary; but as soon as the weather—as many are

ardently wishing it speedily will—changes to a dry time, the eventide waterings overhead should be resumed. We are treating now of Dahlias grown for exhibition purposes, but he who would have good blooms will find this end answered by extra attentions, even if not required for show purposes. A good mulching of partly decomposed manure will be found of great assistance at the roots, and no one knows the value of this application better than the Dahlia exhibitor.

Shading is a matter of great importance in the production of clean and well-coloured flowers. The buds should be covered with thin muslin or gauze bags so soon as the petals show signs of colouring, so that no insect or other pest can mar the promise of useful flowers. The light ground flowers need to be more closely shaded than the dark ones; and varieties having white grounds, and an almost wire edge, or Picotee edge, to the petals, need to be very closely shaded when approaching maturity. The great points are to have the delicate ground-colour pure, and the markings as distinct and regular as possible. Zinc shades are used by some because of their durability, and inverted flower-pots are often employed to screen blooms of an especially tender and chaste character; perhaps the best shade is that made of calico stretched over galvanised wire frames—certainly for all self-coloured flowers that do not need to be so closely shaded as some others.

In regard to thinning the shoots and disbudding, it is perhaps well to defer this for a time, and it should be done sparingly at first, leaving a considerable number of buds on the varieties that produce the largest flowers. But it is very difficult to lay down strict rules in relation to this part of the florist's work, as so much depends on the vigour or otherwise of the plant, and the lessons of experience are the best teachers.

The black-fly is sometimes a source of annoyance to the grower of the Dahlia, and perhaps the best remedy is that found in the advice of an old florist. To make the plants grow as freely as possible when so attacked, the sprinklings overhead will have some effect, but if a more vigorous remedy is necessary, washings with some insecticide will be of value.

There should be no lack of Dahlia blooms this season. Some of the single varieties, such as *lutea*, *coccinea*, &c., have been flowering with great freedom, but the blossoms do not last a great while. The double varieties will hold their own for cutting purposes, because they are so much more durable; and in point of beauty and elegance the shapely, neat, and gaily-coloured blossoms of the pure-flowered varieties are, in some eyes, superior to single forms in which the staring yellow centre is such a pronounced feature. *R. D.*

Natural History.

STARLINGS.—These daring birds are the Dick Turpins and Duvals of the feathered race—they are the chief among fruit-robbers. When I lived at Brynhyfeyd, in North Wales, I had a good walled garden, well stocked with fruit trees of all kinds. The brick walls were hollow, and the first year I lived there I lost a great quantity of fruit, for the starlings had built in the walls, and it would have been impossible to get at their nests without pulling the walls down. The gardener was savagely cross because I would not sanction his closing every hole up and starving the thieves to death. Every ripe Cherry disappeared; Plums, Peaches, and Pears, were attacked in turn; and it was most provoking to see the robbers take the fruit from the trees close to your head and carry it off to their young, whom you could hear clamouring inside the walls, close to your ears. The nests were always built some distance from the place of entrance, and before the year was out I had every hole carefully closed up; so we had considerably more fruit next season; for the starlings were offended, and built in better quarters. *Helen Watney, Derwen, Liss.*

SALE OF THE PLANTS OF SAN DONATO.—The *Bulletino della R. Società Toscana di Orticoltura* gives some particulars of the prices obtained for some of the finer specimens. The total amount of the sale is stated at 108,000 lire. A *Dasylium longifolium*, described as an *esemplare straordinario*, fetched 1500 lire; a *Caryota urens*, 700; a *Scaevola elegans*, 500; and a *Cattleya speciosa*, 600. (A lira is about 9½d. English money.)

PLANT GOSSIP.

THE OLD DARK CLOVE AS A POT PLANT.—Mr. Bause, of the General Horticultural Company's Melbourne Nursery at Anerley, is just now sending to London large quantities of this fine old Clove, the plants growing in 48-sized pots, with an abundance of vigorous grass, and carrying one and two main flower-stems, having many flowers issuing from them. This makes a unique and most acceptable market plant, and they should find a ready sale. In this fine form we get the true brisk Clove scent, and can understand why our forefathers termed it the Clove, for it has the scent of the Clove spice. Philip Miller many years ago wrote in glowing terms in praise of the Clove Gilliflower, which he termed *Caryophyllus altissimus major*. This he termed the true Clove Gilliflower, "of which there are two or three varieties commonly brought to the markets, which differ greatly in their goodness, some of them having very little scent when compared with the true sort." It is not an uncommon occurrence for enquiries to be made for the old or true sort, which appears to be the one Mr. Bause has operated on so successfully.

—**ROSE DEVONIENSIS.**—It is forty years ago since this beautiful Tea-scented Rose was distributed by Messrs. Lucombe, Pince & Co., of Exeter, and it is still acknowledged to be one of the most elegant and useful of the class. When it was distributed it was said to be a hybrid seedling from the yellow China Rose, but it was not known by what variety it was impregnated. It was found growing in a garden in Devonshire by the late Mr. Robert Pince, and at that time it must have been a rare discovery. It is not given to many Roses in a fast extending section like that of the Tea-scented varieties to maintain its individuality for so long a period, and it is a variety requiring a rich compost to enable it to develop its very large double flowers to full perfection and of large size. It is a sweetly fragrant Rose; the flowers are produced with freedom, and they expand without imperfection. It is a Rose that will not soon be banished from gardens, notwithstanding the length of time it has been in cultivation.

—**CRASSULA RAMULIFLORA FOR BASKETS.**—This is a trailing species from South Africa, in cultivation many years ago, and recently brought to our memory again by a figure in the *Gartenflora*. It appears to have been first cultivated in Europe by Prince Salm-Dyck about sixty years ago, and a coloured figure of it was published by Link and Otto in their *Icones Plantarum Selectarum*, t. 17. In habit this is a very distinct species, and it is probably rare in a wild state, for there is only one specimen of it in the Kew herbarium. Growing in a suspended basket it forms long pendent leafy branches all around. The leaves are small and opposite, and the small white flowers are borne in axillary clusters throughout the whole length of the branches, appearing freely from September to December.

—**MIMULUS PRIMULOIDES.**—This pretty little plant has lately been figured a second time in Regel's *Gartenflora*. It is a diminutive and distinct species, differing from most of its congeners in being almost stemless, with solitary yellow flowers on slender, naked, erect peduncles, 1½–3 inches high. Dr. Regel describes it as one of the prettiest and hardiest of the perennial kinds, forming a dense carpet over entire beds in the Petersburg Botanic Garden, and flowering almost uninterruptedly from the beginning of June till the autumn. It is a native of California and the country northward to Oregon, growing only in elevated situations. In its highest habitats the whole plant is scarcely more than 1 inch high, and the most luxuriant specimen we have seen had a leafy stem only 2 inches in length. California, we may add in passing, is the headquarters of the beautiful genus *Mimulus*, twenty-three out of about forty species inhabiting that country, and among them the most attractive of the genus.

—**HYACINTHUS [GALTONIA] CANDICANS.**—Messrs. Kelway & Son, of Langport, write:—"We have in our nursery upwards of 20,000 flowering plants of *Hyacinthus candicans*, about 1000 of which are now in full bloom; the spikes measure from 2 to 3 feet in length, with from fifteen to twenty-five pure white blooms, 2 inches in diameter, hung very gracefully on separate footstalks about 2 inches in length on each spike. The effect they produce is charming; the blooms

are of great substance and well calculated for bouquet-making. The plants have about five leaves from 12 to 18 inches in length, of a bright green colour. We think it one of the most beautiful bulbous-rooted plants for outdoor culture; it is also well adapted for conservatory decoration."

Garden Operations.

FLOWER GARDEN.

In writing calendarial hints it is impossible to avoid repetition, particularly when those hints are suggested by one's own everyday practice, which now almost exclusively consists in keeping the entire garden walks, lawns, shrubberies, parterres, rock garden, &c., in the most perfect state of neatness, without which quality no garden, however well cultivated otherwise, is worthy the name. Young gardeners in particular should always bear this in mind, and the thought will serve as an incentive to secure neatness, which always brings its own reward by increased pleasure, even though the labour be somewhat greater. By reason of the continued rains, lawns require mowing once a week, walks rolled to keep them firm, and the verges cut to prevent the grasses seeding, and thereby producing a crop of weeds on the gravel. Edgings of Box ought all to be trimmed ere this. The redundant growth produced by Portugal and common Laurels, Rhododendrons, and other free-growing shrubs that are exceeding their allotted space, requires knitting—not shearing—into form, whilst hedges of Yew, Cupressus, Thuopsis, &c., may be clipped. The growth on all kinds of shrubs, consequent on the two wet seasons, is excessive, and requires a lot of labour in the way of rough pruning to keep one from encroaching on other shrubs and trees. Roses are enjoying the moisture, growth is profuse, and, if the bad flowers are kept constantly cut off, a regular succession of flowers may be relied on. Continue to bud as opportunity offers; and cuttings of hard wood will now strike readily in the open air if planted firmly on a dry, sunny bank, when they should be left to winter with the protection of hand-lights.

Free-growing seedling subtropical plants require attention as to ties to their supports almost daily, now that growth is in full force. Giant Hemp, Castor-oils, Eucalyptus, Solanums, and Wigandias, are among the more effective kinds that need this attention; whilst among flowers that require it are Dahlias, Gladiolus, Phloxes, and other tall growers in herbaceous borders. The undergrowth in such beds and borders also needs an occasional trimming over, but should never be so closely cut or pinched back as to look as formal as that which obtains in carpet-bedding. Beds of this latter type cannot be too closely kept true to design, simply for the reason that, being formal, unless this characteristic is developed in its entirety, it is useless having formal arrangements at all; but in formal or geometrical laid-out gardens this system of bedding is superior to any other: hence my advocacy of it, but not as carried out in that bald, monotonous manner that one occasionally sees, with no relief to the flat surfaces, such as that obtainable by the introduction of suitable plants as standards at certain angles and lines, or of sometimes a mass of flowering plants in the centre of a bed that is bordered with a formal pattern of foliage plants. Keep all such beds "trim" by going over them once a week to peg, pinch, or clip—there is little need for this latter operation now that there are numerous slow growing plants that keep dwarf without it. It is for this reason, and because the labour of keep is excessive, that we have all but discarded the recently popular *Mentha Pulegium gibraltaricum*, for, as a substitute, *Herniaria glabra* is quite its equal in regard to effectiveness, and superior in that it takes care of itself, requiring next to no attention to keep it in bounds. Keep decaying flowers picked off flowering bedding-plants; seeding soon tends to exhaustion and a flowerless state of the plant. This is the best time to propagate Pelargoniums. If cuttings can be spared plant them firmly in an open border exposed to the sun. We find it difficult to muster courage to begin taking cuttings the moment the beds are filled up, and so purposely forget to do so, preferring rather to lift all the old plants and propagate from them in winter and spring. Heliotropes, Lobelias, Petunias, Verbenas, Coleus, Iresines, and Alternantheras may now be propagated as opportunity offers, and in such quantity as to ensure an abundance of cuttings in spring. We generally find a half-dozen 6-inch pots of each ample stock for the production of many hundreds of cuttings. They strike best at this season in a pit that is kept shaded and that affords a slight bottom-heat. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

With the bulk of small fruits gathered and wall trees for the most part having their young shoots laid in and regulated, a little cessation of labour may be looked forward to during the next few weeks, but at

the same time a vigilant eye will have to be kept upon the progress of the fruit-bearing wood for next year. We have now arrived at a period when the growth of vigorous fruit trees is rather difficult and capricious to manage; excess of wet or the other extreme of drought is so inimical to them in their present stage that considerable skill and caution is necessary in order to rectify a redundancy of growth upon the one hand or a state of weakness upon the other. Perhaps the most important thing to be able to determine from appearance is the character of growth, that is to say, the strength and firmness of the wood of trees according to the individual variety and to the position which it occupies for thoroughly maturing its fruit-buds. What we have to accomplish now is to prevent as far as practicable any tendency to second growth, and to assist with copious supplies of liquid-manure at their roots, trees that are so far advanced in development as to indicate that the vigour of the roots is employed in finding material for swelling the fruit-buds, instead of inducing excitement in the shape of prolonged growth. As a practical instance I may mention a row of standard Pear trees here which are swarming with fruit-buds and the wood changing fast to a brown tinge. These trees are not over-vigorous, and their principal growth consists mainly of short fruiting spurs. This is a case in which—in a light soil like ours—a thick mulching and liberal supplies of liquid manure will work wonders in giving strength and vital power to the trees by increasing and strengthening the roots. Upon the other hand, trees that continue growing and have their shoots still soft, or that occupy north or damp situations on a cold subsoil, should be encouraged to root on the surface, but do not require stimulating food, which would induce grossness, and render the wood more difficult to ripen. Raspberries from which the crop has been gathered should have the old canes cut away and the requisite number of the young ones tied up to fill their places. These would also be much benefited by a good surface mulching, and if not strong enough a soaking of sewage or some other nutritious application will help to strengthen them before the end of the growing season. Red and white Currants are often, through the want of space, grown in orchards under fruit trees, and in such positions they are improved by a partial thinning, that the sun and air may have fair play among the fruit-buds before the former loses its penetrating power with the advent of the short days. Vicomtesse Héricart de Thury Strawberries are now coming in from forced plants. The crop promises to be in every way satisfactory, and all the fruit-buds will have to be tied up into loose bunches, so as to give them a good position for ripening, and they will require extra protection from the ravages of birds. Vines and Fig trees upon walls will also require constant attention in the way of regulating and stopping, and the former will have to be kept clear of mildew by keeping the roots abundantly supplied with water, or by using it sparingly in case of a retentive subsoil or insufficient drainage. *W. Hinds, Canford.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—As soft fruit becomes scarce, and Peaches and Pears on the open walls are extremely thin, or a complete failure, late houses of Peaches and Nectarines, and orchard-houses, will now be found invaluable for the autumn desserts. In years gone by, very early fruit was in great request; but now the increasing demand for large quantities of choice fruit for garden parties has been the means of bringing late houses of Peaches into a prominent position, and, as a natural consequence, they have increased in value to an extent that places them foremost as a paying crop. A short time ago I gave a list of good standard kinds for culture under glass, and as the time has now arrived for making a selection, no time should be lost in paying a visit to the nursery, or requesting the growers to mark the requisite number as "Sold." At the same time I would strongly advise the planting of duplicates on open walls, where they can be kept within bounds and in a fit state for forcing, by annual lifting and replanting—a course which insures the production of short-jointed, fruitful wood, calculated to give good crops of fruit the first season after removal to the houses. The most important operations in the management of late houses are the application of liberal supplies of water both to the roots and foliage—as few trees when in vigorous growth under glass take more water than Peaches and Nectarines; abundant ventilation through the day; and shutting up with plenty of solar heat when the fruit is swelling for ripening. The observance of these items will ensure the largest size, and if it be necessary to retard, a low night temperature with ventilation will best answer the purpose, and at the same time give heavily-laden trees a period of rest. Good syringing backwards and forwards with clean soft water until the fruit begins to soften is essential to health, and destruction of insects, which soon injure the foliage and bring about premature ripening. To have Peaches really good in flavour, they should be

gathered when dry early in the morning and before they are quite ripe, particularly when they have to be packed for travelling. It is necessary to avoid pressure from the fingers when gathering Peaches, as the slightest force causes a bruise to appear when the fruit is ripe, and spoils its appearance. Very fine fruit sometimes swell round the wood on which they are growing; when this is the case, and the shoot can be spared without loss, a cut should be made above and below the fruit, in preference to the application of force; but when the shoot is a leader and cannot be spared, the Peach should be grasped with a pad of wadding in the left hand, while the stalk is severed with a finely pointed pair of Grape scissors. Place each Peach on a square of soft tissue-paper in a padded basket, and keep in a cool room until wanted for use, or pack at once in soft dry moss for travelling. *W. Coleman, Eastnor.*

MELONS.

The stopping, thinning, and tying of the plants will be the order of the day in this department, all of which, where success is aimed at, must be regularly attended to, as advised in previous Calendars. The recent and somewhat frequent storms have necessitated the fire being lighted occasionally to dispel unnecessary damp, now that the nights are becoming longer and somewhat colder. The fires will be the better for being lighted when the evenings indicate a falling in the temperature during the night. The atmospheric moisture in the houses, pits, and frames, must of course be regulated in accordance with the requirements of that stage of growth at which the occupants of each structure may have arrived, and the condition of the weather—that important element upon which so much depends the success of all crops. Shutting up can be done somewhat earlier in the afternoon now—say at from three to half-past three o'clock—now that the days are getting shorter. Damping must be done very sparingly in pits and frames where no hot-water pipes are at command. The latter will be the better of having the linings made up a little around those frames in which the plants are now swelling off their fruits. *H. W. Ward, Longford Castle.*

CUCUMBERS.

Now, and again at the end of the present month, will be a good time to make a sowing of Rollisson's Telegraph—in my opinion one of the best varieties for winter work, producing as it does nice, handsomely-shaped and moderately-sized fruit. The plant is also constitutionally good and prolific. Sow the seeds singly in large 60-pots in light mould, and plunge in a frame in which there is a little bottom-heat, and shift as they require more room at the roots, until they are planted out, or finally shifted into their fruiting pots or boxes, as the case may be, for which use an admixture of three parts light loam and one part peat, and charcoal sufficient in quantity to keep the whole porous. In a mixture of this description I have always found winter Cucumbers grow satisfactorily, more so, in my judgment, than when animal or other manure has been incorporated with the above ingredients. Moreover, stimulants can always be applied in a liquid state as the plants require it. Put small sticks to the plants when sufficiently grown to require supports, to prevent their being broken through vibration or other causes. Syringe the plants twice a day where hot-water pipes are at command, and shut up early in the afternoon—say at from three to half-past three o'clock. The time, however, of putting on and taking off air must be regulated in accordance with circumstances existing in each particular garden and house, such as the aspect and construction of the individual house, inasmuch as one house may consist of a minimum of glass and a maximum of wood, and *vice versa*. These, however, are circumstances with which all regularly-trained gardeners are fully acquainted, and hence, as I have already hinted, there should be no hard-and-fast line drawn for the giving and taking off of air, but the operator should be guided solely by the weather and other circumstances existing at the time. The usual thinning, stopping, and tying of the shoots, and removing of superfluous fruits will, as a matter of course, be duly attended to. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

STOVES.—The present season affords a very favourable and suitable opportunity for overhauling these structures for the purpose of painting, and putting them in proper order for the winter, as now the plants may be moved to almost any house that happens to be at liberty without risk of their taking the least harm. The first preliminary course to painting is to see that the sashes and framework receive a thorough cleansing and washing, so as to remove all sooty and slimy deposits without and within, which is a matter of the utmost importance, for however good the paint may be, it cannot set and harden properly over dirt of that nature, neither can it do so if the parts are not properly dry before it is put on, as, when there is the least damp under, it is sure to blister and scale off,

instead of adhering and preserving the wood. To effect the requisite preparatory drying, there is no better plan than to throw the house wide open, and so subject it to the full influence of sun and air, the heat of the one and the quick passage of the other being such that the two, acting together, soon draw out and conduct the moisture away. If the lights can be lifted off and removed to sheds, their being placed there will be a great gain, as the work may then be carried on under cover, in addition to which, those engaged on it can, under such circumstances, do it with much more speed and comfort than would be possible if they had to climb about on the roof. Not only is it necessary to pay the above-mentioned periodical attention to all stoves, but the heating apparatus should also be examined to see that the setting and everything connected is safe and sound, as a breakdown when boilers are put into use is a very serious affair, and the strain being greater then, that is the time it is most likely to happen. In cases where it has been found that the requisite temperatures cannot be easily kept up, I would strongly recommend on the score of economy that more pipes be added, as although an addition of this kind involves a small outlay, the money so spent is soon saved in the coal bill, for when there is an insufficiency of pipes fires have to be driven harder to do the work, and a good deal of the calorific is sent up the chimney to waste. This also occurs if the boilers are allowed to remain in a foul condition, and therefore the sides and flues should be well scraped out that the flame and fierce heat may impinge on the iron instead of being lost as it often is by passing over the non-conducting coating of soot.

GREENHOUSES.—The winter occupants of these will in most cases be now out-of-doors, and as we are getting frequent showers, the hard-wooded section of the plants will require close watching, to see that they do not become dry at the roots, for although the surface of the ball may appear wet enough, it often happens that the lower portion is just the reverse. To make sure, therefore, that this part has a thorough soaking, it is advisable when giving water to fill up the space in the pots a second or third time, as when peat gets in the above-named condition it seems almost impervious, and it is a difficult matter to moisten it through. It should be borne in mind, too, that plants exposed in the open are more subject to the influence of sun and air than they are under glass, and, as a natural consequence, dry faster, especially on the sides most exposed; to counteract which it is a good plan to screen that part of the pots by encasing them with pieces of old mat, straw, or any similar open material that may be at hand for the purpose. This will keep the roots comfortable, and prevent any undue desiccation, but the best thing to do with all the soft-wooded subjects to preserve them is to plunge in narrow beds that they may be conveniently got at to stake, and tie, and otherwise attend to their various requirements. Roses for forcing will need frequent syringing to keep them clear of red-spider and other insects, as the great point is to secure strong healthy wood, without which no after-management can induce them to break freely and flower in the satisfactory manner they would. Liquid manure given clear will be of much help in sending up bold prominent buds, and to aid the formation of these all blooms should be picked off as they show themselves, and if mildew appears, as it often does at this season, it may soon be destroyed by dusting with sulphur. To have a fine batch of Mignonette in early, seeds should be sown at once in 6-inch or 7-inch pots, which are the handiest sizes for most purposes, as they come in for the embellishment of window recesses and uses of that kind, and they also afford plenty of room for the plants. To grow these strong and fine the soil must be rich, the best and most suitable being fresh fibry loam, with just a little soot sprinkled over and mixed in, which with some rotten manure will impart a deep green hue to the foliage. A pinch of pigeon's dung scattered over the crocks forms a fine stimulant which the roots come up and feed on when the plants are flowering, and as they feel its force, they are enabled to send up very short spikes and furnish themselves with numerous branches, which come in well in succession for cutting. The sowing of herbaceous Calceolarias, too, ought to be no longer delayed, as when these are deferred after this time they must of necessity be small and weak in the autumn. To get the seed to germinate freely, it should be sown in a pan of finely prepared soil with the surface made smooth and watered previous to sowing, and if then covered with a bell-glass, and stood in a warm moist frame or house out of reach of the sun, it will soon be up and the plants ready for pricking off singly, to be then nursed on where they will get plenty of light, in order to keep them sturdy and strong. A pinch of *Browallia elata* sown now will be found of great value for winter, as also *Celosia pyramidalis* and *Schizanthus retusus* and *Grahamii*, all of which come in most useful at that time to work up with *Chrysanthemums*, and the few other things that we have then to fall back upon. *J. Sheppard, Woolverston Park.*

APPOINTMENTS FOR THE ENSUING WEEK.

		Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
TUESDAY,	Aug 10	Weston-super-Mare and East Somerset Horticultural Society's Show. Commencement of four days' Sale of Plants, at the Preston Nursery and Pleasure Gardens.
WEDNESDAY,	Aug 11	Eastbourne Flower Show. Rainsgate and St. Lawrence Horticultural Society's Show. Royal Jersey Horticultural Society's Summer Show.
FRIDAY,	Aug 13	Wakefield Horticultural Society's Annual Show.
SATURDAY,	Aug 14	Exhibition of Bouquets, &c., at the Alexandra Palace.

IN the present number we give the last instalment of the SELECT INDEX OF PLANTS published or noted in these columns from the commencement in 1841 up to the end of the year 1878. The general principles which guided us in the selection of names for insertion were alluded to when the first portion was published. In practice we have conformed, as fully as practicable, to the plan then laid down. If we have deviated from it it has been in a direction for which we hope to gain the goodwill of our readers rather than the reverse. In fact, we have added references to a large number of interesting facts in vegetable physiology bearing on cultivation, which attracted our attention in going through the volumes, and we have supplied indications of a very large number of figures of plants and fruits published in our own columns and elsewhere. Of course, we have omitted far more than we have inserted, and that being the case we are open to the criticism of having omitted what we ought to have inserted, and *vice versa*. But that is inevitable, and we lay the general result before our readers with the consciousness of having made a good endeavour, if nothing else. It will be seen that we have omitted purposely all references to cultural details, which are numerous and important enough for separate treatment, but which we are in most cases in a position to supply when required, with the additional experience which forty years of cultivation and observation has afforded. Indexes to the articles on the insects injurious to gardens and forests, and to the important series of articles on vegetable pathology and fungi, have been previously given, so that readers of the *Gardeners' Chronicle* will now be in possession of at least four sets of indexes, which we need not scruple to say are of considerable importance in horticultural literature.

The present Index contains between 5000 and 6000 entries, and it comprises in addition to references to figures and incidental mention of plants, upwards of 700 original descriptions (published for the first time in these columns) of plants cultivated in gardens. More than half these refer to species and varieties of Orchids furnished by Professor REICHENBACH. Mr. BAKER comes next in the list with miscellaneous plants; Mr. MOORE follows next in order, principally with descriptions of Ferns. Dr. LINDLEY furnished nearly sixty descriptions of various plants; and several other botanists, including Sir WILLIAM and Sir JOSEPH HOOKER, M. DE CANDOLLE, Mr. N. E. BROWN, Mr. A. MURRAY, Dr. SEEMANN, MM. DECAISNE, NAUDIN, KARL KOCH, MORREN, Mr. BATEMAN, Mr. DYER, Mr. HEMSLEY, and General MUNRO, have contributed original descriptions, to say nothing of the numerous fungi described by Mr. BERKELEY, Mr. W. G. SMITH, and others, which find no place in the present Index. To some of the above-named botanists we are also indebted for numerous complete monographs of various orders and genera of garden interest, which, from their full references to the literature of the subjects, are so constructed as to be of permanent value in the history of garden botany, and references to which are included in the present Index. We are quite

aware that we ourselves, and it may be our contemporaries, will derive the greater share of advantage from the publication of this Index, as the mode in which it has necessarily been issued is not one suited to the wants of general readers, to whom the search through several numbers to find an entry they are in search of may be inconvenient. To mitigate this so far as possible we have presented complete sets of the Index to various public libraries, where they are likely to be of most use, and further, we may add, we have taken measures to reprint the whole in a convenient form should there be a sufficient demand for it.

— PHYTEUMA COMOSUM.—Messrs. BACKHOUSE have sent us specimens of this very curious and beautiful alpine plant, introduced into cultivation as long ago as 1752, but still very little known. It is of dwarf habit, with glaucous leaves, and large flower-heads, the individual flowers being blue, and in structure allied to Lobelias and Campanulas. It is a native of the alps of Tyrol, where it is found growing in the fissures of limestone rocks. Mr. SMITH,

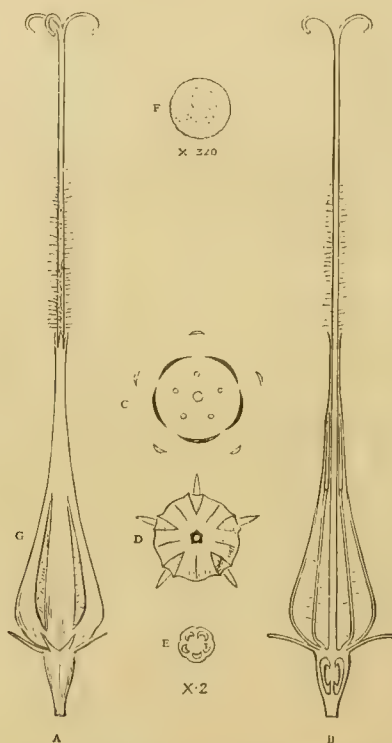


FIG. 38.—PHYTEUMA COMOSUM (DETAILS TWICE NAT. SIZE).

A, Elevation of flower; B, Longitudinal section, showing position of anthers; C, Plan of essential parts of flower; D, View from above, showing small orifice of corolla; E, Transverse section through ovary; F, Pollen, very small, intense purple-brown, enlarged 320 diam.

who dissected the flower, sends us the following note concerning its structure, which shows that in its life history it closely resembles the Campanulas:—"This is a good example of a flower which cannot be self-fertilised. The pollen is mature and free from the anthers long before the stigma is ready. The stigma is pushed through the little orifice of the corolla whilst the former is still in a closed-up state, the hairy style sweeping up all the pollen in its course: when the style is well out of the corolla it opens its tips, as above, to catch stray pollen from other blooms. The longitudinal slits in corolla, seen at C, are protected by hairs from both sides, so that nothing can get either in or out through these slits. The pollen is non-echinulate; in this it differs from Campanula, but agrees with Phyteuma orbiculare."

— VANDA LOWII.—A very fine specimen of this rather scarce Orchid is now in bloom at Ferrières. The plant is a very strong grower, and very handsome, even when not in bloom, with its long, large, and

shiny green leaves. The plant now in bloom has two strong shoots on the main stem, which makes it look even better than usual. It is 4 feet 6 inches from the top of the basket it is potted in, and bears two flower-spikes, each 9½ feet long, with thirty-five flowers on each; one flower-stem has three yellow flowers at the base instead of the pair generally found close to the plant. These yellow flowers are of a fine golden colour, with dark brown blotches. The remainder of the flowers are dark red with creamy lines across; the sepals and petals are longer, but narrower than in the yellow flowers. The flower-spikes and the flower-stems are hairy, as well as the back of the petals and sepals.

— DENDROBIUM GOLDIEI is now beautifully in flower with Mr. B. S. WILLIAMS, of Holloway. One specimen has five spikes, with sixty-one flowers open together. This is one of the finest novelties we have seen for some time in the Orchid way; its bright mauve-coloured flowers added to its free blooming qualities make it a plant that all Orchid growers should possess. The rare Masdevallia Trochilus is also in flower here, as well as the new Paphinia rugosa recently described in our columns by Professor REICHENBACH.

— GREVILLEA ROBUSTA.—This handsome Fern-like-leaved plant is evidently best grown from seed. In the Ascot Nursery there is a batch of about a thousand plants quite 15 inches high, from seed sown just before last Christmas.

— NATIONAL CARNATION AND PICOTEE SOCIETY.—The annual exhibition of the Northern division of this Society will be held on Saturday, August 14, in the Botanical Gardens, Manchester.

— LIVERPOOL NATURALISTS' FIELD CLUB.—The annual report of this Society for the year 1879-80 is before us. The President's address took the form of a series of biographical sketches of the great workers in zoology, from ARISTOTLE downwards. Another address from the same source is devoted to the subject of floral defences or the investigation of those means, structural and otherwise, by which flowers are enabled to repel the visits of unwelcome guests, or at least to neutralise their ill effects.

— PROVING A NEGATIVE.—At the Brussels Congress one of the speakers on the question as to the best method of teaching botany and natural science in schools took occasion to object to certain pictures hung up in schools, such as one representing JOSHUA commanding the sun to stay in his course. A learned Abbé replied that science had not proved that JOSHUA had not arrested the course of the sun!

— ST. STEPHEN'S GREEN, DUBLIN.—We learn from the *Gardeners' Record* that the new works here were designed by Mr. THOMAS, the rockwork by Mr. PULHAM, of Broxbourne, Herts; while the execution of the whole has been effected under the personal superintendence of Mr. W. SHEPHERD, of Rathmines, Dublin.

— BANK HOLIDAY.—The total number of visitors to the Royal Horticultural Society's Gardens, at South Kensington, on Monday, on payment of 2d. each, was 11,370, or about forty more than on the corresponding day last year. At Kew the number of visitors was 32,000, or 21,000 less than last year.

— THE WEST OF SCOTLAND PANSY SOCIETY, which was established last autumn under the Presidency of ex-Bailie GOODWIN, of Kirkintilloch, an enthusiastic amateur Pansy grower, held its first exhibition on July 28, in the City Hall, Glasgow; and notwithstanding that rain fell almost incessantly from morn till dewy eve the display of Pansies and Roses, of which the show was composed, was well patronised by the public. There were between 600 and 700 entries, and as regards the quality of the blooms it is believed that such an exhibition has never been held in Scotland. The best Pansies shown by nurserymen were exhibited by Mr. PAUL, of the Crossflat Nursery, Paisley; while Mr. H. STEWART, of Ayr, took the lead amongst gardeners, and Mr. G. S. RITCHIE amongst amateurs. Chief among the prize-takers for Roses were Messrs. A. DICKSON & SONS, Newtownards, near Belfast, and Mr. HUGH DICKSON, of the Belmont Nursery, Belfast.

— **SYERS' EUREKA FUMIGATORS.**—In the spring Mr. SYERS, of Bowden, Cheshire, sent us one of his Eureka Fumigators, which we have several times used, and find to be a handy and useful appliance that we can well recommend both to amateurs and gardeners, the small sizes for the former, the larger ones for the latter. They are made in four sizes, are very cheap, and possess the merits claimed for all new fumigators, of requiring no attention when once lighted, and of being able to burn any kind of fumigating material.

— **A MONSTER CUCUMBER.**—At the recent exhibition of the Western Horticultural Society at Plymouth, Mr. WEBBER, of Moodbury, is reported to have shown a Cucumber which measured 39 inches in length, and 12½ inches in circumference, and which weighed over 10½ lb. Is not this the largest on record? In length it is 3 inches shorter than a fruit grown by the Rev. B. BLUETT, of Taunton, in 1826; but that was presumed to be a "Snake Cucumber,"

PARKINSON in his *Paradisus* in 1629, it is of very remote origin. It is supposed to have derived its name from being grown on Windsor Hill, and it is worthy of note that it can be commonly met with in the orchards round Windsor. In the *Fruit Manual* it is said "The tree is one of the strongest growers of any variety in cultivation, particularly in its early growth; the shoots are very thick and succulent-like, but short. It is a good bearer, and when grown in a soil favourable to it will produce an abundance of very large, handsome, and excellent fruit. It has the property in many seasons of producing sometimes a profusion of bloom at midsummer, and a second crop of fruit, which, however, is never of any value." Some old accounts of the Windsor Pear represent it as bearing three times a year.

— **DOUBLE FLOWERS IN A WILD STATE.**—It is well known that double flowers are comparatively rare in a wild state, and it is therefore interesting to record that Dr. THURBER announced to the Torrey Club that

blooming almost continuously, each bit of growth producing a spray of pretty white flowers; these are cut when partially open, it being as handsome in the bud state as when more fully expanded. It is planted out, and simply requires ordinary greenhouse treatment.

— **A NEW DACRYDIUM.**—Mr. FITZGERALD, whose most interesting and valuable work on Orchids we have had occasion to note on several occasions, has, says the *Melbourne Leader*, found in one of the least accessible glens of the Blue Mountains a new *Dacrydium*. It is as yet only known in a shrubby state, but may become a tree under favourable circumstances. Its nearest ally is *D. cupressinum*, the Rimu of New Zealand, a tree introduced into our Botanic Garden in 1857, but the new species is easily distinguished from the Rimu by its low size, flaccidity, and the white upper surface of the leaves, originating from exceedingly numerous breathing pores; also by its somewhat different staminate flowers. As yet

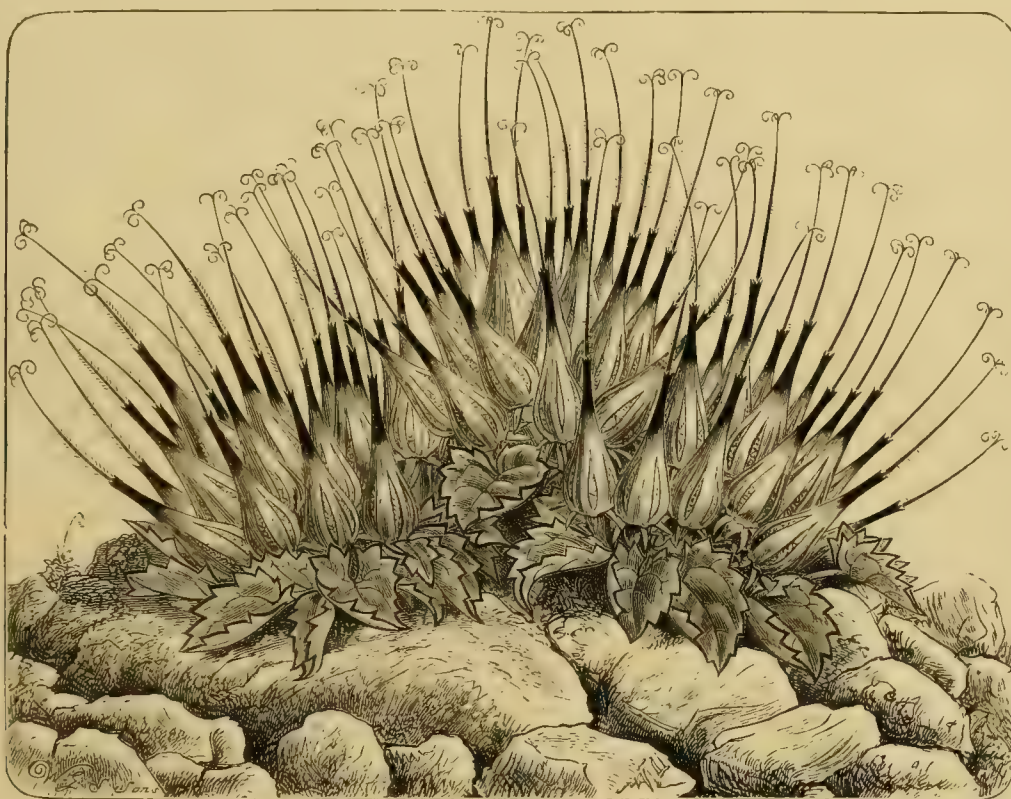


FIG. 39.—PHYTEUMA COMOSUM. (SEE P. 176.)

which is not a Cucumber at all. The nearest approach in length of a true Cucumber that we have any account of was one of Norfolk Hero, grown at Rivenhall, Essex, in 1852, which measured 31 inches. Mr. WEBBER's fruit, in weight, beats all.

— **CYPRIPEDIUM MORGANIANUM** ×. — Messrs. VEITCH & SONS ask us to correct an error that inadvertently appeared in Prof. REICHENBACH's description of *Cypripedium Morganianum* ×, given at p. 134. It is stated there to be named in honour of Mr. MORGAN, but such is not the case; it is dedicated to Mrs. CHARLES MORGAN, of New York.

— **THE WINDSOR PEAR.**—This old variety of the Pear is already putting in appearance on the costermongers' barrows in the London streets, probably sent from Jersey and Guernsey, or other early fruit-growing districts. The fruit is large, plump, and well-coloured, and, it would appear, is plentiful. It is a fine old Pear for orchard culture, and is to be found mostly in the south, south-west, and western districts of England. As the Windsor Pear is mentioned by

he had received from Connecticut specimens of *Nesaea verticillata* in which all the flowers were double; and another member mentioned that he had observed a similar thing in a plant of *Saxifraga virginensis*.

— **MALFORMATION OF A COB OF INDIAN CORN.**—In the *Scientific American* Prof. HARVEY describes a curious malformation of the axis of a cob of Indian Corn. Instead of being elongated and thickly studded over with the corn, it was a hollow body with the corn attached to the inside walls. In Prof. HARVEY's words it is an ear of corn which has grown wrong side out. The cob, he states, has a smooth exposed surface, and a texture somewhat more compact than an ordinary cob.

— **JASMINUM GRANDIFLORUM.**—It is strange that this, the best of all greenhouse Jasmines, is not more generally grown. A house, some 60 feet by 20 feet, at the Ascot Nurseries, has the roof thinly covered with it. The advantages of this over many climbers is that its small foliage does not darken whatever plants are growing under it so much as larger leaved subjects do, and in addition it keeps on

fruits have not been discovered. The habit of the plant is also curious, as the lower branches are often creeping along the ground and rooting at intervals; but this is also the case with some species in New Zealand, where several *Dacrydiums* are indigenous. This genus was not hitherto known to be represented in continental Australia, though seven species are on record from New Zealand, two from India, one from Fiji, one from New Caledonia, and one from Chili. Baron VON MUELLER referred this new Conifer to *Dacrydium*, and named it, in honour of its discoverer, D. Fitzgeraldi. As yet it is known only from one spot, and even there merely a few individual plants were noticed.

— **THE COMING HARVEST: APPEARANCE OF THE CROPS.**—Those pages of the *Agricultural Gazette* of Monday last are the most interesting and important in which some thirty or forty correspondents in as many counties describe the fields around them. It will be seen, we think, remarks the Editor, as the general effect of their testimony, that a prospect of unusual promise has been gradually disappearing before the inclemency of the weather.

Wheat, which in spite of a generally thin plant, has looked hitherto like a full average crop, has had a doubtful flowering time, and has been sadly beaten about. Barley, which looked like the best crop of the year, will yield much of those second-rate samples which are supposed especially likely to benefit by the repeal of the malt tax. Peas, which have been everywhere of extraordinary promise, are so bulky that they have suffered more than any other crop. Potatoes are rotting. Hay is made with as much difficulty and loss as it was last year, and is not nearly so good a crop. The green crops, except perhaps Mangel Wurzel alone, are of exceptional excellence.

— THE AMERICAN CENSUS OF FORESTRY.—Three of the most distinguished botanists of America—Dr. C. C. PARRY, Dr. GEORGE ENGELMANN, and Professor C. S. SARGENT, are now on their way to Vancouver's Island, thence they propose to return and ascend the Columbia River as far as it is necessary to settle vexed tree questions in the extensive forest region along its shores; they will thence journey southward *via* Portland through the centre of Oregon to the great Fir forests of Shasta. We may hope that much "clearing-up" in the nomenclature of certain Conifers will accrue from the visit.

— ROOM, MORE ROOM.—The additional Recreation Ground Committee of the Richmond Select Vestry are memorialising the First Commissioner of Woods and Forests in regard to the proposed extension of Richmond Green. The population of Richmond, like that of other suburban towns, grows enormously, but the Green cannot be extended in the same ratio, charming as it is in itself, and picturesque in its surroundings. It is unfortunately the only place available in Richmond as a recreation ground, but in consequence of the great increase in population, which is now about 20,000, it is dangerous to walk on it in summer-time, and as it is intersected by walks it is something like a risk to life and limb to perambulate one of these on a fine summer's evening when cricket is in vogue. The memorial asks the First Commissioner to consider whether a portion of the Old Deer Park, which is immediately contiguous—say, 12 acres—could not be granted, at a fair rental, for recreative purposes. The Old Deer Park covers a large space of ground, that at the present time is utilised only for grazing purposes, and is little better than waste. It is Crown property, therefore there would be no danger of usurpation of proprietary rights. The Richmond Vestry have unanimously agreed to present the memorial to the Government, and on physical and moral grounds very many will hope it may be successful in its prayer, especially if the remainder be added to the Kew Arboretum and thrown open to the public under necessary restrictions.

— CULTIVATION OF RHINANTHACEÆ.—M. DECAISNE sends us the following note on the culture of these plants, usually considered rebellious to cultivation on account of their parasitic habits:—"I have succeeded in cultivating the majority of the species of Rhinanthaceæ growing wild in the environs of Paris. At the present time we have in full flower *Rhinanthus hirsutus*, *Pedicularis sylvatica*, *Euphrasia officinalis*, *E. lutea*, *Melampyrum racemosum*, and *M. arvense*. The method of culture is very simple. It consists in sowing the seeds immediately they are ripe on some ordinary turf with its admixture of grasses and leguminous plants, or at the foot of some cereal in the case of *Melampyrum arvense*. The seeds of the Rhinanthaceæ usually lose very speedily their germinating power. This is the reason of the general want of success in growing these plants in botanic gardens. Where it is not possible to sow them at once it will be advisable to stratify them during the winter in dry sand. From the results obtained by me it is probable that we may hereafter succeed in the cultivation of the *Bartsias*, the *Odontites*, the *Tozzias*, and the beautiful *Gerardias* of America, which may one day serve to adorn our gardens."

— CIENKOWSKIA KIRKII.—This lovely plant—named in honour of Dr. KIRK, H.B.M. Consul at Zanzibar, who first sent roots to the Royal Gardens in 1871—is now flowering nicely at Kew. It is a charming member of the order Scitamineæ, with elliptic lanceolate leaves 6 or 8 inches long by 2½ to 3½ inches in width, deep green on the upper surface and paler beneath. The slender erect scape, about 3 or 4 inches long, appears with the leaves, and bears a succession of handsome scented flowers

about 3 inches in diameter; in colour these are a lovely pale rose-purple with a bifid golden spot opposite the anther.

— PLANTS IN DWELLING-HOUSES.—Great diversity of opinion still exists as to the effects of plants in rooms on the health of the inmates. Some persons will tolerate growing plants in a sitting-room, but object to them in a bed-room, and would even exclude cut flowers. Happily, this prejudice is rapidly dying out, and the delights afforded by beautiful flowers are now only in rare instances denied those whom ill-health prevents from walking out. Certain plants that exhale very powerful and penetrating odours, however beautiful their flowers, would be excluded under any circumstances; and again, odours that are agreeable to some persons are unbearable to others. But plants or cut flowers that are agreeable to the senses are not injurious to the health of even delicate persons—that is to say, their presence in any reasonable quantity sufficient to gratify the taste would act beneficially rather than injuriously on the health. Dr. ANDERS has lately reprinted a short essay of his on this subject which originally appeared in the *Medical Times* of Philadelphia. The author seeks to show that a limited number of healthy growing plants are, independently of the gratification they afford, actually beneficial in the sick chamber, especially in houses heated by hot-air or hot-water apparatus. He says observation teaches that advanced cases of phthisis (as, for instance, where cavities exist) are benefited by a more decidedly moist atmosphere than is required in health, hence they will require a much greater profusion of plants than those who have the disease in a more incipient stage. The plants should be well selected and kept in a thriving condition. The chief points to be borne in mind in the selection of the plants are, first, that they have soft, thin leaves; secondly, plants having extensive leaf surface are to be preferred; thirdly, those which are highly-scented should be avoided, because they often give rise to headache and other unpleasant symptoms. In order to facilitate a practical application of the data gained by experiment Dr. ANDERS offers the following formula:—Given a room 20 feet long, 12 feet wide, and ceiling 12 feet high, warmed by dry air, a dozen thrifty plants with soft, thin leaves, and a leaf-surface of 6 square feet each, would, if well watered and so situated as to receive the sun for at least several hours, raise the proportion of aqueous vapours to about the health standard. Of course a dry atmosphere, independent of the direct action of the sun, is sufficient to excite transpiration in plants.

— CALLA PALUSTRIS.—In an open-air tank at Kew there is a morphological curiosity in the way of a double-spathed variety of *Calla palustris*. Horticulturally the plant is preferable to the normal form, inasmuch as it seems perfectly constant, all the flowers yet produced having had two spathe, and thus there is twice the surface of ivory-white in contrast with the deep green of the foliage. This novelty was received at Kew from the Hamburg Botanic Gardens last year.

— A NEW GENUS OF PEDALINEÆ.—In the *Sitzungsberichte des Botanischen Vereins der Provinz Brandenburg* of February 27, 1880, is a note respecting a proposed new genus of the Pedalineæ from Noissi-Bé, an island off the north-western coast of Madagascar, where it was discovered by J. M. HILDEBRANDT. It is to be called *Vatkea*, and is said to differ from *Martynia* (to which genus it is stated that it is most closely allied, having exactly the same kind of fruit in external appearance), in having one-seeded instead of many-seeded cells, and in some other particulars. We are curious to see a complete description of this proposed new genus, but our curiosity may possibly long remain unsatisfied, as it is announced that a detailed description of it will appear in the next number of the *Linnaea*, of which we believe no number has appeared this year.

— DIANTHUS HEDDEWIGHI AND D. CHINENSIS FLORE-PLENO.—In the autumn of 1879 Mr. BARRON put out a quantity of these plants on the south border at Chiswick, and notwithstanding the severity of the winter and the losses that happened consequent upon it, especially among biennials, these representatives of the *Dianthus* family came through the ordeal well, and are now blooming with wonderful

freedom, and almost bushels of flowers could be cut, and there would be many more to succeed them. It would not be difficult to have these pretty and useful *Dianthus*es in flower nearly all the year round, by sowing some seed early in spring to bloom in July and August, sowing again in May to flower on plants grown in the open ground and grown on in pots; and by sowing in July and August to raise a batch of plants to stand in the open ground through the winter and bloom in early summer. The *Heddewigii* type is decidedly the showiest, the flowers being larger and showing so much variety in colour, but the *chinensis* type is well worthy of being grown also.

— NEW FRENCH DECORATIVE PELARGONIUMS.—Scarcely a season passes but we have to chronicle some valuable addition to our cultivated plants from the other side of the Channel. At Chiswick there are two or three new decorative *Pelargoniums* that challenge attention. One of these is named Mrs. Potten, which has well formed pure white ground flowers, with a rich shaded maroon spot in the upper petals and slight pink stains on the lower. It is a particularly pleasing and distinct variety, of excellent habit. A variety remarkable for the unsullied purity of the flowers is found in Mr. Charles Koenig. This gives us a pure white *Pelargonium*, really pure, and of the whitest white in flowers, without a taint of colour to detract from the snowy purity that pervades the flowers. The flowers are produced in good sized trusses, and being somewhat erect, they will be found very useful by bouquetists. It is of good habit and very free, and is one of those useful varieties that when distributed will be in large demand. Another of the same character, named Lucy Lemoine, is like the foregoing, and, we think, a little inferior to it. We are indebted to Mons. VICTOR LEMOINE, who has sent us some most useful things, for these desirable additions to our group of Decorative *Pelargoniums*.

— WERDER WAX REINETTE APPLE.—A coloured plate of this Apple, together with a complete description, appears in the *Monatsschrift des Vereins zur Beförderung des Gartenbaues* (Berlin) for June. Its German appellation is *Werdersche Wachs-Reinette*, and Mr. W. LAUCHE, who first described it in 1877, says it is a beautiful and valuable fruit, common in Werder, near Potsdam, where it is esteemed as the best of table Apples. It is in season from January to April, and is equally valuable for cooking and dessert. The tree is of free growth and prolific. The fruit is of medium size, round-oval, with a shining, pale straw-coloured skin, changing to a beautiful lemon-yellow when ripe, and finely dotted all over, and has a yellowish-white, fine-grained, very juicy flesh of a superior aromatic flavour.

— CAROB CULTIVATION IN CRETE.—It is well known that the Olive is very largely cultivated in Crete, and that Olive oil is made in the island on a large scale. The tree next in importance to the Olive in a commercial point of view is the Carob (*Ceratonia Siliqua*), which produces the pod known in commerce as the Locust bean. While the Olive is met with in all parts of the island from the sea level to a height of 2000 feet, the Carob is confined principally to the eastern half of Crete. There its extension has during recent years been considerable, for it is of spontaneous growth, and all that is required to make it productive is grafting the wild stocks. Some tracts of country more or less thickly planted with these trees are by this process being gradually reclaimed from barrenness.

— SPRING IN URALSK.—The following particulars respecting the weather and its results at Ural'sk, we borrow from the *Gartenflora*. Ural'sk, we may mention, lies in about the same latitude as London, but from its continental position its climate exhibits great extremes. Writing under date of April 3, a correspondent says:—"According to the calendar it is the beginning of spring, but yesterday we had 16° Réaumur (2° below Fahrenheit's zero) with a storm of snow from the south-west, and to-day the same amount of cold with a storm from the north-west. The snow-driving commenced early in October, and it has continued with few interruptions throughout the winter, and it has been going on without intermission ever since the beginning of March. When no snow falls, the winds drive the drifted snow to such an extent that it amounts to the same thing. It lies 14 feet in the garden here, and from 4 to 6 feet

deep in the steppe. It is expected that the inundations will cause an immense amount of damage, and already the population has lost the greater part of its cattle. Thousands of animals have perished. One man had 600 horses left of 3000, another seventy out of 240, and it is estimated that from 75 to 80 per cent. has succumbed. The Kirghis have lost everything, and the Tartars relate shocking tales. Wolves were so fat and lazy that they would hardly rise and get out of the way of a vehicle. Even crows attacked the living animals, so the Cossacks tied bast mats around them for protection. Frozen carcasses of animals were collected at the outposts in heaps, house-high, awaiting warmer weather to secure the hides.

— **CULTIVATION OF THE OIL-PALM (ELAIS GUINEENSIS) IN INDIA.**—In a recently received issue of the *Proceedings of the Agri-Horticultural Society of Madras*, the subject of the cultivation of this useful Palm in India was referred to in a communication made to the Society, from which we make the following extracts. The writer says:—"On the western slopes of the airy Balmatha Hill, on which the Basel Missionary Colony at Mangalore is located, about 150 feet above the sea, and enjoying its breezes, the Oil-Palm garden is situated. The soil is of laterite formation, and appeared to the writer so hard and dry as to suggest the impossibility of growing anything; yet there flourish Casuarinas, lofty Teak trees, Poinciana regia, Acacias, Ficus indica, and the young Oil-Palms are as healthy and luxuriant as if they were in their native home. The Palms are now ten years old, the seedlings having been put out in 1869, at a distance of about 10 feet apart. The Palms form now magnificent sheaves of pinnate foliage, and if only elevated to the crowns of high trunks they would prove worthy companions of the feathery Cocoa-nut, the slender Areca, and the stately Palmyra. As yet their trunks have not risen above-ground. Two years ago the Oil-Palms produced their first fruits, which have been used for raising new seedlings. The seeds are described as dropping off very readily when ripe; this, with the fact that crows are very partial to the fleshy pericarp, helps to disseminate the plant. The following is said to be the system of cultivation practised in West Africa, where the Palm is native. The seed, after being planted, germinates in four or five months; for regular plantations the distance between the seedlings is 5 feet, as for Coffee trees. For the first three or four years nothing is seen of a stem, the Palm forms a sessile plume of pinnate leaves with a bright green folded centre leaf. When the plant has formed from ten to fifteen leaves, the negro cuts them all off at the petiole, leaving only the centre leaf, and then the stems develop, reaching a height of from 2 to 3 feet by the time the Palm is eight years of age, when it no longer expands laterally but grows in height, the lower leaves being periodically cut away. After the eighth year the Palm comes into fruit-bearing. Besides the use of the fruits for expressing oil for commercial purposes, they are largely used by the natives in the preparation of an article of food." The fresh nuts are boiled in water, broken in a mortar, and the mixture poured into a perforated calabash, to strain the liquid which forms the chief ingredient of the negro's daily pepper soup, which is composed of salt, pepper, fish, and crushed Yam. The purified oil, obtained in the ordinary way from the pulp of the fruits, is largely used by the negroes for culinary purposes, and chiefly for their savoury *flan-flan*, oil soup. The kernels also contain a quantity of oil, and the nuts are broken by women to extract the oil. The seed of the Oil-palm is in its native country very liable to attack from a particularly fat grub, and it is said that the natives diligently search for and devour these grubs in their oil soup. In the Agri-Horticultural Society's garden at Madras, four Oil-palms were flourishing and bearing a crop of nuts at the time the report was written. These plants were growing in sandy clay.

— **BATH AND WEST OF ENGLAND SOCIETY.**—At a Council meeting of this Society, held at Bristol on Tuesday, July 27, it was reported that, so far as it was as present possible to make an approximate estimate, the probable loss on the year's proceedings would amount to £1000. The amount of £2070 for stock prizes at the Tunbridge Wells meeting next year was granted by the Council. The sum of £200 was granted for poultry prizes at Tunbridge Wells, Mr. G. HERBERT MORRELL repeat-

ing his offer of £6 6s. for prizes for Langshans; and the amounts voted for the several departments of arts, music, and horticulture at Tunbridge Wells were the same as at the last meeting of the Society at Worcester.

— **AGE OF THE GIANT GUM TREES OF THE TASMANIAN FORESTS.**—From an interesting article by the Rev. J. E. DENISON-WOODS in the *Journal of the Royal Society of New South Wales*, we gather the following particulars respecting the age and size of Gum trees in Tasmania. It is only on steep slopes in the deep mountain gullies and gorges that trees attain a very great height. In such situations they are perfectly sheltered from all winds, and they grow so close together that their great height is a consequence of these conditions. Mr. WOODS, speaking of these particular forests, says they are confined to a few localities, and are limited in extent. They do not appear to be confined to any particular soil, neither are they confined to any particular height above the sea-level. The fine timber near the Mill-house Falls grows in gullies 1000 feet and more above the sea, while the forests on the banks of the Heron and Kermadec descend quite down to the beach. The aspects of these forests are most peculiar, and quite different from the thickly timbered country of other parts of the island. The vegetation is dense, and almost tropical in character, and the most conspicuous objects are the tall and tapering Blue Gum trees, *Eucalyptus globulus*. They grow so close together as quite to shut out the prospect, and are of immense height—200 feet before a branch is given off being not at all uncommon; and there are very many trees ranging from 300 to 400 feet high. Mr. WOODS was very anxious to ascertain the age of these gigantic trees, as well as those of smaller dimensions, but the answers his inquiries elicited were on the whole very indefinite, though the general opinion of persons at all qualified to judge was that the largest trees were from 200 to 300 years old. This is a much lower estimate than persons without any practical knowledge would have assigned to such stately trees, but even this estimate is much too high, according to the trustworthy evidence of a Mr. HILL, owner of saw-mills at Honeywood. Mr. HILL has long taken an interest in the age of trees, and he states that out of thousands of trees felled or cut in his mills he has not found one over seventy-five years old, and a very large proportion of the serviceable timber is composed of trees about fifty years of age. Quite recently he had a very interesting opportunity of verifying these observations. At Ladies' Bay (between Port Esperance and Southport) a paddock on the farm of Mr. D. RAFTON was cleared for the purposes of cultivation. It was exactly sixteen years since a crop was taken off it, and it was quite overgrown with saplings, which were all cut down. The stumps were carefully examined, and the number of rings in the tallest saplings was thirty-three. From these facts, concludes Mr. WOODS, "I think we may safely adopt Mr. HILL's conclusions that there are two rings of growth for each year, and that the tallest trees of the forest, the giant timber of Tasmania, range from fifty to seventy-five years old." This estimate is somewhat surprising, and we do not remember having before met with one based on actual observation; but after all it is in accord with the amazingly rapid growth which we know characterises the young trees under favourable conditions. If it be a fact that such valuable timber grows in so short a period, the forests of Tasmania, under proper control, should afford an inexhaustible source of wealth to the colony.

— **CULTIVATION OF CHICORY IN INDIA.**—In a communication to the Agri-Horticultural Society of India, Captain J. F. POGSON strongly advocates the cultivation of this plant for commercial purposes in India. His proposition is to grow Chicory between plants of slower growth, such as Tea, Coffee, Cinchona, &c., so that the land upon which these and similar crops are grown might be made to yield a profit in the first year. As a proof of the extent to which Chicory is used, Captain POGSON points to the fact as stated in the new edition of *Johnston's Chemistry of Common Life*, that in Magdeburg several thousand acres are devoted to its culture, and that 20,000,000 to 30,000,000 lb. of roasted Chicory roots are annually exported from thence, while in France 30,000,000 lb. of roasted root, and

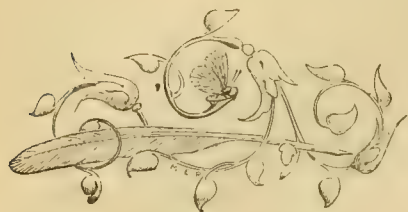
in Belgium 20,000,000 lb. are consumed. To grow Chicory profitably in India it is said the British Government will have to be asked to admit Indian Chicory duty free, and then India will be able to develop this new trade and industry, but if the concession is refused India will have to compete with the Continental producer at a decided disadvantage, for the greater length of voyage and consequent higher freight will tell against the Indian producer.

— **THE POTATO CROP.**—We publish this week a first instalment of the reports with which we have been favoured by our correspondents in all parts of the kingdom. The general result, *so far*, is, that the prospect has rarely been better; but from the outbreak of the disease in numerous localities, and the untoward weather, general apprehension exists. We cannot too strongly urge small growers, and all who can do so, to pull up and destroy diseased haulm directly they see it, and wherever possible to lift and destroy suspicious tubers. If only a concerted effort could be made, we are convinced that a large proportion of the crop might be saved, and more especially that healthy "seed" might be secured. To small growers, who can readily supervise their crops, these remarks are of special moment; but it is too true that comparatively little good result can be hoped for unless neighbours combine to do what they can, but even that little is worth doing.

— **CAUCASIAN WALNUT AND BOXWOOD.**—Two important products of the Caucasus, it is well known, are Boxwood and Walnut burrs; the former of these has for some years been getting scarce, and we learn that the bulk of the Walnut burrs now come from Persia, the Caucasian supply being exhausted. A great quantity of Walnut timber exists, but much of this is, from absence of roads and difficulties of transport, unavailable. These drawbacks, it is pointed out, in the case of the Abkhasian and Circassian forests along the Black Sea can hardly be said to exist. Water-power is almost everywhere available along the coast. Mills could be erected in the forest, the timber cut up on the spot, and transported to the shore on the country carts at a cheap rate. Regarding Boxwood it is reported that almost every marketable tree has already been exported from the Caucasus. One or two reserved Government forests still exist untouched, but the terms demanded for the right of cutting are ridiculous; their real value has been much over-rated. The Boxwood at present exported from Rostov, and commonly supposed to be Caucasian, comes from the Persian provinces of Mazanduan and Guilan on the Caspian.

— **THE WEATHER.**—General remarks on the weather during the week ending Aug. 2, issued by the Meteorological Office, London:—The weather has been dull and very rainy in all parts of the kingdom. Thunderstorms again occurred in several places, and in some localities were accompanied by heavy showers of hail. The temperature was below the mean in all districts; over the greater part of the country the deficit was 3°, but in "England, E." as much as 4°. Both the maxima and minima were very low for the season, the highest reading being 75° in London on the 27th and 28th, and the lowest of the minima 41°, on July 30, at Parsonstown. In most other districts the lowest readings varied from 43° to 45°. The rainfall was more than the mean in all districts; the excess was rather large in the east of Scotland, the north of Ireland, and the central and southern parts of England. Bright sunshine was more prevalent than during last week over the western, central, and north-eastern parts of Great Britain, but elsewhere the number of hours recorded was less. The percentage of total possible duration varied from 60 in "England, S.W." to 25 in "England, E.," and 15 in "Scotland, E." The wind, although easterly in the north on July 28, and very variable over England on August 1, was otherwise generally westerly in direction, and light or moderate in force. On July 28, however, a fresh breeze was blowing at many of our western and southern stations.

— **GARDENING APPOINTMENTS.**—MR. EDWARD EVANS, for the last six years Gardener to F. EVERETT, Esq., Woodbrook House, Northfield, near Birmingham, has been appointed Gardener to the Rev. JOHN THORNYCROFT, Thornycroft Hall, near Crewe.—MR. W. JENKINS, Foreman at Barton Court, Hungerford, has succeeded to the post of Gardener at that place.



Home Correspondence.

The Ribston Pippin Apple.—It may interest some of your readers to know that there is a large tree of this excellent Apple growing in a garden at Mount St. Michael, in the Bay of St. Michael's, on the north-western side of Normandy. Being at Avranches in the Department of the Manche in the autumn of 1877, I visited this celebrated Mount, about which sad, extraordinary tales are told, and on mounting the steps which lead to the monastery and church, which are situate at the top, I noticed an Apple tree, which I thought I recognised, from the peculiar downiness of the points of the young shoots, as the true Ribston Pippin. Wishing to confirm my opinion, I asked a woman who happened to be in the garden to throw me one of the fruits, which lay in a number under the tree, and she did so. It proved to be the true variety of Ribston Pippin. This tree was a standard of considerable size, and I should judge it to be about fifty years old. I made further inquiries respecting the origin of the tree; but the Mount, although having been occupied by priests, soldiers, and convicts, for many centuries, is now tenanted by a body of people who know little of its history or contents. This fortification and monastery, which it has been the work of centuries to construct, is considered one of the wonders of Western Europe, and should be visited by all tourists visiting that part of Normandy. It was made a receptacle for the detention of political offenders during the late Empire. Some portions of it are still in a fair state of repair. Its present occupants are a few priests, who are endeavouring to form the nucleus of a future monastic establishment by the education of youths; the hotel-keepers, and a body of struggling fishermen and women, whose principal means of support seems to be catching the fish brought into the bay surrounding the Mount by the tides, and collecting cockles on the sands after the tide has receded. There is so little vegetation on the Mount, that this particular tree struck me as very remarkable. The legends and tales told of the dangers of the quicksands to be crossed from Pontorson to the entrance, seem to be more mythical than real, as vehicles are constantly plying to and from the Mount. A man of remarkable stature and great physical strength, spade in hand, generally meets vehicles from the shore, to fill up the ruts formed by the flow and ebb of the tides (which are very rapid in the bay), and make the passage more easy. The Mount may be seen from the Botanical Garden at Avranches; but no conception can be formed of this wonderful construction but by a more close inspection. *C. B. S., Jersey.*

The Lucombe Oak (see p. 84).—In the pleasure grounds here the Lucombe Oak is growing and in the best of health. Its measurement at the base is 9 feet 8 inches in circumference, and at 7 feet high 6 feet 6 inches. I also remember seeing one at Knowsley. I, for one, should be sorry to hear of its being cut up for firewood, more especially if it surpasses the one at the Exeter Nurseries, for I thought it a fine tree when under its boughs that sharp frosty Christmas morning when St. Peter's struck it, 1860. *G. J. Cloke, Briarley, Aighurth, Liverpool.*

The Early Louise Peach.—Although much has been written of late about early Peaches, it is strange how seldom one meets with them in private establishments. When I took charge of these gardens in October, 1877, I found a new house that was to be planted with Peaches, and having made a new border, with good loam, &c., we planted six trees in it, three on the front and three on the back trellis. The sorts are Royal George, Millet's Mignonne [syn. of Royal George], two plants of Noblesse, Victoria Nectarine, and one of Early Louise. They all grew strongly and ripened the wood well the first summer. In the summer of 1879 I took from the Royal George eight dozen, and from the Early Louise I only had eighteen fruit. These ripened six weeks before the Royal George. They attained a good size, and were well coloured, but had no flavour; they were so poor indeed that my employer wished me not to send them to the table. I thought I would give the tree another

chance, thinking the bad season might be the cause of the deficiency; but I am sorry to say that this season it is just as bad. This is very annoying when one looks at a tree with from five to six dozen nice-looking fruit on it, to think they are of no use. I have now decided to take it out and throw it away, but before doing so I shall be glad if some of the readers of the *Gardeners' Chronicle* will give me their experience of this Peach—if they have found it good flavoured, and, if so, whether under glass or otherwise. If these early kinds were to prove good they would be most valuable to those who have large houses, to prolong the season, and to those who have only one house; but if they are only fit to look at, then they are not worth growing, and we can afford to wait till Early York and such old tried sorts come in. I ought to add that the trees ought to be true to name, as they came from the raisers, Messrs. Thomas Rivers & Sons. I shall be glad to know if Prince of Wales is a good-flavoured late sort, and if superior to Walburton Admirable for general cultivation under glass, as I thought of planting one of these two in place of the Early Louise. *J. C. F.*

Hardiness of Desfontainea spinosa and Fabiana imbricata.—In the well-kept nurseries of Messrs. Laird & Sinclair at Monifieth, near Broughty Ferry, the Desfontainea, which has been planted out three years, and is growing on a wall (south-east aspect), about 3 feet 6 inches high, and as much spreading, is literally covered with its beautiful scarlet and orange flowers. Besides the beauty of the flowers the foliage is very ornamental for covering walls. Fabiana imbricata is growing luxuriantly close by: this has stood out unprotected for two years also. Noticeable also near at hand is a splendid pair of pyramidal Bays, 25 feet high, seldom to be seen so far north in such splendid condition. *A. O.*

Early Peaches: The Alexander.—At p. 116 Mr. Bond gives his experience in forcing the above Peach. He fancies April 24 is the earliest on record. Mr. Bond cannot have read what took place years ago. I got a Knightian Medal for a dish of twelve Noblesse Peaches that were exhibited at the Horticultural Rooms in Regent Street on April 17, 1843. The first ripe fruit was gathered on April 7, and there was a leading article in the *Gardeners' Chronicle* of that week on the subject. Well, in 1844, on March 23, I gathered the first Peach of that year. Mr. Bond will see that is quite a month earlier than he gathered his first fruit with an early sort. There were no Early Beatrice or Alexanders in those days; if there had been I should have been weeks in advance. It must be several years over forty since the much respected Mr. Marnock ripened Peaches at Bretton Hall, in Yorkshire, in April. The late Mr. Gardiner, when at Weston Park, used to have ripe Peaches in April annually; and Mr. Gardiner at Easington Park does the same thing. To show that we are not much in advance of our fathers, I may state that my father grew Peaches and Nectarines in pots, ripening Noblesse, Royal George, &c., in the first week of May. This he did years before I was born. Let Mr. Bond start his trees a month earlier next year and see the result. *W. Hutchison, Lkoynd Court, July 28.*

The Sparrow Question.—I have carefully read Mr. Cornhill's discriminating vindication of the sparrow, at p. 117. It is very different from those vehement rhapsodies in his praise, which try one's patience to read. Of course I accept his facts, and only wish similar ones could be multiplied, being as carefully collected and as well-vouched for as those of your correspondent. I shall also give due weight to all that my trustworthy and genial friend, Mr. Cannell, may have to say about sparrows and Pelargoniums. I always read his altogether too scarce notes with attention and pleasure—but this one seems to have escaped my notice or my memory. I would, however, submit that London sparrows may be more fond of animal diet than those in the country. There is also a point or two in Mr. Cornhill's note that requires notice. I have not observed the common sparrow in any large numbers far from the abodes of men, either hopping about among Oaks or other trees. Where sparrows exist, they are generally seen hopping on the ground, the tops of corn stacks, or the rows of green Peas or ears of corn. They are by no means arboreal in their habits. If Mr. Cornhill will favour me with a visit, I will answer his question of what the sparrow lives and feeds its young upon at this time of the year, before the grain is ripe, with any number of demonstrations in the form of empty Pea-pods, which crown our Pea haulms in numbers almost as great as full ones. I can also show him boys with rattles, guns, &c., round the corn-fields attempting in vain to frighten the hungry sparrows from shelling and eating the yet green Barleys and Wheats. As for slugs the garden, and even the walks, have swarmed with them this season. All I can say of them is, that while sparrows have abounded, hand picking, burning, &c., have been brought to bear on the slugs—they still

abounded while hundreds of Lettuces and a great many Cauliflower plants were devoured by the sparrows. It may be said by some that we have blamed the sparrows for the doings of the slugs; but not only were the sparrows seen at their Lettuce meals, but the results of the slugs and the sparrows are so different as to be easily distinguished by those who are familiar with the subject. While, therefore, thanking Mr. Cornhill for his courteous and informing note, I am sorry to say it has done but little to give me a more favourable opinion of the common house sparrow. It is only in corn-growing districts, in which thatched roofs and game-preserving abound, that the intolerable evils of an overcrop of sparrows are fully known. It is of little use for any single cultivator to attempt to keep them within due limits, or to extirpate them. Possibly the revival of the old Sparrow Clubs, and a poll-tax on sparrows, to be paid by the parson or churchwarden of every parish in the rural districts, would be the simplest means of reducing the sparrow to his proper place and power on the farm and in the garden. *D. T. Fish.*

The Phylloxera.—By this post I send you a small box containing some Vine roots badly affected with Phylloxera—I am I right in calling it Phylloxera? [yes]—which I have discovered on the Vines in three houses out of four in a range. I wanted my employer last September to allow me to burn the lot, they being young home-grown Vines, and had only been planted the previous April, and grow Cucumbers and Tomatoes in the houses during the winter and spring, but I could not get his consent. However, I then took means of stopping its ravages *pro temp.*, and when the Vines had gone to rest I had them taken up, washed, and afterwards submerged for eight or nine days in soot-water, and the borders turned over several times and any portions of a root that we could see picked out. Several cartloads of new soot and lime were incorporated with the soil, a ton of salt put over the drainage. The brickwork, woodwork, &c., were well washed with hot lime and warm soft-soapy water; the soil levelled down in its proper place, and a surface-dressing of soot put on, then 6 inches new and suitable soil. The Vines were then taken out of the water-tubs and the roots thoroughly dusted over with soot and lime, after which they were spread out in the usual way and incisions made in some of the largest roots and stems and dusted over with sand half an inch thick, and finally covered with the regular ingredients. After this the Vines were painted with a composition almost strong enough to kill the Vines themselves. Thus the work was so far completed, and, I must confess, with anticipated success; but, alas! the contents of the box show how I have succeeded, notwithstanding the Vines (some of them) are making splendid growth. Even the wireworms were killed (roasted) in the soil at the time it was being mixed. *A Gardener.*

Herbaceous Plants.—I notice that a correspondent advises the planting of these in rows, of one kind, which, to my thinking, is a most objectionable way of arranging them, as the less formality there is the nobler and better will they look. Bold groups in irregular borders are by far the most effective, as in that way the several varieties of Delphiniums, Lilies, Aquilegias, Alströmarias, Pyrethrums, Irises, and the more telling kinds may be massed together out of line, or in isolated clumps; the foreground being filled in with low-growing things and bulbous plants interspersed among them, as then no large portion of the ground would ever be bare. Many of the larger growing subjects might be left in front of the shrubs, jutting quite out on to the grass, as also hosts of Daffodils, Bluebells, Primroses, &c., where, if left undisturbed for their foliage to ripen, they would become thoroughly established, and look quite at home. What is wanted in gardens is to get away from the formal style of planting to the more natural, which is the most pleasing and satisfying of any. *J. S.*

Peas of the Season—New and Old.—Through the courtesy of Mr. Gilbert, of Burghley, I have had the opportunity of tasting the finest samples I have yet seen of the two Peas, Telephone and Telegraph, and of comparing them with one or two other new and splendid Peas. Mr. Gilbert's Peas were fine examples of the highest culture. That culture had told on the width as well as length of pods and size of Peas. Many of the Peas at first sight reminded one of that much over-praised as well as over-podded Pea Superlative. But the shells were remarkably well-filled with from ten to eleven Peas each. I name the distinction of pod, because the Burleigh samples were far wider podded than any previous samples of these two Peas I had seen. The Peas seemed also finer, and altogether Mr. Gilbert's fine samples have increased the high estimate I had already expressed of these two grand Peas. As to quality I find the Telephone decidedly sweeter than the Telegraph when cooked as well as raw. The test applied was quite impartial; four varieties of Peas were cooked and numbered with marbles—one, two, three, or four marbles, as the cases might be,

being cooked with them. Only clean water and neither Mint nor sugar were used. They were then submitted to three ladies, who knew nothing of either Pea, and singularly enough in each case, and without consultation, the result was the same—Telephone 1st and Telegraph 3d best. Strata-gem was pronounced the second best Pea—a magnificent green Marrow Pea of Mr. Knight's green Marrow type; pods and Peas green, and averaging from nine to ten Peas in a pod; quality almost equal to Telephone. Then came Telegraph, a good third; and white selection from Marvel, fourth. This is a very large, green-podded, green Pea, of great size; the flavour is strong of Peas rather than sugar. Connoisseurs well know what this means. This is a very handsome Pea, and likely to prove a valuable one for market purposes, as, indeed, are all the four sent. I have also to thank Mr. Gilbert for a pod or two of John Bull and some other seedling Peas of great promise, including the Zulu, which has a purple pod, though the Peas are white. The lovers of green Peas—and who are not?—will be glad to

and, besides, the sugar Peas might probably be improved by cultivation. At present they resemble distended wind-bags, and are puffed out far beyond the needs of the Peas within for space. The Giant Sugar Pea so often seen in the Parisian markets is a most uncouth customer to look at, reminding one almost of a thin slice of an elephant's trunk; but there are several varieties, and no doubt this species of Pea might be improved by hybridisation. It would almost seem as if such Peas as Superlative had a touch of the fluffy-podded sugar Pea blood in it. The Peas are rather inferior, but the pods with the Peas served in them in a young state are sweet and good, and would afford a useful change in an age when change of food is considered better than medicine. I found a dish of the large, crooked, or sword-shaped sugar Pea so popular the other day at a provincial show, that there seemed considerable danger of its being wholly eaten up in a raw state. Singular enough, too, I was the only one near it at the time that had ever seen it before, and it was held up as the most wonderful thing that had

evergreen edging can scarcely be deemed indispensable. Box, as is well known, forms during the winter a harbour of refuge for a host of vermin, which after a long winter's fast sally forth in the sweet spring-tide to work sad havoc amongst young growing crops. The Oak, being devoid of foliage, does not offer such a safe and sure retreat in cold weather, and admits of being easily examined. The walks in the kitchen garden at St. George's Hill, Byfleet, are lined with Oak, which forms a dense impenetrable scrub in the winter, and presents a neat, refreshing appearance during the summer months. J. Cornhill.

Rose Mabel Morrison.—I think perhaps the following may be interesting to some of your readers. In the autumn of 1878 I bought two plants of Mabel Morrison, which, as every Rose grower knows, is a sport from Baroness Rothschild. The following summer of 1879 both plants flowered true to name, but in the autumn one of the plants produced a pure Baroness, so that at a show I exhibited it under the name of Baroness; if anything it was rather a deeper pink than



FIG. 40.—DIEFFENBACHIA LEOPOLDII.

hear that we do not seem to have yet reached to an end of all perfection in Peas. Improvement is still marching on, and most of the new Peas are distinguished by vigour of constitution, great fertility, large size, and high quality. The number of early Marrows, too—a class that will soon drive the common early Peas out of cultivation—is increasing. I have lately had a promising Pea of this class sent to me without note or comment—Tredgett's Excelsior Early Marrow Pea. It looks very much like a small sample of Veitch's Perfection, and should it prove equal to that in quality, and be a month earlier, it will prove valuable indeed. I have lately met with some striking examples of the old sugar Peas, that is, those without a tough lining to the shells, which seem worthy of more general cultivation. The pods of these are edible as well as the Peas, and there can hardly be a doubt that the shell of the Pea without its tough membrane is quite as pleasant and as nutritious food as the shell of the Runner or French Bean. Most of the pods of these sugar Peas are somewhat crooked and uneven; they are also very brittle. These might prove drawbacks to their cooking and orderly serving; but the large pods could be sliced across, as many in fact do their Kidney or Runner Beans,

ever been seen in Peas, which it assuredly is, though practically one of the oldest extant. D. T. Fish.

Dieffenbachia Leopoldii.—We are indebted to Mr. Bull for the accompanying illustration (fig. 40) of one of the finest stove foliage plants we know. The oblong ovate acuminate leaves are of dark green velvety colour, with a central band of ivory-white. It has been frequently exhibited by Mr. Bull, and was shown, in a small state, by more than one exhibitor, at the late Exhibition in Brussels. We have never seen the flowers, and are, therefore, in no position to say whether the plant is a true *Dieffenbachia* or not.

Oak as a Substitute for Box.—Those of your readers who may be desirous of finding a good substitute for Box edging cannot do better than adopt the common Oak. The formation of an Oak edging involves scarcely any expense and but little labour, consisting simply in sowing the acorns at the proper time and topping the young plants as they attain the desired height. The Oak, of course, drops its leaf in the autumn, and as a natural sequence is bare in the winter; but in the case of kitchen garden walks an

Baroness usually comes. This summer I particularly watched this plant, and at the same time it had opened a pure Baroness, and also a Mabel Morrison. The other plant I bought has always thrown Mabel Morrison blooms. This I think is a curious freak of Nature, and I shall be glad to know if any of your readers has found a similar eccentricity with regard to this Rose. E. L. F.

Large Potatos.—The gardener of the Rev. S. D. Rees, rector of Tolleshunt Knights, Essex, in digging up the early Potatos in the rectory garden this week was agreeably surprised to find an unusually heavy crop, notwithstanding the late heavy rains, free from disease; some of the Potatos, Early Rose, weighing nearly 2 lb. each, and are extraordinarily large ones. R.

Delphiniums.—I have tried the following method with success in prolonging the blooming season of the Delphinium:—When the flower stems have started, say 12 to 18 inches, cut the one half back to within a few inches of the ground; they will soon start into growth again, and will flower some six weeks later than those that were allowed to remain,

When cut flowers are much in demand this operation is well worth a trial, and the plants so treated add much to the beauty of the herbaceous borders in autumn. *J. Downie.*

Vines.—I am glad to see that the *Gardeners' Chronicle* continues to take a lively interest in Vine culture. I have two vineries, and very heavy crops in both. The Black Hamburg, the truest bearer of all, has an abundant crop—Buckland's Sweetwater and Muscat of Alexandria also very prolific, the latter finishing well sixteen bunches. The Duke of Buccleuch is my shyest bearer, with only three bunches, but, in rich yellow colour and size of berry, it throws all others in the shade. *Amateur, Ayr.*

Claytonia sibirica.—Mr. Entwistle is on safe ground when he concludes that this and *C. alsinoides* are not distinct species—he could add, not even marked varieties. The two are joined in *Sereno Watson's Index* and in the *Botany of California*. It may be well to state that the second and concluding volume of the latter work has at length been finished by Mr. Watson. It will be published early in August. *A. G.*

The Alnwick Seedling Grape.—I have had my attention drawn to an article in your issue of the 24th ult., p. 115, on the Alnwick Castle Seedling Grape at Chiswick. Upon inquiry, I find that the Vines referred to were got from Mr. Williams, whose variety I contended from the first was spurious, and certain to lead to disappointment and failure. With regard to the Grape for which I was awarded a First-class Certificate in 1876, under the name of "Alnwick Seedling," for the sake of distinction I propose to call it in future Bell's Alnwick Seedling, so that the public may be protected from a variety which I believe to be worthless. My opinion of it may be judged from the fact that after I received the award of the Royal Horticultural Society I put up a house 180 feet long for its special culture, and, from my prolonged experience, I have every reason to expect an increasing verdict in its favour. This house was planted in May, 1877, and I took between 400 and 500 bunches from it last year, and now more than double that number are hanging, as well and uniformly set as any Hamburg house can possibly be. Where a large quantity of Grapes is grown, a few bunches may always be had more or less suitable for the exhibition table, but these form no proper criterion by which to judge of a general crop, or even the quality of any particular Grape. Now, however, that every doubt may be set at rest and every cavil removed, I freely invite any interested to call at Clive House, that they may judge for themselves on a subject which I feel assured will amply vindicate my own position, and subserve the interests of horticulture in this very interesting branch. *D. P. Bell, Clive House, Alnwick, July 31.*

Autumn Giant Marrow Pea.—I am much pleased with this fine Marrow Pea, of which I enclose you a sample. In height and general character it much resembles the wrinkled or light green portion of Telegraph, called Telephone, but with me it is a heavier cropper, and produces enormous pods and Peas. This, like Telegraph and Telephone, if I mistake not, only requires a trial to at once establish itself as a general favourite, and will do much credit, as the above Peas have already done, to the raiser, Mr. Culverwell, of Thorpe Perrow. I am indebted to Mr. Towler, of Bedale, into whose hands I believe the stock is placed, for the opportunity of again testing this Pea. *T. Keetley, Darley Abbey, Derby.* [A fine sample; quality excellent. *EDS.*]

Cattleya Dowiana.—I have sent you a flower of two of *Cattleya Dowiana*. I fancy it is somewhat different from those I have seen in flower before, which have been, however, but few. It appears to be generally considered a very shy bloomer. This is the first time I have flowered it, most of my plants having been too weak; but this year I think all that are sufficiently vigorous are showing flower. The great thing appears to be strength and a sufficient period of rest at the right time. It is certainly worth some trouble, as I think no *Cattleya* comes up to it. *William Marriott, The Down House, Blandford, Aug. 4.* [Two fine blooms on one stalk. We fancy the lateral petals may be somewhat narrower than usual, but otherwise see no difference. *EDS.*]

Market Pelargoniums.—I should not have made any comment on the notice of Mr. Wetherell's nursery if it were not that Pelargonium Captain Raikes is recorded as a seedling. This is an error which I think should be rectified. Pelargonium Captain Raikes originated at Mr. Wetherell's nursery (and I believe was the first of its type) some twelve years ago as a sport from *La Vesuve*, a variety of shortlived repute, some two years previous, and its sportive propensities also produced *Queen Victoria*, and doubtless other sorts. Pelargonium Captain Raikes was awarded a First-class Certificate of the Royal Horticultural

Society, but this honour is no passport to favour in Covent Garden, and if it is now a favourite there it has suddenly risen to that position. All the sorts of this character that I know of are sports; if any have been obtained as seedlings I should be glad to be informed of the circumstance. My opinion is that none of this class are destined to make a name in the market. Although Mr. Baines informs us that some of the best varieties have been raised as seedlings by Mr. Wetherell, and have become established market favourites, none of the Pelargoniums he names, save one, have emanated from this nursery, and this, we are told, is reserved for cutting purposes. Here are three good old sorts of Pelargoniums which were favourites twenty years ago, and I should be pleased to renew their acquaintance:—*Carlos*, *Forget-me-Not* (both show sorts), and *Ninon de l'Enclos*, alias *La Reine*. The latter is a free-blooming, salmon-coloured variety, a colour not now grown, and I think if reintroduced would be appreciated. Should you deem these remarks worthy of publication would you permit me to ask your readers whether they could furnish me with a plant or cuttings of these? If a cursory glance at the leading sorts of Pelargoniums that have been grown for market for the past twenty-two years, and their origin, as far as my knowledge extends, would be of any interest to your readers, I would take an early opportunity of furnishing you with an account. I have no notes, but think I can quote pretty accurately from memory. *W. Brown, Hendon.* [We should be very pleased to publish such a "glance." *EDS.*]

Balsams in the Subtropical Garden.—Considering the very effective display that these plants make when associated with stately foliage plants in subtropical beds, I think they are worthy of more extended cultivation. There are few plants better adapted for the above purpose than the Balsam, being easily raised from seed, and, as is well known, they are rapid growers if they are planted in a rich open soil. They are generally grown in pots for the embellishment of cool structures, but there is a striking contrast between the habit and vigour of plants grown in a rich soil in the flower garden, and those that are nursed and coddled under glass. Several samples of these plants with us are now 3 feet through and over 2 feet high, and they work in admirably with such things as *Castor-oils*, *Cannas*, and the beautifully striped *Zebrapoincia*. The colours vary from brilliant scarlet to pure white, pink and deep purple; and then there is no end of mixed colours as well. In order, however, to have nicely furnished plants they should be grown on into 6-inch pots, and their bottom shoots pegged down with a view to having nice bushy plants furnished with rich green leaves and flowers down to the soil. The plants referred to were planted out early in June, and I am so pleased with their behaviour in the subtropical garden that I intend to grow them largely another year. *H. C.*

Potato Disease.—This subject is with good reason now attracting considerable attention. Whether the later Potatos will all be lost, or whether, to a great extent, they will all be saved, is just now an open question. Climatic conditions have of late been highly favourable to the disease, as all gardeners know; but the rains, frosts, and droughts of the past winter, spring, and early summer are equally important to the life or death of the *Peronospora*. Very few things are so susceptible to injury from over-dryness or over-moisture as the spawn and spores of fungi. It is within every one's experience that a warm humid October will sometimes be totally barren of Mushrooms: the weather is exactly what is wanted, but there are no Mushrooms in the pastures: the explanation is clear, the delicate spawn of the Mushroom has been resting in the ground for a whole year, and at some particular time during the year the spawn has been parched to death by dryness, frozen to death, or killed by a superabundance of moisture. A very little too much or too little dryness, moisture, frost, or heat is commonly fatal to Mushroom spawn. The spawn and spores of the *Peronospora* and of all other fungi are affected in the same way; it is not only the present weather, but the past that must be considered. What does "A. D." mean by his soil "just becoming Potatoised" (p. 75, ante), and that "during the first few years since it was broken up from pasture it retained its crudities"? I have heard it stated as a well-known fact by large owners of property in Ireland that pastures when first broken up invariably produce first-rate Potatos free from disease. Some of the land in Ireland has been pretty well "Potatoised" of late years. "A. D." speaks of Mr. McKinlay, Mr. K. Fenn, and himself as growing Potatos in the same soil for many successive years with good results, but it must be remembered that these three gentlemen are admirable gardeners and thinking men; they care for their Potatos as other people care for their children, every possible attention is paid to their welfare and some of the plants belonging to "A. D." have, says he, "Three feet in an open field." What would become of "A. D.'s"

"Potato breadths" in an ill-drained field, with Potatos planted 6 or 8 inches apart, the fragments of Potato when planted placed in actual contact with rank, fresh dung and garbage, the haulms 5 or 6 feet high, stems as thick as a quill, and so transparent that a newspaper could be read through them? One does not have to go far to see Potatos planted in this style, and my impression is that it is the rule rather than the exception amongst average rustics. *W. G. S.*

—On the 17th of July I noticed the first signs of disease on *Early Rose*, *Extra Early Vermont*, *Myatt's Ashleaf*, and *late Rose*, and at once had the crops of these early varieties lifted, and at the present time of writing (August 2) find only a few tubers affected. On July 24 the following varieties proved that the murrain was rapidly spreading over them:—*Magnum Bonum*, *Paterson's Victoria*, *Early Forty-folds*, *McKinlay's Pride*, *Dalmahoy*, *Regents*, *Snowflakes*, *Scotch Champions*, *Bresee's Peerless*, and *Bresee's Prolific*; and I had the haulms cut off within 3 inches of the ground. This plan I would sooner adopt than, as Mr. D. T. Fish recommends, having the whole crop lifted, as I maintain that, while the tubers are still in the ground the rootlets are supplying them with nutriment, and consequently the Potatos are increasing in size, besides ripening gradually; whereas, if such varieties as *Paterson's Victoria*, *Magnum Bonum*, and more especially *Scotch Champion*, were lifted at the first appearance of the disease, the tubers would be too small to keep even for seed. [A good thing too! *EDS.*] On July 31 I tried a few roots of *Magnum Bonum* and *Scotch Champion*, and found that, although the leaves had the disease, not a tuber showed the slightest traces [to the unassisted eye.] These two varieties had the same results last year, when I allowed them to remain in the ground till the beginning of September, when heavy crops were lifted without any diseased Potatos; so (as far as my experience goes) I would not recommend these varieties either to be lifted or even have the haulms cut off at present. I find that new English varieties prove murrain-proof much longer than the Americans, and would persuade Potato raisers to proceed this season to persevere in raising seedlings from those sorts that resist the disease the best, and I feel confident in stating that their efforts will be well rewarded in years to come. I will by-and-by give you, for the benefit of your readers, the result of my leaving the later sorts in the ground for a time. *J. Geo. Hill, Royal Merriott Nurseries.*

The Potato Disease, and How to Save the Crop.—I note as a singular coincidence—see "A. D.'s" note, p. 149—that the disease appeared at Bedford and Hardwicke on the same day (the 20th), seeming to show that there might be a considerably long wave (over 100 miles) of spore-laden air sweeping over the earth. I also note with peculiar pleasure that on the same page the Potato authority *par excellence*, Mr. Fenn, saves his Potato tubers—how noble in size, how exquisite in finish they are, though he has left them no eyes to see their good qualities—by bodily drawing their tops out of the ground. Also (see p. 150) that the Editors endorse the same practice—please to observe the emphasis on the word drawing, or drawn. Much, perhaps most, of the success of this simple and easy means of saving the tubers rests on this—The tops must be drawn out bodily—not cut off. In the latter case there may still be more than enough semifermented sap in this part of the top left to destroy the tubers. The connection between top and bottom must be wholly and completely severed to save the tubers. In many sorts it needs a good pull to get them up, and the best way of pulling the tops is to place the feet one on either side of the crown of the ridge or row while dragging the top out. This simple *modus operandi* breaks the earth but little, and leaves the tubers where they grew—both points of considerable importance in completing the maturity of the tubers without ruffling or rubbing their imperfectly set skins. Since writing this, the dire disease in the Potato has spread with terrible rapidity and force. There is hardly a garden, allotment, or field in which it may not be seen, and, alas! in many cases smelt, indicating a far more dangerous and destructive phase of the disease. During the greater part of last Thursday, spent among Potato crops, I found no garden or field quite free. Such varieties as the *Rose*, *Beauty of Hebron*, *Brownell's Beauty*, and *Snowflake*, were among the worst; but all, with hardly an exception, were more or less affected according to the ratio of their maturity: even soil and locality had but little perceptible modifying influence. Condition of crop in relation to maturity seemed almost the only thing that could hinder or foster the disease. The more nearly ripe the more diseased, and *vice versa*; hence, the three sorts that were least affected were the *Flourball*, *Magnum Bonum*, and *Champion*. Within the last few days the former have given way, and the latter also to a lesser extent; and yet if any amount of vigour could withstand the disease, these three varieties and the *Roses* this year would prove more than a match for it. But the abnormal vigour only

makes it worse, as I had abundant opportunity of showing at a large cottagers' garden show last week. In the face of such facts it is indeed strange the worn-out theory survives as a vulgar error, even in high places. Never did the Potato look less like an affected plant than this season. Even the old Ash-top is by no means superseded, as those who judge Potatoes at provincial shows can testify. As a good means of propounding our simple plan of saving as much of the crop as possible, I would advise public meetings being held in connection with horticultural, agricultural, and cottagers' shows, after the manner of those held at Higham and other places. Last Thursday a crowded meeting listened to a detailed account of the only available means of saving the Potatoes, by pulling the tops, or whipping up the tubers at once, with the utmost interest; and I have the best of reasons for believing that there and elsewhere the plan has been largely adopted. It can do little or no harm, for the disease quickly arrests the growth of the tubers, and dischaulming can do no more or worse. I also prefer drawing the tops to lifting the tubers. Detached from the stems the Potatoes take no hurt in the ground. Each lies where it grew, unbruised by overcrowding or otherwise. The dischaulming also takes less time, and time is most important. Large breadths may be quickly denuded of their tops, while the careful lifting and storing of Potatoes is an arduous work. Oh, for a brilliant spell of sunshine to save our latest Potatoes and ripen and garner the corn, which is now battered down with the winds, with pelting storms or relentless floods, and threshed out wholesale by sparrows. *D. T. Fish, July 31.*

About Potatoes.—I fear those readers of the *Gardeners' Chronicle* who are not special admirers of the Potato will have to endure more than usual reference to this esculent for the next few weeks, as there will be many lamenting the appearance of the disease and its effects, others rejoicing, like myself, over splendid crops; and still others telling us, in tones unmistakable, that such and such a kind alone is free from disease whilst all others are rotten. Mr. Fish, in a marvellous and certainly very imaginative simile, likens the Potato crop and the attack made upon it by the fungus, to an engine-driver sitting upon the safety-valve of his locomotive. Let but a show of fungoid spores come, and crash goes all. Why on earth should people run mad directly they see or hear of a spot of the fungus? It may work harm no doubt, but it will not exterminate the Potato or the human family; therefore we may as well keep our senses when we either talk or write about it. I am sorry to find that so excellent an observer of natural facts as is Mr. Fish should show so much faith in the disease-resisting powers of any kinds of Potatoes. I am such a born sceptic that any such doubt expressed on my part might be excused, but when I remember the faith Mr. Fish has shown in other matters I rather marvel at his want of faith in this particular direction. What faith our excellent friend displayed in the virtues of Salus, for instance, and how eloquently he dilated upon its powers to cure the disease; but somehow the faith was not borne out by the results. Perhaps that lamentable failure to realise anticipations has acted as cooler of the fervour of faith, and now it is found well to see before believing. I say boldly, I have considerable faith in the disease resisting merits of some kinds of Potatoes, notably *Magnum Bonum*, *King of Potatoes*, and *Vicar of Laheham*, as last year, when the disease was here as elsewhere so deadly, not a tuber of the former was injured, nor was one heard of in this neighbourhood, where many tons of it were lifted, and of the other kinds the damage to tubers was most trifling. So strong is my belief in the robust properties of these kinds to resist disease, that I have cross-fertilised all three—*Magnum Bonum* with the *King* and the *Vicar*, and also *Woodstock Kidney*; and I have little doubt but that the progeny will, a few years hence, show good features in the desired direction as any crosses can give. I am very pleased to observe that our excellent friend, Mr. R. Fenn, who has for some time been hibernating at Sulhamstead, is still alive and working. He writes in a hopeful mood, although what he has striven to do for the Potato in years past has hardly met with the appreciation it deserved. In spite of strong depreciation in many quarters, however, Mr. Fenn has never lost faith in his Potato children, and this year I think his faith will show itself strongly justified. Could he have stood by when I this day lifted my stock of his *Early Market*, he might have exclaimed, "Now is Robert Fenn avenged." A better crop, or finer samples of this beautiful garden Potato I have neither seen lifted or lifted myself, nor probably has any one else. Rector of Woodstock, Bedford Prolific, Woodstock Kidney, International, and Bountiful all look splendid, the growth robust, and as yet full of health and vigour. I think Mr. Fenn's Potatoes will be seen to the fore this season. Porter's *Excelsior* has thrown up a beautiful clean crop, so also has *Lemon Kidney*, the oldest perhaps

of all the Ashleafs; Don of the Day, a West of England variety having a short Ashleaf top and handsome semi-round white tubers, threw a good produce, all clean and sound; White Emperor, another early round, was also a good crop, and handsome. All these are early garden kinds. The American raisers have sent us so many of the Rose family that their abundance is getting a nuisance. We started with the *Early Rose*, then the *Late Rose*, and these were followed by *Extra Early Vermont* and *Early Gem*, both of which are duplicates of *Early Rose*; then a break is made with *Beauty of Hebron*, still a Rose, but paler in colour; and latest is *Early Ohio*, that has the shortest top of all, and is in that respect perhaps an improvement, whilst its tubers, like those of *Beauty of Hebron* in colour, are rather rounder. I found, on lifting this newer kind, that it gave me ten handsome show tubers when the *Beauty* gave but one—a considerable recommendation when growing for exhibition. The earliest of all the Americans to ripen off its foliage is *Triumph*. This good red round has given a grand sample twice the size I have ever lifted before. The finest crop and largest lifted come from a seedling from *Early Market* and Porter's *Excelsior*, a crop that quite astonished an old soldier like myself. I have many kinds to lift yet, and hope to be able to write of their merits as they come to the surface, and I trust some few will during the ensuing week, weather permitting, do so. *A. D.*

Cottagers' Kale.—About the beginning of last June about 800 healthy plants of Cottagers' Kale were put into the ground of the Lock Hospital, Harrow Road, and which appeared to flourish up to July 23, when suddenly the gardener noticed that the leaves drooped in a way which often occurs before a storm comes on, and next day a few were taken up and their roots inspected; they were found to be "clubbed," but I send one plant for examination. The gardener informs me that soap-suds from the laundry of the Lock Asylum had been used as manure, and to this he attributes the baneful influence exerted on the plants, because where they have not been used in other parts of the garden the plants have done well. It is feared that all these 800 plants will perish. I should like to know, if soap-suds be the cause of the disaster, in what way they act? I will therefore beg the favour of the insertion of this letter in your next issue. The gardener tells me that a kind of black-fly, which soon changes into a maggot, is often seen to affect vegetables where the soil has been impregnated with soap-suds. I should have thought the alkaline properties of suds would have destroyed animal life. *John Colebrook.*

The Gardeners' Royal Benevolent Institution.—Permit me to thank Mr. Cutler for his full and satisfactory answer to my queries. It was the fifteenth year on the book rule that caused me—and, doubtless, many others—to doubt. Probably some such rule is needful to prevent the funds of the Society being unduly drawn upon and exhausted, more especially as no medical examination nor age test is applied. Possibly as the election by right, owing to the operation of what may be termed its time-basis, serves to exclude the possibility of electing any by favour or merit—that is, their greater misfortune—some check upon membership may be needful. But hitherto one of the great difficulties has been to get practical gardeners, who might be likely to become pensioners, to join, or interest themselves in, the Society. I trust that the explanation now given in reference to the advantageous position of life members will lead to a large increase of such. There could hardly be a more gratifying sequel to the Royal patronage the Society has just been honoured with, than that a hundred or more life members should be added to the Gardeners' Benevolent Institution. Two objections are very prevalent against joining it: one is, that the proof of need insisted on is too strict and absolute, and the other that the amount of relief given is too small. Both, however, might readily be readjusted were more funds placed at the disposal of the Society. While it is so poor and so much dependent on charity too much care can hardly be taken to see that only the most distressed should be relieved. The same reasoning applies to the amount of pension. Let those who urge this objection join, and induce others to do likewise, in numbers, and no doubt all concerned would gladly augment the pensions of deserving indigent gardeners and widows. "We shall never need it," is another objection often expressed, indirectly rather than in so many words. "I hope not," has ever been my reply; "but others do, and all may." Were I to sign my name most of my fellow craftsmen would say I had been most fortunate. I have filled good situations long, changing but little, and still hold a good place. I have, however, had several severe and sudden attacks of illness, and long-continued costly domestic affliction. In consequence of these, and also of the loss of the major portion of the small but most careful savings of years, were I to be suddenly smitten down—well, it makes my face burn to write it—I might yet have to become a pensioner

or leave another yet more dear to be helped through by the Gardeners' Benevolent Institution. And yet looked at from the outside no one would seem less likely to need such aid than myself. But still I hope and pray; and am truly thankful if the little I have been able to do for the Gardeners' Benevolent Institution has soothed the sorrows or lightened the burthens of our brothers or sisters of our craft. There are many kindhearted ladies and gentlemen who would assuredly make their gardeners life members if they only knew what a burden of fear and anxiety it would remove from their minds and hearts as to the future. *A Life Member, &c.*

Mulching.—It may, as Mr. Fish remarks, appear like mockery to speak or write about mulching, if we were under a continuance of such weather as we had some time ago, but only so even then, I should think, to those who have to follow their gardening pursuits in wet, low-lying districts, or where the land is naturally heavy and water-logged; for here, when I penned the article relating to that much neglected, but much needed operation, lawns were turning rusty and we had had to water our outdoor Peaches and Nectarines, Peas, Scarlet Runners, and Celery several times. The incessant downpour to which Mr. Fish adverts must, therefore, have been more imaginary than real, as, excepting heavy rains, brought about in different parts of the country through thunderstorms, I have not read or heard of anything like continuous wet anywhere, and in this part the fall has been such as to be highly beneficial to all crops, which in most places are looking remarkably well. Mulching, to be of any use, should, as I endeavoured to show, be put on when the ground is well soaked, to conserve the moisture within, as to let this escape and have recourse to it after, is something like locking the stable door when the steed has been stolen. In this light land, with a very short water supply, and that principally obtained from pumps, I could do nothing by way of growing garden produce were it not for early mulching, and I am well satisfied if I can get it carried out before dry weather sets in, as for years past I have witnessed its good effects, and have felt what an immense saving it is in labour. This latter is a great consideration when there is such a press of work, as with the gradual growth of most establishments they are generally undermanned, and to save having to water so frequently, and almost fruitlessly, as would be the case without mulching, is a great gain and sets hands free for use in other directions. Not only do we cover our Vine and Peach borders, the ground along the Pea and Celery rows, French Beans, Runners, &c., but we generally serve our flower beds in the same way, and this being done with either sifted leaf-soil or the short stuff from the Mushroom-house, never looks untidy or objectionable, as they would were straw matter used. I remember, more years ago than I care to look back, how well the Messrs. Garaway, of Durdham Down, used to manage their Briers for budding, which we were enabled to work at the whole summer through, however hot or dry it might be. The ground containing the stocks was heavily littered down with stable-dung got from Bristol, which answered the several purposes of keeping out frost during the winter, encouraging root-action, enriching the soil, and by keeping the latter so uniformly moist the bark of the young shoots never became contracted, but always left the wood freely, so that buds could be inserted whenever desired. Besides all this there was no weeding or cleaning required, and a great saving was therefore effected in that way, and when the time came for the buds to start in the following spring they did so with a vigour that was truly surprising. Tan may be all very well for heavy lands, but I should be sorry to use it on such as are light unless I could make sure of getting it all off again, as owing to the large amount of vegetable fibre it contains, and the very slow decomposition it undergoes, it is a long while rotting, and before this process takes place it is almost sure to generate fungus—a parasite that is most baneful to the roots of all plants, and one which completely poisons the ground. The same objection holds with regard to cocoa-fibre, which is much like the bark in its nature, and many that have used it incautiously have found how exceedingly hurtful it is. Nevertheless for all that it is of great value when kept on the surface and for plunging material, as it lies lightly around the pots and does not unduly exclude the air, the play of which is so necessary to keep plants in health. *J. S.*

Flowers in Grasmere Church.—A better use of common flowers could hardly have been made than in Grasmere Church on the occasion of the "Rush-bearing" (see p. 133). I do not remember to have ever seen those common wild flowers, the *Water Lily* and the *Foxglove*, and the equally common garden flower, the large *Canterbury Bell*, used more attractively. Previous to the entry of the procession of school children with their garlands, the rector's family and friends had decorated the reading-desk and font,

and placed effective banks of flowers at the east end of the church, in the corners to the right and left of the communion-table. All the seats were free. "You cannot sit down in the wrong place," said an old inhabitant, apparently in office. I sat down among some children and village lasses, who formed a most engaging group with the font in the centre. The whole of this ancient relic, taken from Fountains Abbey, it is said, with its base, were covered with mosses and flowers thickly studded with Water Lilies. A floral cross rose from its centre. I cannot conceive a more beautiful object than this sacred relic, formed of the red sandstone which prevails around Fountains Abbey, old and chipped, resting in safety in the beautiful valley of Grasmere, and ornamented with such tasteful art. Among the materials for floral decoration which abound in this neighbourhood are the giant mosses which grow upon the mountain sides, the Stag's-horn and the Club moss. The reading-desk was profusely studded with the gorgeous blossoms of some tubular exotic flower, as I thought, as I sat some distance from it, and could not conceive what that noble-looking flower could be. After the service I walked forward and discovered the wonderful flower to be the Canterbury Bell, which grows in every cottage garden. None of the stem was used, only the flower cut off almost close, and set in a groundwork of small flowers and greenery. The corners of the church before alluded to were built up with large Ferns and other things, among which the long spikes of the Foxglove were prominent. Is there a handsomer wild flower than the Foxglove?—and is it often used in church decoration? *H. E.*

The Persian Ranunculus.—This very fine old-fashioned florist's flower has succeeded remarkably well this year in some districts; the genial showers of rain with blinks of sunshine seems to suit them, and in some places the bloom has been finer than for many years. A splendid collection was exhibited at Manchester on the occasion of the National Society's Rose Show, from the gardens of Samuel Barlow, Esq., of Stakehill House, Slatocks. There were 305 blooms in more than seventy varieties, their bright and varied colours were most attractive, and could not fail to cause expressions of wonder to fall from a considerable proportion of the visitors. Mr. Barlow has been kind enough to send a boxful of them, in more than fifty varieties; they are all quite double, and of the most perfect shape; the colours, too, are so varied. There are some of the darkest maroon, rose, crimson, and one quite scarlet, with yellow, primrose, and white flowers edged like the Picotee. Mr. Barlow states that their culture is very simple indeed, and that they should not be more than thirteen weeks in the ground altogether. In previous numbers I have stated that they require a little care in planting; the tubers should not be too deep in the ground, an inch and a half of soil over them is enough. I like to place some white sand over and under the tubers, besides, the soil should be rather sandy. It is necessary, also, to take up the tubers as soon as the leaves are withered, to prevent them from starting into growth again. The old growers were also careful to pour the water between the rows and not over the leaves. If the plants suffer from want of water during the growing period, a good bloom cannot be expected. *J. Douglas, Loxford, Ilford, E.*

Moss Roses.—It is, I think, much to be regretted that with all the improvement there has been made among Tea and hybrid perpetual Roses, Moss kinds should have been so neglected by the raisers of new sorts, for assuredly they are the most beautiful of any either for bouquets, button-holes, or vases, to each of which they lend quite a charm; as what can be more effective than a few partly expanded buds surrounded with their lovely frizzled greenery just peeping out among other gay coloured blossoms, which they help to tone down better than anything else? Unfortunately the aim of growers seems to be to get big flowers that will tell on an exhibition table, but grand as these are, they are not the best for cutting when one has an epergne to dress, as they are altogether too large and lumpy to be of use in any graceful arrangement. This being the case, the wonder is that Moss Roses, few as they are, are not more grown in gardens, where, although they may not be quite so showy as other kinds, they are far more valuable for the purposes already mentioned. The best way of cultivating them is to have them as dwarfs on their own roots, and the readiest mode of increase is by means of layers, as, owing to the rough state of the bark, buds cannot well be inserted without injuring that part, which often causes many to fail, and not only this, but worked plants send up suckers, whereas those on their own break strongly and spread from below, so that in course of time they may be taken up and divided and increased in that manner. The layering may be carried out at any season, but the proper time is in the autumn after the leaves fall, when if the shoots receive a slight twist, and are then bent down and covered at a depth of 2 inches or so

with sharp sandy soil they will root the following year, and be fit for taking off early in the winter. Moss Roses likewise admit of being propagated by cuttings, which should be made as soon as the wood is a little ripe, as then they strike freely; but to enable them to do this they must be put under handlights placed on a half-shady border or under the shelter of an old frame where they can be kept a little close for a bit, and sheltered when they need it from severe frost. It should be borne in mind when pruning Moss Roses that they are rather impatient of the knife, and that they succeed by far the best if they only have their shoots just shortened and thinned out by taking away the weakly ones, so as to afford the others proper room and give them plenty of light and air. The most satisfactory way of growing Moss Roses is in masses in borders, or in beds to themselves, where they can be kept separate from others and have the special treatment they require. Like the perpetuals they are fond of good soil, but do not require it so rich and heavy as those kinds do, but more after that suitable for Teas, which is such as is of a sandy nature, as in that they can work with more freedom. It would appear that Moss Roses are shy seeders, as among the few we have several are sports, the most notable among them being the Clifton or Bath White, the history of which is a curious one, as, if I mistake not, it was brought into notice by two Quaker ladies enquiring of Mr. Salter, a Bath nurseryman, when cutting them some flowers of the red, if he had seen the white variety, but as he had not he was quite incredulous such a thing was in existence. The ladies, however, it is said, assured him they had one, and would bring him some blooms, which they did, and as they had long stems he was enabled to propagate from them, and sent it out at a guinea each—a price rosarians who sell would now like to see for new sorts, and yet such is the demand at the present time that no doubt those at less than a fourth of the cost pay better. *J. S.*

Reports of Societies.

Tonbridge Horticultural: July 21.—This Society held its annual show in the usual place, the Castle grounds, than which it would be difficult to find a more enjoyable or appropriate site. The exhibition collectively was a good one, each department being well represented.

In the class for six flowering plants Mr. Burt, gr. to H. B. Mildmay, Esq., took 1st, with a well managed group, in which *Stephanotis floribunda*, *Clerodendron Balfourianum*, and *Allamanda Hendersoni* were particularly good. Mr. Bolton, gr. to W. Spottiswoode, Esq., was a good 2d, staging nicely grown plants, *Ixora Williamsii*, *Anthurium Scherzerianum*, and *Clerodendron fallax* being well flowered; the *Clerodendron* had a dozen of its bright scarlet panicles in fresh condition. For four varieties in bloom the positions were reversed, Mr. Bolton taking 1st, and Mr. Burt coming in a close 2d. Mr. Burt had a nice example of the double white-flowered *Tabernaemontana*, a plant deserving of more general cultivation than it now receives.

There were five exhibitors of six ornamental foliaged plants, all showing good lots, Mr. Burt here again being 1st, with a well grown collection, the best of which were *Croton majesticus*, *C. Weissmanni*, and an *Encephalartos*; Mr. Pope, gr. to J. J. Barrow, Esq., who was a near 2d, putting up a handsome half-dozen, containing well-managed examples of *Alcacia metallica* and *Croton angustifolius*. With four ornamental plants Mr. Pope took 1st, having plants of a similar description to those shown in the preceding class; 2d, Mr. Burt, showing, along with others, a very fine specimen of *Dracena Baptistae*, the best of the large growing kinds of this numerous family.

Ferns, likewise, were present in very good condition. Six exotic species,—1st, Mr. Goldsmith, gr. to P. C. Hardwick, Esq.; in his group were good plants of *Cyathea medullaris*, *Alsophila excelsa*, and *Davallia Mooreana*—the latter one of the handsomest of all dwarf-growing Ferns; Mr. Henderson, gr. to J. Deacon, Esq., 2d, with smaller plants nicely shown. *Lycopodium* were beautifully done, Mr. Henderson taking 1st, Mr. Goldsmith 2d.

Flowering Begonias were both large and extremely well-flowered. With six Mr. Bartholomew was 1st; his plants, mostly seedlings, were very full of flower; Mr. Bolton 2d, with smaller plants in excellent order. Caladiums were large, and in very fresh condition; in the class for six varieties Mr. Burt took the lead; his finest examples were Prince Albert Edward and Laingii; Mr. Bolton 2d.

There is always a keen competition at Tonbridge in the class for groups of plants arranged for effect, which are here better done than at most places. There were five competitors, all having nicely-arranged lots of suitable plants; in a very close run Mr. Bolton came in 1st with such plants as *Acacia lophantha*, grown to a single stem, feathery Palms, long-leaved *Crotons*, *Dracenas*, flowering Begonias, Orchids, and the elegant *Francoa ramosa*, with its slender cord-like shoots, clothed with white flowers—the whole edged with *Caladium argyrites*, *Panicum variegatum*, small *Adiantums*, and *Blue Lobelia*. Mr. Burt was 2d, also having a very nice group of plants equally adapted for the purpose; Mr. Fennell, gr. W. E. Cazalet, Esq., 3d.

With six hardy Ferns, Mr. Bartholomew was 1st, showing a clean grown fresh lot of plants; Mr. Fennell

2d. Messrs. Veitch, as usual where they do exhibit, had a very fine miscellaneous collection, consisting of Orchids, amongst which were *Disa grandiflora*, with seven spikes; *Vanda tricolor*, *Odontoglossum vexillarium*, *O. crispum*, *O. Schlieperianum*, the pretty white-flowered *Angraecum falcatum*, *Oncidium curtum*, shown under its true name, not *Gardnerianum*, which seems to be one of those unmeaning synonyms that serve no object but to confuse; associated with these were *Nepenthes* and other insectivorous plants, Palms, Ferns, &c.

Cut flowers are always forthcoming here in quantity, and beautifully arranged, several of the most successful exhibitors of this description of decorations being present. The 1st prize for a single centrepiece was won by Mrs. Seale, of Vine Nursery, Sevenoaks, with one of her elegantly arranged stands. Miss Buswell, who took 2d, had an exhibit only a very little behind the winner. In the class for a similar stand filled with wild flowers, Mrs. Seale was 1st and Miss Buswell 2d. It is interesting to see what an elegant and effective group can be made with wild materials alone when the right things are chosen and arranged in a way that they admit of. Bouquets also were nicely made up—Miss Seale 1st, Miss Buswell 2d.

Boxes of cut stove and greenhouse flowers, shown in bunches of distinct kinds, when well done, as at Tonbridge, are always attractive. Mr. Bolton took 1st, with a very good dozen, consisting of Orchids, *Ixoras*, *Hibiscus*, and others; Mr. Burt 2d.

Roses likewise were fairly shown. For forty-eight trebles Messrs. J. Bunyard & Co. had 1st, with a fine lot of flowers, in which Marie Rady, Princess of Wales, Etienne Levet, Marie Baumann, Royal Standard, and Emilie Hausburg were all good. Messrs. Mitchell & Sons, Piltown, who were 2d, had excellent blooms of Catherine Mermet, John Stuart Mill, Alfred Colomb, and Sultan of Zanzibar. With forty-eight singles Messrs. Bunyard were also 1st, their best flowers in this class being Charles Lefebvre, Francois Michelon, Marie Rady, Louis Van Houtte, Fisher Holmes, and Comtesse de Nadailac. Messrs. Mitchell were 2d, and Messrs. Kinmont & Kidd 3d. With Tea varieties Messrs. Mitchell took the lead, as they often do in competitions exclusively of these beautiful flowers. In their stand of twenty-four they had fine blooms of Souvenir d'Elise Vardon, Catherine Mermet, Souvenir de Paul Neron, &c. Messrs. Bunyard were 2d. In the class for twelve Teas, single blooms, the Rev. H. Biron was 1st, with, amongst others, beautiful flowers of Perle de Lyon, Devonensis, Comtesse Riza du Parc, and Jean Ducher. The same exhibitor was also 1st for twelve Roses; Mr. Talmage 2d.

Messrs. Cripps, nurserymen, Tunbridge Wells, contributed a stand of twenty-four varieties of Clematis flowers, and several fine varieties of Iris *Kempferi*.

Fruit was well shown, as it usually is at this Society's exhibitions. Black Grapes again this summer give evidence, by their being more generally well coloured than ordinary, of the benefit they have received by being plentifully supplied with water at the roots, consequent upon the frequent rains we have had. With eight dishes of fruit, Mr. Goldsmith took 1st in a good collection, having Black Hamburgh and Foster's Seedling Grapes, Barrington Peaches, Elruge Nectarines, and Read's Scarlet-flesh Melon, all in fine condition; 2d, Mr. Henderson, his best dishes being Black Hamburgh Grapes and Violette Hative Nectarines, very well coloured. In Pines, Mr. Henderson had 1st with a good Queen; Mr. Fennell 2d, the former exhibitor also showed, not for competition, five handsome Queens. Black Grapes, three bunches, were well shown, seven exhibitors competing in the class, Mr. Pope taking 1st, Mr. Hopgood, gr. to Sir J. Goldsmith, 2d, both staging very fine examples; the 1st prize bunches were considerably larger than the 2d, but not so large in the berries. White Grapes, three bunches,—1st, Mr. Burt, with good bunches of Golden Champion, a little short of colour; 2d, Mr. Bolton, Foster's Seedling. Three bunches, different varieties, excluding Black Hamburgs and Muscats.—Mr. Goldsmith, who was 1st, staged Madresfield Court, Lady Downe's, and Foster's Seedling; 2d, Mr. Henderson, a fine bunch of Muscat Hamburg, Foster's Seedling, and Dr. Hogg. Peaches and Nectarines were likewise well done. Mr. Bridger, gr. to Lord de Lisle, took 1st, with a beautiful dish of Stirling Castle, much higher-coloured than usual; Mr. Fennell, 2d, showing Noblesse; and Nectarines—1st, Mr. Fennell, Violette Hative, in excellent condition; Mr. Bashford, gr. to Mrs. S. Douglas, 2d, exhibiting highly-coloured fruit.

Royal Southampton Horticultural: July 31 and Aug. 2.—This Society held its summer show, as heretofore, in the Avenue, Westwood Park. The show has of late years grown in importance, until it is now equal to any in this part of the country. The details connected with the exhibition are well carried out, and good prizes are offered—£20, £15, and £10 in the first class. On the present occasion several of the exhibitors possessing the best plants in the kingdom put in appearance, the result being that the competition for flowering and fine-leaved plants was such as has not taken place here before. The following are a few of the most noticeable productions present at this very extensive exhibition, to touch upon more than which it is not possible to find space.

In the class for six plants in bloom and six fine-foliaged, Mr. Tudgey, gr. to T. F. G. Williams, Esq., Henwick Grange, Worcester; Mr. Rann, gr. to J. Warren, Esq., Handcross Park, Crawley; and Messrs. Jackson, Kingston-on-Thames, took the prizes in the order of their names, all showing well. Mr. Tudgey had the finest lot we have seen him stage this summer. Amongst them was an unusually well-bloomed *Dipladenia amabilis*, *Erica Irbyana*, a couple of fine *Ixoras*,

coccinea and Dixiana, the latter bearing over eighty heads of flower. The foliage subjects combined with them were equally good. Mr. Rann had a fine group, the most meritorious of which were *Erica pulcherrima* and Gilbert's variety of *Statice*, a free growing profuse flowering sort. Messrs. Jackson had, along with others, several well-flowered *Heaths*, a finely coloured *Bougainvillea glabra*, and *Bonapartea juncea filamentosus*, 5 feet in diameter, and in beautiful condition.

In the miscellaneous plants, Messrs. Oakley & Watling, nurserymen, Southampton, took 1st with an even collection of medium-sized examples. With the groups of eighteen plants, not less than five in flower, there was a brisk competition—Mr. Wills, gr. to Mrs. Pearce, being 1st, showing a very good lot which contained a specimen of *Clerodendron Balfourianum*, such as has seldom been seen, 6 feet by 5, and completely clothed with fresh flowers; a very fine *Cypripedium barbatum* and *Dendrobium nobile*, in nice condition for so late in the season. Mr. J. Amys, gr. to the Hon. Mrs. Eliot Yorke, who was 2d, in addition to flowering plants, had some nicely grown foliage specimens.

The class for groups shown for combined quality of the plants and effect of arrangement also brought out a good competition. Mr. Wills was here again 1st, putting up a very creditably arranged lot of plants suitable for the purpose; 2d, Mr. Amys, likewise showing well.

Ferns were well done. Mr. Wills having 1st for six clean well-grown plants, in which was a splendid example of *Nephrolepis furcans*, *Adiantum cardiophyllum*, and *Davallia Mooreana*. Four exotic Ferns.—1st, Messrs. Jackson, showing a medium-sized collection, containing a handsome plant of the not-often-met-with *Lomaria discolor*; Mr. James, nurseryman, Lower Norwood, 2d.

Group of plants staged for effect, occupying a space 10 feet by 6.—1st, Mr. Chamberlain, who had a nicely arranged lot, well chosen for their suitability for this kind of work; 2d, Mr. Vokes, also a neat group.

For a collection of Orchids, number unlimited, Messrs. Jackson were 1st with, amongst others, *Dendrochilum filiforme*, *Odontoglossum vexillarium*, and *Saccolabium Blumei majus*, bearing a spike of bloom, 2 feet in length, every flower quite fresh. Mr. James, who was 2d, had a nicely bloomed fresh lot of plants.

Begonias were better in size, quantity of flower, and general condition of the plants than ordinarily seen. With six Mr. Wills took 1st, his examples of *Paul Masurel* and *Vesuvius* were extremely good. Mr. J. Burden, gr. to G. Y. Mercer, Esq., was 2d, with well-grown plants. A large tent was filled with table decorations, centrepieces, bouquets, collections of cut flowers, &c., which alone would have been an extremely attractive exhibition, being generally very well done. Of a table laid out in the usual style, there was some half-dozen exhibitors, Mrs. Fudge taking 1st with an elegant arrangement; Mrs. Wills a very good 2d; Three vases or stands of flowers.—1st, Miss Chamberlain; 2d, Mrs. Ladhams. For the best single stand Mr. Chamberlain was 1st; Mr. W. Sanders, gr. to J. East, Esq., 2d. In a keen competition for twelve bunches of cut flowers, Mr. Rann had 1st honours with a very good lot, mostly Orchids.

Roses were few, but some good blooms for the advanced season were staged by Mr. Prince, of Oxford, and Messrs. Keynes & Co., Salisbury. With twenty-four, Mr. Prince took 1st easily, having amongst others fine flowers of *Comtesse de Nadailac* and *Madame Sophie Protop*. In another stand Mr. Prince had Bennett's new *Roses*, *Beauty of Stapleford*, *Duchess of Westminster*, and *Viscountess Falmouth*, in very good condition.

There was an extensive display of fruit, mostly in good order. Of six dishes there were seven exhibitors, Mr. Ollerhead, gr. to Sir W. W. Peck, Wimbledon, being 1st, with a meritorious collection, containing a handsome Queen Pine, 5 lb. weight, and a good dish of Royal George Peaches. Mr. Budd, gr. to F. Dalgetty, Esq., was 2d; his best dishes were Black Hamburg and Buckland Sweetwater Grapes. Three bunches of black Grapes.—1st, Mr. Jones, gr. to Lady B. Mills, with medium-sized bunches of Black Hamburg, well coloured; 2d, Mr. W. Simpson, gr. to W. Baring, Esq. Three bunches of white Grapes.—1st, Mr. Ollerhead, showing Muscat of Alexandria, in nice condition; 2d, Mr. Hillier, with Foster's Seedling. For a handsome Queen Pine Mr. Browning, gr. to F. Holloway, Esq., had 1st; Mr. Budd 2d, with Cayenne. Dish of Peaches.—1st, Mr. Windebank, very good Chancellor; 2d, Mr. Amys, Stirling Castle, highly coloured. Nectarines.—1st, Mr. Rann, with Pittaston Orange.

Vegetables were splendidly shown, Mr. Hinds, gr. to Lord Wimborne, taking 1st in the leading class, and Mr. Sanders 2d.

Buckingham Floral and Horticultural: July 27.—This is one of the oldest societies in the United Kingdom, and many years ago it did good service in promoting to a large extent the culture of florists' flowers. Of late years this feature has decreased, a more general show is held, and the annual exhibition is now regarded as the *fête* day of the neighbourhood. Buckingham is so rich in trees, open spaces, watercourses, &c., and its streets are so gay with good window gardening, as to be half town and half country; and close to the very heart of the town the annual exhibition is held in a field, access to which is had from the market-place. This field runs down almost to the river Ouse, which is on three sides of the town, and the tents, some seven or eight in number, are placed round the field, leaving the centre for the band and for promenading.

About Buckingham there abounds rare cottage and allotment gardening. In the cottagers' tents the tables groaned under the abundance and weight of the produce of their gardens, and the awarding of the prizes was anything but a sinecure. The competi-

tion covers a somewhat large district, and in addition there are classes for cottagers living within a radius of five miles from Buckingham. Looking over their productions we found the fine Cabbage Lettuces were represented by Drumhead and Grand Admiral; Cos Lettuces by Paris White Cos; there were Parsnips and Long Red Surrey Carrots, of enormous length, and symmetrical throughout; in the classes for short Carrots the leading variety was the Horn, and many a seedgrower would be glad of the fine "stocks" shown on this occasion. Turnips were superb, the Snowball type being prominent, with a few of the red-topped American Stone among them. One great feature was the presence in the classes for Beet, and in collections of vegetables, of the Egyptian Turnip-rooted, in all cases shown in fine condition, large and handsome, and in point of earliness much in advance of the long-rooted kinds, in fact the latter were simply nowhere. A few years ago Mr. Barron strongly recommended this Beet for its earliness and general good qualities, and the cottagers round Buckingham have profited by his teaching. Spring-sown Onions were very good, though all vegetables of this character had, owing to the wet character of the summer, gone very much to top. Tripoli Onions were very fine, and mainly represented by the flat Italian. Peas were as fine as they were varied in shape, length, and colour of the pod; but Jeyes' Conqueror (Ne Plus Ultra) won nearly all along the line. There was a remarkable display of Potatoes, and we were glad to learn that so far symptoms of disease had presented themselves but sparingly. In the class for six dishes there were not less than twelve entries, generally of good quality and of fine size; there was also a good balance of colour. The best white kidneys were Ashleaf, very fine; International Kidney, Woodstock Kidney, and Snowflake; coloured kidneys, of the Rose type, Beauty of Hebron being very good; Wonderful Kidney, wonderfully fine; Bountiful, Purple Ashleaf, and Princess Louise. Round white Potatoes was represented by Rector of Woodstock, extra fine; White Emperor, Porter's Excelsior, Ninon, and Dalmahoy; red round by Emperor, Red-skinned Flourball, and Gloucester Red, the former being remarkably good; *Lye's Favourite*, Radstock Beauty, and one or two others of the newer sorts were found in the cottagers' collections. If any one required a study of cottagers' vegetable s they could not do better than attend a Buckingham show: one thing only is necessary to make it perfect, and that is a more effective and judicious arrangement of the subjects on the exhibition table. In the amateurs' tent the vegetables were also very fine.

As far as plants were concerned the collections were up to the usual average, and Mr. J. Parker, nurseryman, Rugby, was the leading exhibitor, and took the leading prizes open to all-comers. His and other collections of stove and greenhouse plants comprised the subjects usually in flower at this season of the year, *Dipladenias* being a leading feature; in the class for foliage plants Mr. Parker staged one of the finest plants of *Croton Weismanni* we have yet seen, and a fine piece of *Cycas revoluta*. Ferns were numerous, and on the whole fairly well shown. In the class for a group of plants arranged for effect, Mr. Hoskins, of Stowe Park Gardens, set up a group that was arranged with great taste and skill, and which won for him the special prize given by Mr. Egerton Hubbard. In the class for six annuals in pots, an excellent half-dozen specimens were contributed by one exhibitor whose name we failed to obtain. They were well grown and bloomed, and consisted of *Viscaria corulea violacea*, *Chrysanthemum tricolor*, very fine; Prince's Feather, Dwarf French Marigold, Meteor, and a superb double scarlet *Zinnia*. These were the best lot of annuals of the kinds we have ever seen in pots.

In the way of cut flowers the best twenty-four *Roses* came from Mr. John Mattock, nurseryman, Oxford, while excellent stands of cut Zonal Pelargoniums came from Mr. Thomas Austiss, Brill, and Mr. J. Bates, of Oxford. Dahlias used years ago to be a leading feature at Buckingham, but on this occasion Mr. Austiss was the sole exhibitor, but showed some remarkably good flowers for the season. The stands of twelve hardy herbaceous plants were of a very interesting character, and thoroughly well shown. The best lot came from Sir Harry Verney, M.P., and included *Delphinium formosum*, *Digitalis grandiflora*, *Everlasting Peas*, *Phloxes*, *Sweet Williams*, &c.; Mr. Hoskins, of Stowe, was 2d with a very good lot. In the classes for twelve bunches of stove and greenhouse cut flowers Mr. W. Prewett, Hammersmith, was 1st, with *Allamanda*, *Dipladenia*, *Anthurium*, and other striking subjects.

Table decorations are always a leading feature at Buckingham, three pieces being shown by each exhibitor on tables covered with white cloths. On this occasion Mr. J. Parker, Rugby, was 1st, with an arrangement so perfect in all its parts as to be perfect. It was elaborate without garishness, and commanded general admiration. Mr. Hoskins took 2d place. Bouquets and buttonholes were very pretty indeed, being arranged to the best advantage on white cloths.

Of fruit there was a good display, and mostly by local gardeners. The best eight dishes came from Mr. T. P. Miller, Winslow, who had black and white Grapes, Peaches, Nectarines, Apricots, &c.; 2d, Mr. W. Bedford, Maids Morton. In the class for six dishes Mr. Bedford took 1st place, the Hon. W. J. Drummond, Maids Morton, being 2d. What we took to be the Early Amber Cherry was shown in several collections, and it was stated this variety was at one time grown very largely in the Cherry orchards of Buckinghamshire. Mr. James Smith, Wootton Gardens, had the best white Grapes, showing fine Muscats; Mr. T. P. Miller coming 2d, with Foster's Seedling. The best black Hamburgs came from Sir Harry Verney, Mr. H. Gurney, Aylesbury, being 2d. Peaches were numerous and remarkably fine, and the Nectarines were equally good, though

not quite so numerous. There were but very few Apricots, as might have been expected. Other fruits were fairly well shown for the season.

Though the weather threatened in the morning, it proved very fine at mid-day, and a large company was present in the afternoon.

West Wycombe Horticultural.—This flourishing Society, which was established some years ago in order to promote and encourage, by way of prizes, the cultivation of vegetables, fruits, &c., within the boundaries of this extensive parish, held its ninth annual exhibition in the beautiful and picturesque grounds of Lady Dashwood, the patroness of the society, in West Wycombe Park, on Tuesday, August 3. The day being exceedingly fine, a large concourse of people from the surrounding neighbourhood assembled. The Potato, which, as a vegetable, forms the staple article of consumption in a cottager's family, has very properly received its due share of notice and encouragement by the committee of this Society, as no less than ninety-six prizes were offered for this esculent, to be shown in single dishes, varying from 4s. to 1s. each. This large class is divided into eight sections, and six prizes are allotted for each division. Nearly two hundred entries were received for this class, most of which were accordingly staged, and made a good display of much interest to those concerned, and in some instances the exhibits were of a character fit to grace an exhibition table anywhere in the kingdom. A glance over these plainly reveals the popularity of some of the American kinds amongst this class of growers. The American Early Rose was more abundantly shown than any of the other kinds—a fact which goes far to prove the value of it as a variety for the purposes under consideration. Prizes were offered by the Society for collections of six distinct kinds of vegetables. The exhibits in this class were numerous and good, and so also were those in the class for four kinds, for which Messrs. Sutton & Sons, of Reading, offered three prizes.

The other open classes for vegetables included Onions, Cabbage, Carrots, Peas, Parsnips, Beans, Turnips, Vegetable Marrows, &c.; the prizes in all these classes were well contested, and in some instances it needed the keenest discrimination in making the awards justly. Salading subjects were also plentiful and good. Amongst these a wonderfully fine brace of Cucumbers was shown, not for competition, by the gardener to G. Hussey, Esq.

The show of fruit was a fairly representative one—small sorts, as Raspberries, Gooseberries, and Currants, being tolerably abundant. Apples were scarce, and Pears still more so. As usual at this show the table of bouquets and devices of wild flowers, chiefly contributed by the boys and girls at the Board Schools, were very neat, pretty, and interesting.

Beckenhams and Penge Horticultural.—The usual summer exhibition of this Society was held in the grounds of The Hall, Penge Road, the residence of F. Thirkell, Esq., on Monday last. Increasing in extent, more tent accommodation was found this year for the numerous exhibits, and although the somewhat aristocratic cottagers of the Alexandra Cottages partly hold aloof, there was no lack of the genuine cottager element in the locality to make up in that section a large and really very admirable display. The gardeners' class is a growing one, and includes some growers who know how to grow plants, although their specimens in no case are large ones, but none the less they are very clean grown, healthy, and full of vigour, and probably are limited in size because the home capacities are limited also. The six Fuchsias exhibited by Mr. W. Reid, gr. to J. Goddard, Esq., Beckenhams, were admirably grown, and well deserved the 1st prize; about 4 feet in height, full of foliage and bloom, they were as good as their size would permit. The 2d prize lot were pillar plants—too much pinched, but neat and fully blown; and in the 3d lot was a half-standard plant of Lord Beaconsfield that was literally a mass of bloom. Zonal Pelargoniums, inclusive of single and double kinds, were very good, and full of bloom: the best six were staged by Mr. B. Whitehouse, gr. to J. Cameron, Esq., Beckenhams, and included *Adelaide Blanchard*, *Wonderful*, *Madame Thibaut*, *La Cygne*, *McLeod*, and *Lucie Lemoine*; in this class Mr. Braybon, gr. to F. Palliston, Esq., Beckenhams, was 2d with capital plants, only needing a little more bloom. For special prizes for flowering Begonias offered by Mr. Laing, of Forest Hill, there was good competition, and the plants shown were first-class, the two first lots being of almost equal merit. Mr. Whitehouse was 1st, and Mr. Braybon 2d, both having kinds unnamed. In the decorative groups Mr. E. Braybon was 1st, having not only a pleasing arrangement, but very meritorious plants. Prominent in this group was a plan of the climbing *Paullinia thalictrifolia*, sent out a few years since by the Messrs. Veitch; generally it was mistaken for an *Adiantum*, as its foliage bears a close resemblance to the fronds of *A. cuneatum*. Stove and greenhouse flowering plants were, as is now usual, a weak feature, but Ferns, Palms, *Dracenas*, *Caladiums*, and similar foliage plants were abundant enough. The six Ferns shown by Mr. G. A. Steer, gr. to R. Reid, Esq., Beckenhams, though of moderate dimensions, were well grown, and very handsome. Messrs. J. Laing & Co. exhibited a very handsome group of plants and cut flowers, *Hollyhocks*—"a very fine show," said Mr. Laing, "not a speck of fungus this year"—and good *Roses*. Amongst the plants were fine herbaceous *Phloxes*, *Begonias*, and many interesting things. Mr. Cannell, of Swanley, sent one of his fine collections of cut *Verbenas*, with grand boxes of double and single Pelargoniums. The gardeners

exhibited good collections of cut flowers, amongst which was a capital lot of Dahlias staged by Mr. Townshend, gr. to P. McKinlay, Esq., Penge, who was placed 1st. In this locality Potatoes are a strong feature, and many good sorts are widely grown. In the open class for six kinds Mr. Townshend was 1st with handsome clean samples of Veitch's Ashleaf, Vicar of Laleham, Trophy, Lye's Wiltshire, Snowflake, International, and Purple King. In the 2d prize lot, shown by Mr. Poffley, gr. to F. Thirkell, Esq., there was a very handsome dish of Fenn's English Rose. In the cottager classes Mr. Denyer, of Beckenham, was 1st in with four dishes, having International, Grampian, Triumph, and Early Rose. In the largely contested classes for single dishes, International, white kidney; Trophy, red kidney; Giant King, white round; and Vicar of Laleham, coloured round; were the 1st prize dishes. There was a good show of fruit in all classes, and vegetables were fine and most abundant.

The Pelargonium: Aug. 4.—The annual meeting of this Society was held in the garden of the Royal Horticultural Society, at Chiswick, on Wednesday last. The following extracts from the annual report will show the success which has hitherto attended the work of the Society.* The committee state that hitherto the prize list has gone on steadily increasing in amount, with a marked effect on the quality of the exhibitions. This year the large amount of £141 15s. was offered, and no less than £109 was awarded. The increment in the various years is shown in the accompanying table:—

	Prizes Offered.	Prizes Taken.
1875..	£50 0 0	£40 0 0
1876..	62 0 0	36 10 0
1877..	104 10 0	87 2 6
1878..	109 13 6	78 7 6
1879..	125 15 0	91 10 0
1880..	141 15 0	109 0 0

The handsome certificate card which was provided to mark the excellence of new varieties adjudged to be worthy of it has brought out in the present year a large number of seedlings in the various classes of Pelargoniums, no fewer than 118 entries having been made. Of these eighteen have received the coveted honorary award of a First-class Certificate.

The committee have again to offer the most cordial thanks of the Society to Messrs. Kinghorn, Laing and Smith (Tollington Nursery), for the care and discrimination with which they awarded the Certificates to new varieties; and to Messrs. Douglas, Hibberd, and Denny, for awarding the prizes in the several classes. In instituting classes for new varieties not in commerce, the committee have had in view rather the improvement of the quality of the flowers than of the culture of the plants; but in all the other classes the object has been that superior cultivation should be specially aimed at and rewarded.

The committee have also to acknowledge the substantial and valuable assistance again rendered to the Society by the Council and officers of the Royal Horticultural Society—first, by providing for the cultivation of their collections at Chiswick; and, secondly, by the facilities afforded for holding their exhibitions. In this connection their thanks are especially due to the Garden Superintendent, Mr. Barron, for the warm interest always manifested by him in the Society's proceedings, whether at Chiswick or South Kensington.

Thus far the committee have been able to congratulate the Society on its efforts and their results. They have, however, to express their profound regret that they are henceforth to lose the official services of their present treasurer and secretary. These honorary officers have held their respective positions since the Society was established in 1874, and they now feel that, having done their part in working up the Society to its present prosperous position, they are entitled to rest from their labours, while other willing hands take up their respective tasks. The committee feel that words fail to express the indebtedness of the Society to Dr. Denny and to Mr. Moore for the work they have so ably, so ungrudgingly, and so disinterestedly performed.

It remains only to state that the balance-sheet presents a satisfactory view of the Society's financial position, since while all expenses and prizes are paid there is a balance of £62 in hand. The personal exertions of each member are, however, still needed to keep up the subscription list, so that means of offering substantial prizes, and of maintaining the Society in an independent position, may be forthcoming.

It was announced that the Council of the Royal Horticultural Society, in consideration that the show of Pelargoniums should take place at the date of their *conversazione*, and should be continued over a second day, would be prepared to augment the sum given by them in aid of the prize list. The meeting decided to hold the two days' show as proposed, and the additional subsidy was agreed to be disposed of in augmentation of the first and second prizes in section ii. of the schedule. The prizes for double Zonal Pelargoniums were also increased, so as to correspond with those offered for the singles. In other respects the schedule of last year was adopted for the exhibition of 1881. At the subsequent election of officers W. B. Kellock, Esq., was elected Chairman for the ensuing year; T. Moore, Esq., Vice-Chairman; H. Little, Esq., Hon. Treasurer; and S. Hibberd, Esq., Hon. Secretary; the following gentlemen being elected to the vacancies on the committee—Dr. Denny, E. B. Foster, J. King, Dr. Masters, and D. Windsor.

AUTUMN FRUIT SHOWS.—The annual fruit show at the Crystal Palace is announced to be held on the 25th, 26th, and 27 inst.; and a four days' show is to be held at the Alexandra Palace, commencing on Friday, August 3.



STATE OF THE WEATHER AT BLACKHEATH, LONDON.
FOR THE WEEK ENDING WEDNESDAY, AUG. 4, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						Hygrometrical Deductions from Glaisher's Tables 6th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.				Degree of Humidity. Sat = 100.	Average Direction.
July	In.	In.	°	°	°	°	°	°			In.
29	29.43	-0.33	74.1	56.1	18.0	61.7	0.6	57.1	85	S.W.	0.34
30	29.47	-0.29	70.1	50.5	19.6	57.7	4.6	51.0	79	WNW	1.07
31	29.61	-0.14	68.3	45.0	23.3	55.2	7.1	47.2	75	WSW	0.00
Aug.										S.W.	
1	29.42	-0.33	63.5	52.0	11.5	55.7	6.6	51.4	87	N. NNW	0.22
2	29.49	-0.26	60.2	50.0	10.2	55.4	6.9	51.9	89	WSW	0.32
3	29.68	-0.07	68.0	46.5	21.5	56.8	5.4	46.9	70	W.	0.03
4	29.68	-0.07	70.0	56.0	14.0	54.2	0.0	54.8	77	S.W.	0.00
Mean	29.54	-0.21	67.7	50.9	16.5	57.8	4.5	51.5	80	S.W.	0.05

July 29.—Frequently fine and warm. Squally, with heavy showers at times. Thunder heard, with heavy rain at 2 P.M.; two-tenths of an inch fell in six minutes. Fine evening. Cloudless at night.

— 30.—Heavy rain till 9 A.M. Fine from 10 A.M. till 3 P.M. Thunderstorm, with very heavy rain and hail at 3.40 P.M. Three-tenths of an inch of rain fell in 10 minutes. Fine in evening. Cloudless and cool at night.

— 31.—Fine day, a little thunder in the morning; cold.

Aug. 1.—Dull and wet till 10 A.M.; occasional sunshine afterwards. Cold day.

— 2.—Quiet dull morning. Heavy rain frequently from 10 A.M. till 2 P.M.; very dark and dull; sun came out after 3 P.M.

— 3.—Fine day, dull in morning, but more cheerful afterwards.

— 4.—Fine bright morning; frequently cloudy sky; warm night.

LONDON: Barometer.—During the week ending Saturday, July 31, in the vicinity of the metropolis the reading of the barometer at the level of the sea increased from 29.88 inches at the beginning of the week to 29.95 inches by the morning of the 25th, decreased to 29.49 inches by the afternoon of the 26th, increased to 29.83 inches by the night of the 27th, decreased to 29.56 inches by the morning of the 29th, and increased to 29.82 inches by the morning of the 31st, and was 29.77 at the end of the week. The mean reading for the week at sea level was 29.72 inches, being 0.29 inch below that of the preceding week, and 0.22 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 77° on the 25th to 68° 3 on the 31st; the mean value for the week was 72° 6. The lowest temperatures of the air observed by night varied from 45° on the 31st to 57° 1 on the 28th; the mean value for the week was 52° 5. The mean daily range of temperature in the week was 20° 1, the greatest range in the day being 25° on the 25th, and the least 13° 8 on the 28th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—25th, 62° 7, + 0° 5; 26th, 61° 1, — 1° 1; 27th, 63°, + 0° 8; 28th, 61° 8, — 0° 4; 29th, 61° 7, — 0° 6; 30th, 57° 7, — 4° 6; 31st, 55° 2, — 7° 1. The mean temperature of the air for the week was 60° 5, being 1° 7 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 153° on the 25th, 145° on the 27th, and 144° on the 29th; on the 28th the reading did not rise above 112°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 41° 6 on the 31st and 47° on the 30th; the mean of the seven lowest readings was 49°.

Wind.—The general direction of the wind was W.S.W., and its strength strong.

The weather during the week was cloudy, dull, and wet.

Rain fell on six days during the week; the amount measured was 2.04 inches.

ENGLAND: Temperature.—During the week ending Saturday, July 31, the highest temperatures of the air observed by day were above 76° at Blackheath, Cambridge, and Birmingham, and below 70°

at Plymouth and Liverpool; the mean value from all stations was 73° 2. The lowest temperatures of the air observed by night were below 47° at Leicester, Nottingham, and Wolverhampton, and was 51° at Norwich, Leeds, and Sunderland; the general mean from all stations was 48° 4. The extreme range of temperature was above 29° at Blackheath, Cambridge, and Wolverhampton, and below 20° at Bradford and Leeds; the mean range from all stations was 24° 9.

The mean of the seven high day temperatures was above 70° at Brighton, Blackheath, and Cambridge, and below 67° at Liverpool, Bradford, and Leeds; the mean from all places was 68° 5. The mean of the seven low night temperatures was below 53° at Blackheath, Wolverhampton, Nottingham, and Hull, and above 55° at Norwich and Bristol; the mean value from all stations was 54°. The mean daily range of temperature was above 18° at Cambridge and Blackheath, and below 11° at Plymouth and Liverpool; the mean daily range from all places was 14° 5.

The mean temperature of the air for the week from all stations was 59° 4, being 2° lower than the value for the corresponding week in 1879. The mean temperature was above 60° at Brighton, Blackheath, Norwich, and Birmingham, and below 58° at Leicester, Wolverhampton, Sheffield, Liverpool, Bradford and Leeds.

Rain.—Rain fell on five days at Hull, Bradford, and Sunderland, at all other stations it fell on six or seven days. The fall on the 25th was nearly 1½ inch at Truro; that on the 26th exceeded 1 inch at Plymouth and Sheffield; that on the 27th exceeded 1 inch at Norwich and Nottingham. In the week the fall exceeded 2 inches at Truro, Blackheath, Norwich, Nottingham, and Sheffield, and at Hull only was the fall of the week less than 1 inch.

The weather during the week was generally dull, with frequent rain, and but little sunshine.

SCOTLAND: Temperature.—During the week ending Saturday, July 31, the highest temperatures of the air varied from 76° at Dundee to 69° at Aberdeen; the mean from all places was 71° 3. The lowest temperatures of the air varied from 46° at Paisley to 48° at Glasgow. The mean range of temperature in the week from all places was 24° 4.

The mean temperature of the air for the week from all stations was 57° 3, being 1° 1 lower than the value for the corresponding week in 1879. The mean temperature was above 58° at Glasgow and Dundee, and below 56° at Paisley.

Rain.—The general fall was 1.08 inch; at Leith the fall was 0.49 inch; at Edinburgh the fall was 0.62 inch; at Glasgow it was 1.52 inch; and at Paisley it was 1.67 inch.

JAMES GLAISHER, F.R.S.

Variorum.

RAVAGES OF RATS AND MICE IN INDIA.—From the *Journal* of the Asiatic Society of Bengal we learn that rats and mice destroyed an enormous quantity of the crops in the Dakhan during the harvest of 1878-9. The Rev. S. B. Fairbank states that their ravages on an extensive scale commenced at the end of 1878, when the winter crops began to ripen. There had been destruction before, but when, daily, large quantities of green Sorghum stalks were brought to Nagar for sale, and it was known that they had the night before been cut down by rats, everybody awoke to the importance of the subject. At first stalks were cut down here and there on the fields, but more were cut as the days went on, and afterwards fields were suddenly attacked and destroyed in a few nights. When food became scarce where they were, the rats gathered their forces, and an army of them invaded fields that had not been harmed before, and quickly destroyed them. In some places they did not cut down the stalks, but climbed them, and gnawed off the ears of grain. Some of the ears thus cut off were eaten, or partially eaten, where they fell, and some were hauled into their holes by the rats, and stored there. A good deal of the grain thus stored was dug up and used for food. The farmers, finding the rats would leave them nothing, gathered as many as they could of the unripe ears, and thus saved from an eighth to a sixteenth of the crop. The rats also attacked the Wheat, and much of that was harvested while the grain was in the milk, but the dried unripe grain was shrivelled, small in quantity, and poor in quality. Gardens of Egg-plants, and other irrigated vegetables, were found by the rats, and the fruit was eaten by them while it was still immature. Even Carrots and Lucerne were eaten in the hot season, when their supply of *Cynodon Dactylon*, which is their usual food, was exhausted. The patches of Melons, and

other Cucurbitaceæ that are grown in the moist sand of river beds during the hot season, were nightly visited by the rats, and the fruit eaten before it was ripe enough for the food of man. These ravages extended over several thousand square miles, and reduced the poor people to great want. Fortunately these rats are sometimes destroyed in large numbers in a very summary manner. Where the first rains that fell were heavy, the black soil suddenly swelling, so as to fill up any holes or cracks there had been in it, caught the rats as securely as traps would have caught them, and smothered the greater part of them. In one place there was above 2½ inches of rain in the night, and in the morning the whole black soil was covered with dead and dying rats sticking in the mud. From superstitious motives the people use no means for destroying them.

VEGETATION OF THE SERRA DA ESTRELLA.—The *Ergänzungsheft*, No. 61, of Petermann's *Geographische Mittheilungen*, is wholly devoted to an account of the climate and vegetation of this little known region of Portugal, illustrated with a map, by J. Rivoli, of the forest department of Portugal. With regard to the vegetation, the author confines himself more particularly to the arboreal element, and gives some very interesting particulars. We mention this contribution to phytogeography because we have no doubt that it will be useful to botanists visiting the region.

PYRENE OIL MANUFACTURE IN CORFU.—Under the name of pyrene oil the oil from the residuum of the pulps and kernels of the Olives after the fruits have been submitted to the usual insufficient amount of pressure is now largely prepared. This so-called pyrene oil is, it appears, now regularly expressed in all the Olive producing countries bordering the Mediterranean. The residuum from which this oil is expressed retains from 2 to 4 per cent. of oil, which up to the time of the discovery and application of the ingenious method of extracting it now practised was entirely lost to commerce. The British Consul at Corfu, writing on this subject, says the experiment, first hazarded on a limited scale, has proved so successful that there are now two manufactories of this product in active operation in the island of Zante; and to the single high-pressure cylinder employed at the outset another has since been added, worked by two steam engines of 30 horse-power and capable of producing, one year with another, from 700 to 750 tons of oil. As in general a full Olive crop is produced only in alternate years, the supply of the necessary material must vary accordingly; but a pretty regular supply is kept up by importations from the other islands, from Greece and Epirus, and even from Italy, where, with the exceptions of Lucca and Tuscany, the methods employed in the oil manufacture remain in a state of almost primitive inefficiency. It is amazing with what pertinacity the people of these countries cling to old habits, even in the teeth of their own immediate interests. In this spirit the peasantry of Corfu persist in using the refuse of their Olive mills for fuel, while one of the managers of the pyrene oil-works says that he has neglected no opportunity of proving to them that for any given quantity of this substance they may obtain a price adequate to procure a quantity of firewood doubly sufficient for every domestic purpose. Attached to the pyrene oil-works is a soap manufactory on a proportionate scale, worked by a steam-engine of 14 horse-power, and turning out from 30 to 40 tons of soap monthly according to the demand. The article thus obtained is equal in its detergent properties to the best sorts produced from the ordinary oils used in soap manufactories, differing only somewhat in the colour, which is of a palish green. An attempt was made two years ago to introduce it into the English market, but owing to the heavy freights, added to the export and import duties, the prices obtained were not sufficiently remunerative to encourage the experiment.

VEGETABLE PRODUCTS OF BORNEO.—In a recent Consular report from Borneo some interesting notes are given on the products of the country. The principal article of export, it seems, from the port of Brunei to Singapore is sago flour, which is prepared in the factories of two Chinese (British subjects) in Brunei, who purchase the raw sago from the natives, and work it up into sago flour by Chinese coolie labour, using no machinery. The two Chinese sago manufacturers are now experimenting with tapioca, and have several hundred acres planted with that root.

The ground they have chosen, and for which they pay no rent to the Sultan, on the sides of the hills in the neighbourhood of the town close to their factories, is not the best procurable, and the difficulty in obtaining Chinese labour and the high wages demanded, as compared with the rates ruling in the Straits Settlements, may prove impediments to the success of the experiment. In many parts of the country the natives of the interior cultivate tapioca for their own consumption, and the root is said to be of large size. Until, however, a settled government is established in Borneo, neither Chinese nor European planters can embark in agricultural operations on a large scale. At Labuan the raw sago received is worked up into sago flour at three Chinese factories in the colony, and exported to Singapore. No pearl sago is made either at Brunei or Labuan, and in the latter sago flour is not an article of consumption; in parts of Borneo proper it is boiled and eaten under the name of *boyal*, with any acid condiment obtainable. The Sago Palm is described as one requiring little or no care or cultivation. A young tree is planted in swampy ground and let alone for ten years, when it is ready to be cut down, and the pith taken out of the trunk. Meanwhile, however, young Sago Palms have been springing up from its base, which in turn produce other Palms, and are themselves cut down and utilised. One tree yields from 3 to 5 piculs (about 17 piculs make a ton) of raw sago, which loses 50 per cent. during the process of its conversion into Sago flour. Next to sago flour the principal remaining exports are gutta-percha and india-rubber, camphor of the valuable kind known as *barus*, from *Dryobalanops aromatica*, bee's-wax, and birds' nests.

RELATION OF THE NUMBER OF CONCENTRIC RINGS IN TASMANIAN ENDOGENOUS TREES TO THEIR AGE.—It has long been proved that the concentric rings in exogenous trees correspond to periods of growth, and, therefore, the number of rings does not necessarily coincide with the number of years a tree has existed. Nevertheless the number of rings gives a very close approximation to the ages of trees in our climate, because there is rarely more than one period of growth in each year. It sometimes happens, however, that a very dry summer, which has completely arrested growth and even caused the leaves to fall, is succeeded by a warm wet autumn, which causes a second growth in the same year. The second growth is probably rarely equal to the first or spring growth, and in cases, in Europe, where it has been tested it has been found that there was an additional zone of wood in the young branches only, and all traces of it were lost before reaching the trunk. An interesting observation on the relation of the age of Gum trees in Tasmania to the number of concentric circles in their trunks is recorded in the *Journal and Proceedings of the Royal Society of New South Wales*. It is given on the authority of the Rev. J. E. Tenison-Woods, in an article on the forests of Tasmania; and the information was obtained from a Mr. Hill, proprietor of an extensive saw-mill at Honeywood, whom Mr. Woods designates as a perfectly reliable authority. This gentleman had observed that the Gum trees shed their bark twice annually; and having heard at a lecture on the growth of trees that a ring of wood was added each year, he was induced to test the truth of this statement. There was a Blue Gum-tree in his garden at Hobart Town, the age of which he knew with certainty, as his brother planted it eighteen years previously. He felled it and counted the rings, and found them to be thirty-six in number, or two for each year. From this, and from the shedding of the bark as described, and a long series of observations, he concludes that the sap rises twice in the year. He has for many years watched the growth of the trees, and he believes that for the first twenty years the average growth is about 1 inch in diameter for each year.

Enquiries.

He that questioneth much shall learn much.—BACON.

FLOWER SHOW EXPENSES.—Will some of our readers who have had practical experience in the economical management of flower shows kindly give me a hint as to what would be considered a fair sum to allow for expenses in proportion to the prize-money offered? *Lex*.

TOBACCO REFUSE.—It would be a great obligation if some correspondent would kindly mention whether this is used on ship-board for packing any special import, and if so, whether it is sold at any of our ports, and the price per cwt.? This inquiry refers to plant rubbish,

useless for the ordinary purposes of Tobacco, but stated to be procurable, and very serviceable as an insecticide, or to keep off attacks of insects. *O*.

TREES FOR POOR CLAY SOIL.—*J. B.* writes:—"I want to plant about 6 acres of very poor clay soil with trees that will grow into use quickly. Will Larch do? Also, will it pay to drain the land first?"

Answers to Correspondents.

FUNGUS: G. L. The specimen sent is the ultimate and dusty condition of one of the Myxogastres (*Spumaria alba*). When young it looks like white froth. It is more frequently seen on the stems of grasses than on *Potentilla*, as in your case, but it is not particular as to its host. *W. G. S.*—*T. L.* Your fungus on the pods of Kidney Beans seems the same with what is common on Pea-pods in wet seasons—*Ascochyta Pisi*, Lib. That on Wheat is *Septoria nodorum*, B.—*M. J. B.*

NAMES OF PLANTS: E. C. C. D. Buckwheat (*Polygonum Fagopyrum*). The husks of the seeds are used as packing for bulbs by the Dutch growers.—*S. P. A.* *Cerastium triviale*.—*H. F. W.* 1, The Virginian Poke (*Phytolacca decandra*); 2, *Gaultheria Shallon*. The berries of No. 1 have no economic value.—*P. H. G.* 1, *Pothos violacea*; 2, *Coccoloba platyclada*.—*D. P.* 1, *Sedum Maximowiczii*; 2, *Sedum spurium*; 3, *Campanula*, species indeterminate; 4, *Silene*, apparently pendula. The Pelargonium appears to have been burnt by the sun after a shower.—*J. Silver*, *Caulalis Anthriscus*.—*E. A. Dalrymple*, *Sidalcea oregana*.—*W. K.* *Chrysanthemum leucanthemum*.—*A. G. Hinds*, 2, *Aira flexuosa*; 3, *Bromus giganteus*; 4, *Jasione montana*; 5, *Artemisia vulgaris*; 6, *Scutellaria galericulata*; 8, *Galium uliginosum*; 9, *Teucrium scorodonia*. Why do you pack flowers in cotton-wool?—*B. H.* *Cannabis sativa*; the common Hemp.—*T. P.* 1, *Bignonia Chamberlaynii*; 2, *Cyrtodeira cupreata*.—*E. P. D.* *Camelina sativa*.—*Subscriber*. Perhaps *Spirea vacciniifolia*; but the specimen is insufficient.

PELAGONIUMS: W. R. The flowers all belong to the "large flowered" section, and appear to be of the "decorative" type.

POTATO DISEASE: North Devon. The spots are probably those of the dreaded malady, as there are traces about them of incipient fungus spawn.

* * * Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

CATALOGUES RECEIVED:—Jules de Cock (Faubourg St. Lévin, Ghent), Trade Catalogue of Plants.—Wm. Paul & Son's (Waltham Cross), Bulb Catalogue.—Dammann & Co. (Leipzig), Catalogue of Dried Flowers and Grasses, Floral Devices, &c.

COMMUNICATIONS RECEIVED:—G. T. M.—J. C.—C. S. & Son (many thanks).—F. D. H.—M. D.—H. C.—W. R.—H. E.—J. J. B.—W. C.—F. & A. S.—A. C.—J. G. B.—S. S.—G. M.—T. E.—F. S. (best thanks). The *Calothamnus* next week.—W. A. G.—O. B.—W. T. T. D.—Charles Naudin.—C. L.

Markets.

COVENT GARDEN, August 5.

Trade has fallen off considerably during the last few days, and all classes of goods are only cleared at lower rates. Soft fruit nearly finished. Large arrivals of Grapes from the Channel Islands. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen	4 0 9 0	Fuchsias, per dozen	5 0 12 0
Begonias, per doz.	4 0 12 0	Lilium eximium, doz.	9 0 24 0
Bouvardias, per doz.	12 0 24 0	— auratum, p. doz.	30 0 60 0
Calceolarias, p. doz.	4 0 12 0	— speciosum, dozen	12 0 30 0
Cockscombs, p. doz.	3 0 6 0	Lobelia, per dozen	3 0 6 0
Crassula, per dozen	12 0 18 0	Mignonette, per doz.	4 0 9 0
— large, per pair	5 0 10 0	Myrtles, per doz.	6 0 12 0
Cyperus, per dozen	4 0 9 0	Nasturtiums, dozen	3 0 6 0
Dracena terminalis	30 0 60 0	Palms in variety,	
— viridis, per doz.	12 0 24 0	each	2 6 21 0
Euonymus, various,		Pelargoniums, dozen	9 0 24 0
per dozen	6 0 18 0	— Ivy-leaved, doz.	4 0 3 0
Ferns, in var., doz.	4 0 18 0	— Tricolor	4 0 12 0
Ficus elasticus, each	1 6 7 6	— scarlet, per doz.	3 0 9 0
Foliage Plants, various,		Rhodanthus, per doz.	6 0 9 0
each	2 0 10 6		

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Pansies, 12 bunches	2 0 6 0
Bouvardias, per bun.	1 0 4 0	Pelargoniums, 12	
Calceolaria, p. bunch	0 9 1 0	— sprays	0 6 1 0
Carnations, 12 bun.	3 0 9 0	— zonal, 12 sprays	0 3 0 9
Cornflower, per doz.	3 0 6 0	Phlox, 12 bunches	0 6 12 0
Eschscholtzia, 12 bun.	3 0 6 0	Primula, double, per	
Eucharis, per doz.	4 0 6 0	bunch	1 0 1 6
Feverfew, 12 bun.	4 0 6 0	Roses (indoor), doz.	1 0 9 0
Forget-me-not,	12	— outdoor, 12 bun.	4 0 9 0
— bunches	3 0 9 0	Staplelatis, 12 spr.	3 0 0 0
Gardenias, 12 blms.	4 0 12 0	— Tricolor	4 0 12 0
Heliotropes, 12 sp.	0 6 1 0	Tropeolum, 12 bun.	1 0 3 0
Mignonette, 12 bun.	2 0 6 0	Tuberose, per dozen	1 6 4 0

FRUIT.—WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Apples, ½-sieve .. 2 0-3 0	Lemons, per 100 .. 6 0-10 0
Apricots, per box .. 1 0-1 6	Melons, each .. 2 0-5 0
Cherries, per ½-sieve 6 0-12 0	Oranges, per 100 .. 6 0-12 0
Currants, black, .. 9 0-11 0	Peaches, per doz. .. 4 0-8 0
½-sieve .. 9 0-11 0	Pine-apples, per lb. 1 6-4 0
Gooseberries, per .. 2 3-3 6	Raspberries, per lb. 0 3-0 5
½-sieve .. 2 3-3 6	Strawberries, per lb. 0 6-1 0
Grapes, per lb. .. 1 0-4 0	

VEGETABLES.—RETAIL PRICES.

s. d. s. d.	s. d. s. d.
Artichokes, Globe, .. 6 0-9 0	Horse Radish, p. bun. 4 0- ..
per doz. .. 6 0-9 0	Lettuces, Cabbage, .. 0 6-1 6
Aubergines, per doz. 3 0- ..	per doz. .. 0 6-1 6
Beans, French, p. lb. 0 6- ..	Mint, green, bunch. 0 4- ..
Beet, per doz. .. 1 6-2 6	Mushrooms, p. bask. 1 6-2 0
Cabbages, per doz. .. 1 0-2 0	Onions, per bushel. 5 0- ..
Carrots, new, bunch 0 4-0 6	— Spring, per bun. 0 6- ..
Cauliflowers, Eng- .. 3 0-6 0	Parsley, per bunch. 0 4- ..
lish, each .. 3 0-6 0	Peas, English, per qt. 1 6- ..
Celery, per bundle .. 1 6-2 0	Radishes, per bun. 0 2- ..
Chilis, per 100 .. 3 0- ..	Small salad, pun. 0 4- ..
Cucumbers, per doz. 0 6-0 9	Sprinach, per bushel 2 6- ..
Endive, per doz. .. 1 6-3 0	Tomatos, per dozen 2 0-3 0
Garlic, per lb. .. 1 0- ..	Turnips, new, bunch. 0 4- ..
Herbs, per bunch .. 0 2-4 0	Vegt. Marrows, doz. 2 0- ..

Potatos are all much lower, and prices down all round from 1s to 1s 2d.

SEEDS.

LONDON: Aug. 4.—The market to-day was very thinly attended, with scarcely any business doing; in fact, no disposition to deal in any description of seeds has yet manifested itself. The abundance of green food throughout the country, but more particularly the general scarcity of stock, have this summer combined to considerably curtail the usual sowing demand for seeds. Lower quotations for Trifolium come to hand from France: the inquiry here continues meagre. Turnip seeds will this season be exceedingly cheap. New Rape seed now offers more freely. There is no change in the values of either Hemp or Canary seeds. The lively speculation in Clover seed, which cable reports describe as now current in America, has thus far found no response on this side. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

There was no business transacted at Mark Lane on Monday, it being Bank Holiday. On Wednesday trade was not very lively. Wheat was held for the full prices of Monday last, but there was very little doing. Barley was steady. Malt was neglected. Oats were in moderate supply, and sound corn was steady. Maize was rather dull. Beans, Peas and flour were quiet, without material variation.—Average prices of corn for the week ending July 31:—Wheat, 44s. 2d.; Barley, 27s. 1d.; Oats, 23s. 1d. For the corresponding period last year:—Wheat, 49s. 3d.; Barley, 28s. 6d.; Oats, 21s. 8d.

CATTLE.

At the Metropolitan Market on Monday trade was exceeding dull, and partook very much of a holiday character; but choicest qualities of beasts, being scarce, were not much lower than last reported. There was but a small attendance of buyers on the sheep side; trade was consequently very dull, and on the average prices were rather lower. Choice lambs were in request, but the larger number on offer were very middling. Calf trade unaltered. Quotations:—Beasts, 4s. to 4s. 10d., and 5s. 4d. to 5s. 10d.; calves, 4s. 10d. to 5s. 10d.; sheep, 5s. to 5s. 4d., and 6s. to 6s. 8d.; lambs, 6s. 6d. to 7s. 6d.; pigs, 4s. to 5s.—Thursday's cattle trade was very quiet in tone. With a slow sale, prices for beasts were about as above. Sheep and lambs moved off quietly at previous rates. Calves and pigs were unaltered.

HAY.

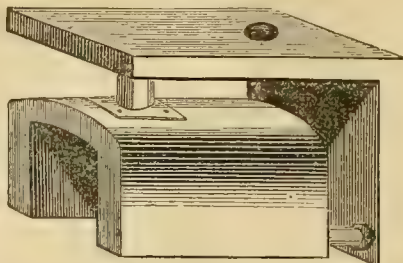
Tuesday's Whitechapel market report states that supplies were large and the trade very dull, but not to alter current rates. Fine weather much wanted to finish the hay-making. The second crop is coming forward very rapidly, and in some localities is well advanced towards maturity. Quotations:—Superior Clover, 110s. to 140s.; inferior, 70s. to 95s.; superior hay, 90s. to 110s.; inferior, 30s. to 80s.; and straw, 25s. to 40s. per load.—On Thursday there was a large supply of fodder on sale. The trade was dull, and prices were without alteration.—Cumberland Market quotations:—Superior old meadow hay, 108s. to 116s.; inferior, 65s. to 88s.; new hay, 50s. to 95s.; superior old Clover, 130s. to 140s.; inferior, 90s. to 110s.; new Clover, 70s. to 120s.; and straw, 36s. to 42s. per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that the supplies of English are very large, and disease very apparent. Trade is very dull, and prices depressed. There are also full supplies of foreign, which are very unsaleable. Quotations:—English Regents, £3 to £4 10s.; Shaws, £3 to £4 10s.; flukes, £5 to £6; kidneys, £6 to £6 10s.; French, £3 to £4 per ton. Dutch, 4s. 9d. per basket, averaging about 60 lb.

Government Stock.—The Exchange was closed on Monday. On Tuesday the closing prices of Consols were, for delivery, 97½ to 97½, and for the account 97½ to 98; these figures were repeated on Wednesday. Thursday's closing figures were, for delivery, 97½ to 97½; and 97½ to 98 for the account.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	7 0 0
20 "	18 "	24 "	400	8 0 0
20 "	18 "	30 "	500	9 0 0
24 "	24 "	24 "	700	12 0 0
24 "	24 "	30 "	850	14 0 0
24 "	24 "	36 "	1000	16 0 0
24 "	24 "	48 "	1400	20 0 0
28 "	28 "	60 "	1800	25 0 0

Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Balham Hill, S.W., May 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers: they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS OF HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for

HOT-WATER PIPES and CONNECTIONS.

4-inch Pipes, 1s 8d. per yard. Other sizes equally low.

SILVESTER & SAINSBURY, Castle Hill Foundry

Engineering and Boiler Works, Newcastle, Staffordshire.

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½d. per lb.—all colours. Improved Zinc White Paint, 4½d. per lb. Cash. —A. LEETE & CO., 129, London Rd., Southwark, S.E.

Gather Honey from Your Flowers.

NEIGHBOUR'S Celebrated BEEHIVES.

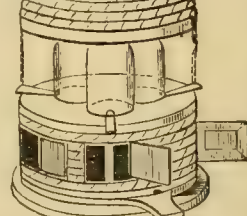
PHILADELPHIA EXHIBITION, 1876.

PARIS EXHIBITION, 1875, 1878.

Three Silver Prize Medals awarded George Neighbour & Sons.

The IMPROVED COTTAGE BEEHIVE, as originally introduced by G. Neighbour & Sons, working three bell-glasses, is neatly and strongly made of straw; it has three windows

in the lower Hive. This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.



Price, complete £1 15 0

Stand for ditto 0 10 6

Also BAR FRAME

HIVES of most approved

construction, at 7s. 6d.,

12s. 6d., to 25s. each, and

Philadelphia Frame Hives,

complete with Cover and

Stand, 42s.

An Italian Alp Queen,

with full directions for

uniting to Black Stocks, at

current prices.

LIGURIAN and ENGLISH BEES.—Stocks and swarms

may be obtained as heretofore.

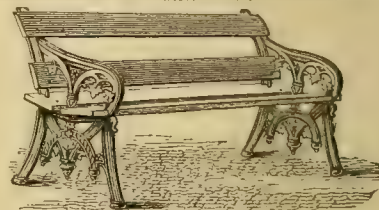
THE APIARY. By ALFRED NEIGHBOUR. 5s., postage 5d.

A newly arranged CATALOGUE of other improved Hives,

with Drawings and Prices, sent on receipt of two stamps.

GEO. NEIGHBOUR AND SONS, 127, High Holborn, W.C.,

or 149, Regent Street, London, W.



Rustic Garden Furniture in great variety.

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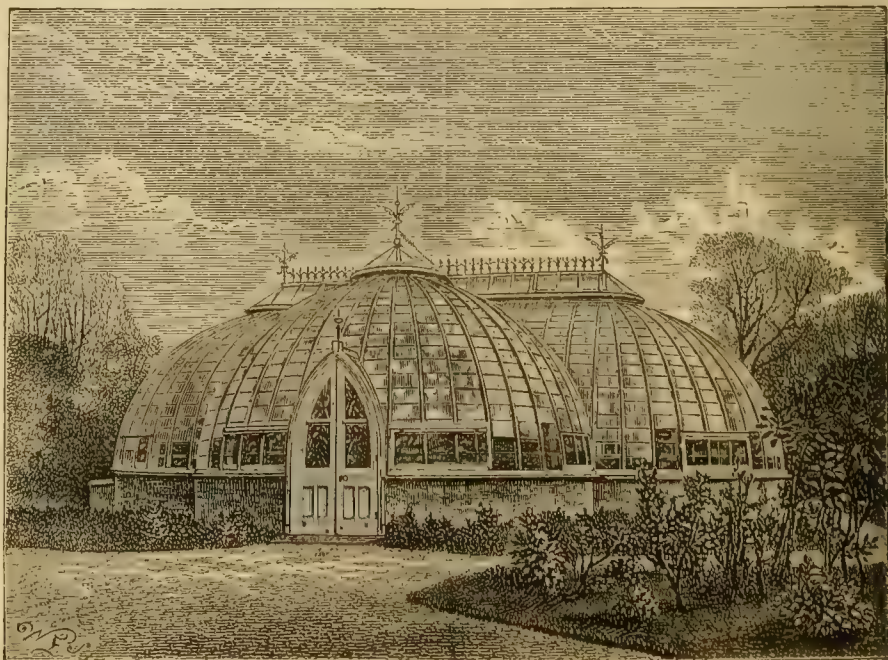
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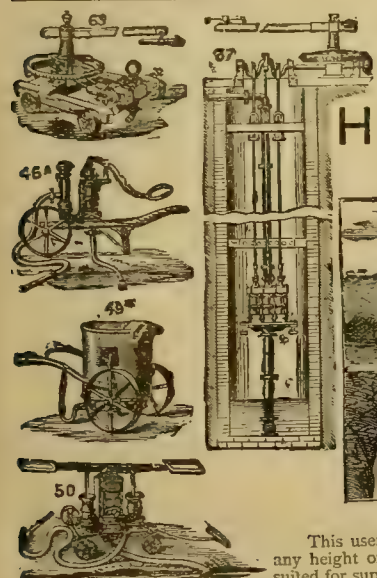
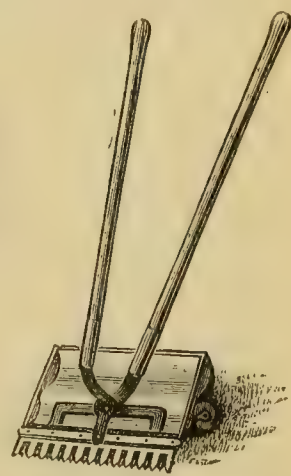
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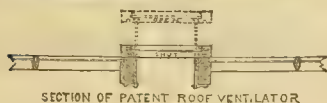
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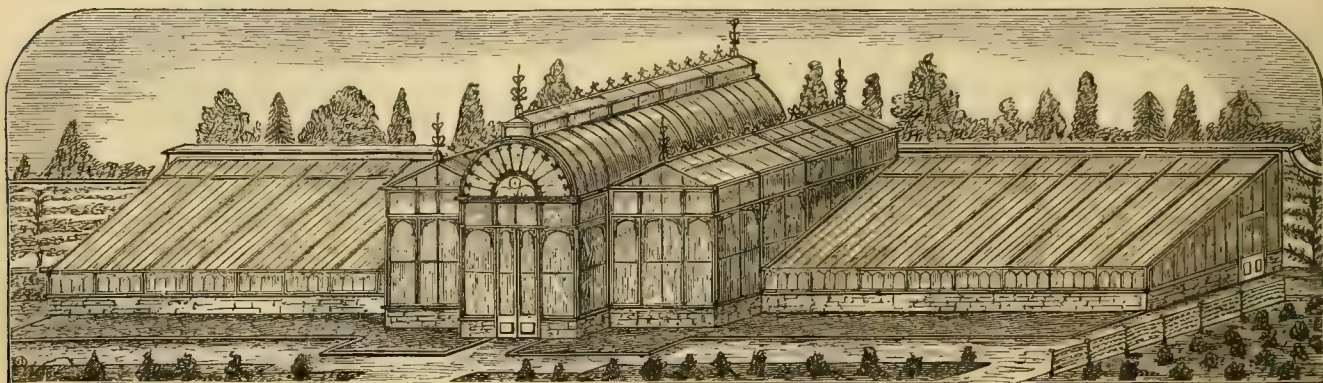
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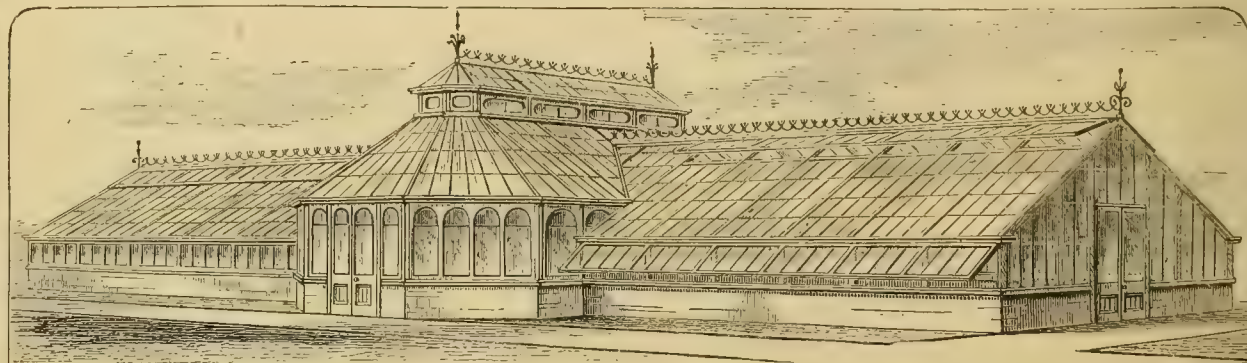
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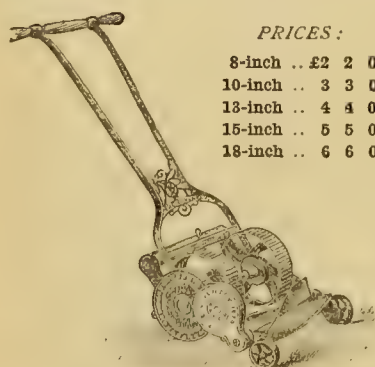
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Now Complete.

SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of the Numbers:—

1879.—Oct. 11, 2.	1880.—Jan. 10, 24.	1880.—May 8, 29.
Nov. 25, 8.	Feb. 7, 21.	June 19, 10.
„ 15, 29.	Mar. 20, 27.	July 10, 10.
Dec. 13, 13.	April 3, 13.	August 7, 10.

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

CRYSTAL PALACE.

AUTUMN FRUIT AND FLOWER SHOW.

WEDNESDAY, THURSDAY AND FRIDAY, Aug. 25, 26, 27.

Schedules on application to Mr. W. G. HEAD, Crystal Palace.

ALEXANDRA PALACE,

London, N.

THE NATIONAL FRUIT EXHIBITION, September 3, 4, 6, 7. Prize List forwarded on application. Exhibitors need not attend in person, provided due Notice be given of the Dispatch of the Exhibits.

JOS. FORSYTH JOHNSON.

Director of Horticultural Exhibitions.

ALEXANDRA PALACE,

London, N.

THE NATIONAL FRUIT EXHIBITION, SEPTEMBER 3, 4, 6, 7. The following PRIZES are included in the Schedule:—

CLASS	1st.	2d.	3d.
1. 20 Varieties of Fruits ..	15 0 0	10 0 0	6 0 0
2. 5 Varieties Grapes, one bunch each ..	5 0 0	3 0 0	2 0 0
3. 4 Bunches Black Hamburgh Grapes ..	5 0 0	3 0 0	2 0 0
4. 3 Bunches of Muscat Alexandra Grapes ..	5 0 0	3 0 0	2 0 0
5. Ornamental Baskets of Grapes, not less than 8 varieties ..	5 0 0	3 0 0	2 0 0
6. 1 Heaviest Bunch Black Grapes ..	3 0 0	2 0 0	1 0 0
7. 1 Heaviest Bunch White Grapes ..	3 0 0	2 0 0	1 0 0

A Complete List forwarded on application. Exhibitor need not attend in person, provided due notice be given of the Dispatch of the Exhibits.

JOS. FORSYTH JOHNSON, Director of Horticultural Exhibition.

ISLE OF THANET FLORAL AND HORTICULTURAL ASSOCIATION AND COTTAGERS' GARDENING SOCIETY,

will hold their TWENTY-FIFTH EXHIBITION at Dane Court, St. Peter's, on WEDNESDAY, August 25.

5, Brook Terrace, Margate. C. D. SMITH, Hon. Sec.

To the Trade.

CARTERS' WHOLESALE CATALOGUE of DUTCH FLOWER ROOTS, SUNDRIES, PLANTS, &c., has been Posted to all Customers. Should any miscarry, a duplicate copy will be forwarded on application. 237 and 238, High Holborn, London, W.C.

NOTICE IS HEREBY GIVEN, that all Claims upon the Firm of Barnwell and Tibbury must be sent in on or before the 31st of this month; and that the above Business will now be CARRIED ON by JOHN TILBURY. The Graperies, Crescent Road, Worthing.

LILY of the VALLEY.—Fine strong Crowns for forcing, the best quality, as known in use many years; 40s. per 1000; by taking at least 5000, at 38s. per 1000, for cash, carriage free to Hamburg. By taking at least 10,000, and cash with order, carriage free to London. Early orders requested. ROBERT NEUMANN, Erfurt, Germany.

Hyacinths, Tulips, &c.

BUDDENBROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

DUTCH BULBS.—Cheap Route.—Buyers when ordering should request the Growers to consign them to

WATSON AND SCULL, 90, Lower Thames Street, London, E.C., Forwarders to all parts of the World; they will then secure speed with cheapness.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., is now ready, and will be posted to their Customers in a few days. Also post-free, on application. Lion Walk, Colchester.

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JOHN LAING AND CO.'S unrivalled Gold Medal Collection is now in bloom. Inspection invited. Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out. LISTS free on application. The Nurseries, Forest Hill, London, S.E.

SPIRÆA ULMARIA VARIEGATA.—Beautiful golden variegated foliage (see the Garden, of June 12, 1880, p. 513). Messrs. BUDDENBROS., Hillegom, near Haarlem, Holland, offer fine plants of the above at 20s. per 100.

WM. CUTBUSH AND SON beg to announce that their

GENERAL PLANT CATALOGUE is now ready for the ensuing season, and may be had post-free on application. Highgate, London, N.; and Barnet, Herts.

AZALEA INDICA, fine healthy plants, well shaped, covered with buds, of all the best varieties in commerce. Price from £3 4s. to £8 per 100; special price per 1000. L. DELARUE-CARDON, Nurseryman, 98, Chaussée de Bruxelles, Leideberg, near Ghent, Belgium.

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Primulas — Primulas — Primulas.

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WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free. Extra strong plants, in 60-pots, 2s. 6d. per dozen, or in EXCHANGE for MAIDENHAIR and other FERNS. The above are quite equal to those I have sent out in previous years. Cash with order. JOHN STEVENS, The Nurseries, Coventry.

WANTED, Two large Plants of **MAGNOLIA GRANDIFLORA**, in pots: larger the better. Size and price to BUCHANAN, Gardener, Sherwood, Tunbridge Wells.

WANTED, **ARAUCARIA IMBRICATA**, 2 to 3 feet high. Must be well established. Size and lowest price to Messrs. LEVAYASSEUR AND SON, Nurserymen, Ussy, Calvados, France.

WANTED STRAWBERRIES, strong, Sir Chas. Napier, La Grosse Sucrée, and new kinds; also ZONAL PELARGONIUMS, Bicolors, Mrs. Pollock, Vesuvius, &c. H. CANNELL, Home for Flowers, Swanley.

To Farmers, Market Gardeners, and Others.

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NEW ROSES in Pots.—Tea and Noisette

ROSES in Pots.—CLEMATIS in Pots.

INFALLIBLE MILDEW COMPOSITION.

Special LISTS, with full particulars, now ready, gratis and post-free.

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THE BEST of the NEW GERANIUMS of

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New Early-Flowering Pelargoniums.

F. AND A. SMITH will be sending out their selection of the above, which consists of the greatest novelties yet raised, combined with robust, compact, and free habits. Priced LIST on application.—The Nurseries, West Dulwich.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries. CATALOGUES free. The Trade supplied.

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MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug. Royal Nurseries, Ascot, Berks.

To the Trade only.

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The Wholesale CATALOGUE (No. 347A) of Dutch Flower Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants, for 1880-81, is now ready, and may be had free on pre-paid application, by Nurserymen, Florists and Seedsmen.

ORANGE TREES.—To be Disposed of,

Two large Orange Trees, height 12 feet. Apply to A. BYE, The Gardens, Hampton Court, Leominster, Herefordshire.

EWING AND CO.'S Magnificent Collection of ROSES is NOW in FULL BLOOM. Intending purchasers are specially invited to inspect the stock. The Nurseries are open to the Public on Week-days. CATALOGUES of Roses and General Nursery Stock gratis and post-free. The Royal Norfolk Nurseries, Eaton, near Norwich.

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Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

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Strong Roots for Fruiting next year, 4s. per 100.

Descriptive LIST on application.

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being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once. CATALOGUE post-free. Special Prices for large quantities. H. CANNELL, Swanley.

STRAWBERRY RUNNERS,

strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s. W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

Strawberries.

CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice. The Royal Nurseries, Slough.

Select Seeds for Present Sowing.

CABBAGE, ONION, LETTUCE, CALCEOLARIA, CINERARIA, PRIMULA, as well as all others of very superior quality. JAMES DICKSON AND SONS, 108, Eastgate Street, Chester.

SALES BY AUCTION.

The Magnificent Collection of Established Orchids of the Right Hon. Lord Londesborough.

MR. J. C. STEVENS has received instructions from the Right Hon. Lord Londesborough, to **SELL BY AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **TUESDAY**, August 17, and following days, at half-past 12 o'clock precisely each day, his Valuable and Extensive **COLLECTION OF ORCHIDS**, amongst which will be found fine Specimen Plants of the following rare varieties:—*Masdevallia Harryana*, Bull's blood variety; *M. Trochilus*, *M. Macrura*, *M. Toverensis*, *M. Veitchiana*, *Veitch's* best variety; *Lycaste Skinneri* alba, *Cattleya labiata*, summer and autumn flowering varieties; *Laelia anceps Dawsoni*, *L. purpurata*, with pure white sepals and petals and dark purple lip; *L. autumnalis*, Mr. Rucker's best variety; *L. Jonghiana*, *Cattleya exoniensis*, *C. Dowiana*, *C. gigas*, *C. Warneri*, Mr. Rucker's variety; *Coclogyne cristata*, *C. cristata Lemoineana*, true *Dendrobium Falconeri*, *D. erythroxanthum*, *D. Kingianum*, *Aerides Veitchii*, *Angraecum sesquipedale*, finest variety; *Saccolabium Blumei*, *Phalaenopsis Portiana*, *P. casta*, *P. leucorhoda*, *P. Lowii*, *Angraecum Ellisii*, *Pleione Reichenbachii*, *Odontoglossum vexillarium*, *O. Hallii*, *Sobralia macrantha*, *Woolley's* variety, &c.

May be viewed the morning of Sale, and Catalogues had.

Masdevallia Shuttleworthii.

MR. J. C. STEVENS will **SELL BY AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, August 19, a quantity of fine plants of **MASDEVALLIA SHUTTLEWORTHII**, well established, and making good growths.

May be viewed the morning of Sale, and Catalogues had.

Dutch Bulbs.

MR. J. C. STEVENS will **SELL BY AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **SATURDAY**, August 21, at half-past 12 o'clock precisely, a consignment of **HYACINTHS**, **TULIPS**, **CROCUSES**, **NARCISSUS**, and other Bulbs, just received direct from well known farms in Holland.

May be viewed the morning of Sale, and Catalogues had.

Imported and Established Orchids.

MESSRS. PROTHEROE AND MORRIS will **SELL BY AUCTION**, at the Mart, Tokenhouse Yard, E.C., on **MONDAY**, August 23, half-past 11 o'clock precisely, 400 lots of **ESTABLISHED ORCHIDS**, including *Masdevallia Toverensis*, *M. Harryana* carulescens, fine specimen with forty leaves; *Cattleya exoniensis*, *Odontoglossum vexillarium*, and many other rare varieties; a consignment of Eight Cases of **IMPORTED ORCHIDS**, received direct from Mexico in very fine condition, including several large pieces of *Laelia majalis*, *L. autumnalis*, *L. acuminata*, *Cattleya citrina*, *Epidendrum vitellinum majus* (true), *E. nemorale*, *Bonapartei* stricta, *Ceratostomum Frederici* Guillemii, *Brahea nitida*, a rare ornamental Palm, &c.; also a few **SEMI-ESTABLISHED ORCHIDS**, imported in May last.

Catalogues had at the Mart, and 98, Gracechurch Street, E.C.

Brentwood.

CLEARANCE SALE.—The Nursery having been sold for building,

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Mann, to **SELL BY AUCTION** on the Premises, the Nursery, Brentwood, on **THURSDAY**, August 26, at 12 o'clock, the whole of his choice collection of **ZONAL GERANIUMS**, including Lord Beaconsfield, and other varieties not yet sent out; *Azalea indica*, *Camellias*, Ferns, &c. Two and Three-Light Boxes, Tumbrel and Water Carts, Iron Roller, large Heap of Mould, and other effects.

Catalogues on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C.

Dutch Bulbs.—Special Trade Sale.

MESSRS. PROTHEROE AND MORRIS will **SELL** at the Mart, Tokenhouse Yard, E.C., on **MONDAY**, August 30, at half past 11 o'clock precisely, first class **HYACINTHS**, **TULIPS**, **CROCUS**, **NARCISSUS**, and various Bulbs from Holland, in lots to suit the Trade and other large buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

High Field House, near Nottingham.

To **COLLECTORS OF FERNS, FLORISTS, and OTHERS**. In consequence of having gone to reside in Monmouthshire, E. J. Lowe, Esq., has instructed

MR. J. M. POTT to **SELL BY AUCTION**, on the above Premises, on **AUGUST 19** and **20**, his valuable and well-known **COLLECTION OF BRITISH FERNS, CAMELLIAS, and other PLANTS**. The Ferns consist of about 4000 Specimens and Half Specimens, amongst which are several hundreds of the finest exhibited plants in England, which have obtained above 100 First-class Certificates from the Royal Horticultural and Royal Botanic Societies for new varieties, and several hundred First-class Prizes in various parts of England and Scotland.

Catalogues may be had on application, by post, to the Auctioneer, Eldon Chambers, Wheeler Gate, Nottingham.

To **Gentlemen's Gardeners, Florists and Others**. To **BE SOLD**, the Lease of a lucrative **MARKET NURSERY**. Nearest approach to Covent Garden.—**C. G., Gardeners' Chronicle Office, W.C.**

Island of Guernsey.

To **BE SOLD**, a **GARDEN, VINERIES, and GROUNDS**, containing about 2½ acres, in the parish of St. Peter Port, and within a short distance of the town. The Vineries are in all 270 feet long, stocked with the choicest Vines, on which there are now about 3000 lb. of fruit. The Garden was laid out about four years ago. There are upwards of 300 young Fruit Trees, including nearly 100 of the famous Chaumontelle Pears. There is a Nursery of about 7000 young Vines, and about 20,000 strong Asparagus plants. The Land is held in fee, not subject to any Rent, and the taxes are nominal. One-third of the Purchase Money may be left outstanding.

Apply to **T. GODFREY CAREY, Esq., Advocate, Court Place, Guernsey.**

To Market Gardeners and Others.

To **BE LET**, on Lease or by the Year, from Michaelmas next, Large or Small Parcels of most suitable **LAND** for Market Gardeners. Admirably situated (for convenience of good trade, &c.) on the South Coast.

MR. GEO. LEGGETT, Estate Agent, Littlehampton.

To Market Gardeners, Builders, &c.

To **LET**, 50 Acres of First-class **LAND**, 2 mile from station, 14 from London. Possession at Michaelmas. Apply to **S. SMITH, 46, Watling Street, and The Manor, Felham.**

London, S.E. (5076.)

Within 7 miles of Covent Garden.

FLORIST'S BUSINESS, excellent and well-established, doing a good Market and Local Trade in Cut Flowers, Heath Growing, and Pot Plants. Comprises nearly 2 Acres of Land, with Three Houses, Pit and Potting-shed (belonging to freeholder), Seven large Span-roof Houses, Twelve Span-roof Pits, all heated by Hot-water Piping; Stabling, Office, and Shed, the property of Tenant. Lease twenty-four years at the low rent of £50. Price for Tenant's Glass Erections and Lease, £1500. No stock to be taken. Full particulars of Messrs. **PROTHEROE AND MORRIS**, 98, Gracechurch Street, E.C.

ST. JOHN'S COTTAGE, near Clapham Junction, standing in its own Grounds, fourteen Rooms, extra large Flower and Fruit Gardens, Coach-house, Stables, and three Rooms attached.

Enquire, **AGENT, Estate Office, 6, Bolingbroke Grove Villas, Wandsworth Common, S.W.**

BANBURY HORTICULTURAL SOCIETY.—The **THIRTY-FOURTH ANNUAL SHOW** of the above Society will take place on **TUESDAY**, August 25, at **OPEN PRIZES**.

1.—**STOVE or GREENHOUSE PLANTS**, either in Flower or Ornamental, but not Achimenes, Fuchsias, Pelargoniums, or Annuals, 9 varieties, to be grown in not less than 3-inch pots. 1st, £10; 2d, £5.

2.—**24 ROSES**, not less than 12 varieties. 1st, £1 10s.; 2d, 15s.

3.—**CUT FLOWERS**, 24 Bouquets, and not less than 18 varieties. 1st, £1; 2d, 10s.

4.—**FRUIT for DESSERT**, best collection (without a Pine), not less than 8 varieties. 1st, £1; 2d, 15s.

Exhibitors must give Notice to the Secretary on or before Saturday, August 28. For further particulars and Schedules, apply to **High Street, Banbury.** **Mr. E. J. HARTLEY, Sec.**

MASDEVALLIA SHUTTLEWORTHII.

This most beautiful and distinct Plant is very free flowering in its native country, and the contrast of colours is very charming. It is very difficult to import alive, but is free growing when once established. The Plants offered for Sale comprise the entire importation of established and growing Plants. When once well shown in flower it will become a great favourite. A plant of four leaves will often have as many flowers. It requires to be grown cool, viz., 60° by day, and 45° by night, and thrives in a damp atmosphere.

A Water-coloured Painting will be shown at Messrs. **STEVENS' Rooms**, 38, King's Street, Covent Garden, W.C., on August 17, 18, and 19.

SENECIO SPECIOSUS.—A Bed with thousands of flowers of this beautiful New Plant (illustrated in the *Gardeners' Chronicle*, July 31, p. 149), can now be seen at Mr. **WILLIAM BULL'S** Establishment. Being a continuous blooming plant, it will be in perfection until next November.

Seed of this striking novelty will shortly be ready, at 2s. 6d. per packet.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Autumn, Winter, and Spring Flowering Plants.

F. AND A. SMITH offer well-grown stocky examples of the above, a LIST of which will be found in last week's issue of this Paper. Price on application. The Nurseries, West Dulwich, S.E.

Dutch Bulbs.

C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to

Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E.C.

To the Trade.

ENGLISH SOWING RAPE SEED and WHITE MUSTARD.

H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application. Seed Growing Establishment, Wisbech.

NEW GERANIUMS of 1879,

Reduced in Price.
12 superb varieties **ZONAL GERANIUMS** of 1879, for 6s.
12 splendid varieties **GERANIUMS** of 1878, for 4s.
12 very select varieties **GERANIUMS** of previous years, for 3s.
12 very superb varieties **DOUBLE GERANIUMS** of 1879, for 6s.
12 fine varieties **DOUBLE GERANIUMS** of 1878, for 4s.
12 best selected varieties **OLDER DOUBLE GERANIUMS**, for 3s. In good Plants, Post-free, from **B. W. KNIGHT, Florist, Battle, Sussex.**

JULES DE COCK, NURSERYMAN,

Ghent, Belgium, offers:—
PALMS, seedlings, in store pots, per 100:—*Areca* alba, 60s.; *A. masagascariensis*, 60s.; *A. rubra*, 30s.; *Chamaedorea exelsa* and *humilis*, 8s.; *Corypha australis*, 22s.; *Lantana borbonica*, 10s.; *Pandanus utilis*, 20s.; *Phoenix reclinata*, 20s.; *P. tenuis*, 10s.; *Ptychosperma Alexandrie*, 60s.; *Sealorthis elegans*, 20s.
FERNS, in small pots, per 100:—*Adiantum cuneatum*, 32s.; *A. gracilima*, 40s.; *Cibotium regalis*, 70s.; *Dicksonia antarctica*, 30s.; *Lomaria gibba*, 25s.; *L. zamanioides*, 40s.; *Nephrodium racemosum*, 30s.; *Pteris argyrea*, 25s.; *P. serrulata cristata*, 30s.; *Dracena indivisa*, 15 to 20 inches high, 12 each.

Bulbs, Orchids, Hellebores, &c.

THOS. S. WARE'S BULB GUIDE for the present season is now ready, and contains, in addition to a grand assortment of Miscellaneous Bulbs, full and complete Collections of Lilliums, Narcissus, and Gladioli; fine selections of Hardy Orchids, Primula Sieboldii and Helleborus; also Climbing Plants, Bamboos, Aquatics, and Herbs; selections of such Perennials and Hardy Florists' Flowers as are adapted for planting at this season. Gratis and post-free on application. **Hale Farm Nurseries, Tottenham, London.**

FOR SALE, Cheap, about Fifty Specimen and strong **PALMS, FERNS, FLOWERING PLANTS, &c.** also **BEDDING GERANIUMS and GOLDEN EUONYMUS**, in 3-inch pots. For particulars apply to **W. GROVE, St. Owens Nursery, Hereford.**

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit. **CARTERS**, the Queen's Seedsmen, High Holborn, London.

Strawberry Plants.—Strawberry Plants.

STRONG PLANTS of the undermentioned varieties, purchaser's selection, 3s. 6d. per 100; our selection, 2s. 6d. per 100; 100 plants, in forty varieties, our selection, 6s.; 500 in ten varieties, our selection, 11s.; 1000 in twenty varieties, 21s. —

Aromatic, Ananas Perpetual, Ascot Pine-apple, Avenir, Alice Maude, Auguste Nicaise, British Queen, Bicton Pine, Black Prince, Bonny Lass, Cockscomb, Cornucopia, Crimson Queen, Duke of Edinburgh, Eleanor, Excelsior, Early Prolific, Enchantress, Exquisite, Fairy Queen, Filbert Pine, Frogmore Late Pine, Grove End Scarlet, Garibaldi, Haquin, Hautbois (Myatt's), James Veitch, John Powell, Keen's Seedling, La Grosse Sucrée, Leon de St. Lannier, Lucas, Newton's Seedling, Oscar, Prince of Wales, President, Prince Arthur, Princess of Wales, Pioneer, Royalty, Sir Joseph Paxton, Sir Charles Napier, Scarlet Pine, Souvenir de Kieff, Traveller, The Countess, Victoria, Vicomtesse Héricart de Thury, Wonderful.

Cash with order.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

GREENHOUSE and STOVE PLANTS.

TUBEROUS BEGONIAS, HERBACEOUS PLANTS, SEEDLING PRIMULAS, CINERARIAS, and CALCEOLARIAS for potting.

COLLECTIONS of GREENHOUSE or STOVE PLANTS, in good named varieties, for exhibition or house decorations, at 6s., 5s., 12s., and 18s. per dozen, according to size and quality of collection; varieties omitted which purchasers possess.

CROTONS, in good leading kinds, 6s. and 9s. per dozen.

TUBEROUS BEGONIAS, several thousands of named sorts now on sale, all from last year's bulbs, at 4s., 6s., 9s., 12s., and 18s. per dozen.

PRIMULAS and CINERARIAS, from as fine a strain as any in cultivation, 12s. post-free, 1s. 6d., 2s. 6d., 3s., 5s. for 5s. 6d. **CALCEOLARIAS**, 2s. per dozen, 12s. per 100.

All these are now in cold frames, and strong plants, ready for potting into 5s.

HERBACEOUS PLANTS—If these are planted now almost a season is gained in growth, and the plants are much stronger and better prepared for the winter than is the case when planted in autumn.

Our collection comprises almost all worth growing for Garden decoration, and selections can be made for any situations at 3s., 4s., or 6s. per dozen, of twelve varieties, 2s. 6d., 3s., or 5s. per 100.

FUCHSIAS, HELIOTROPES, LANTANAS, SALVIAS, COLEUS, TROPEOLUMS, twelve fine varieties of any of these, all named, and including many novelties, 2s. and 2s. 6d. per dozen, 22s. and 12s. per 100.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

To the Trade.

SPECIAL OFFER of TURNIP SEEDS.

TURNIPS.	Per bushel.
POMERANIAN WHITE GLOBE ..	17s.
GREEN GLOBE, special Price stock ..	16s.
RED GLOBE ..	17s.
GREEN BARREL, fine early ..	16s.
HARDY GREEN ROUND ..	16s.
WHITE STONE or STUBBLE ..	18s.
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GREEN-TOP YELLOW SCOTCH ..	20s.
PURPLE-TOP YELLOW SCOTCH ..	20s.
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YELLOW TANKARD ..	20s.
ORANGE JELLY ..	20s.

SWEDES.

SKIRVING'S IMPROVED ..	18s.
SUTTON'S CHAMPION PURPLE-TOP ..	18s.
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BANGHOLM PURPLE-TOP ..	18s.
HALL'S WESTBURY PURPLE-TOP, true ..	18s.
GREEN-TOP, large and hardy ..	18s.

The Turnip crop of this year having proved a very good one, I offer, as above, which will be all of crop 1880, pure, nett and fine samples, and of reliable stocks. Delivery when required. Early and large Orders are respectfully solicited. Special Low Estimates for general GARDEN SEED. Orders for the coming season will be gladly furnished on application.—**ALFRED LEGERTON**, Seed Merchant, 5, Aldgate, London, E.

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LANTANA BORBONICA, in stores, 12s. per 100.

established in thumbs, £1 4s. per 100.

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in thumbs, with 2 and 3 leaves, £1 4s. per 100.

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WILLIAM ICETON, Nurseryman and Florist, Barnes, S.W.

1880.—Dutch Bulbs.—1880.

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Overveen, near Haarlem, Holland. **HYACINTHS, TULIPS, CROCUS, GLADIOLI, &c.**, direct from the Growers, at Growers' Prices, delivered entirely free in London, Edinburgh, Leith, Glasgow, Hull, Liverpool, Dublin, Belfast, Bristol, Plymouth, and Newcastle-on-Tyne.

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FRUIT, BOUQUETS, FESTIVE and MEMORIAL WREATHS, FLORAL CROSSES, DRIED FLOWERS, &c., sent to all parts of the country on receipt of letter or telegram.

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JOHN GOUGH, Manager.



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June 13, 1880.

"DEAR SIR,—I heard last night from Pallanza, Italy, that the parcel of Geranium Cuttings had arrived, and given great satisfaction."

SAMUEL CHARLESWORTH, Esq., Casa Giammelli, Barrie e Garibaldi, Treviso, Italy.—July 12, 1880.

"DEAR SIR,—I have received the Cuttings of Fuchsias and Coleus in good health, which have given me great satisfaction."

CATALOGUES Post-free.

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TROPEOLUM, fl.-pl., distinct from above, colour light orange-red, 6d. each.

TROPEOLUM, Dr. Mules, one of the best dark single varieties for climbing, indoors or out, 6d. each.

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GIANT ROCCA.—A fine large variety, 6d. per ounce.
LARGE LATE FLAT RED, extra.—Grown from prize bulbs, 1s. per ounce.

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KAPHIA, for binding purposes, 1 kilo for 3s., 10 kilos for £1 8s., 100 kilos for £12.

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Primula, Calceolaria, and Cineraria.
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CALCEOLARIA, herbaceous, 1s. 6d. and 0

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3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 20s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 6s. 6d. per truck. **BLACK FIBROUS PEAT**, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.

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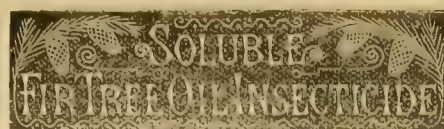
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KOPF'S COMPRESSED VEGETABLES. Preserving the properties of Fresh Vegetables.

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15-oz., 6 x 4 to 7½ x 5½, 9s., 10s., 11s., 12s.		
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20 x 12 to 24 x 16, 11s. 6d., 13s. 6d., 14s. 6d., 15s. 6d.		
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15-oz., Orchard House, 20 x 12, 20 x 15, 20 x 13, 20 x 16, 20 x 14, 20 x 17, 16s., 17s. 3d., 18s. 3d., 20s.

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CHOICE VEGETABLE SEEDS
FOR PRESENT SOWING.
POST-FREE.

ONION.

	Per oz.	s. d.
GIANT ROCCA	1	6
LARGE EARLY RED ITALIAN ..	1	6
LARGE EARLY WHITE ITALIAN ..	1	6
GIANT LATE RED ITALIAN ..	1	6
GIANT LATE WHITE ITALIAN ..	1	6
THE QUEEN ONION	Per pkt.	1 0

CABBAGE.

SUTTON'S IMPERIAL,
1s. per ounce.

ALSO	Per ounce—s. d.
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B. MALLER begs to invite an inspection of his very extensive stock of the following Plants, all in the best possible health and condition:—
ERICA HYEMALIS, very fine this season, and promising a profusion of bloom.
ERICAS, in variety, **EPACRIS**, **GENISTAS**, **AZALEAS**, choice Seedling **Tuberous BEGONIAS**, **CYCLAMEN**, **HOUBARDIAS**, **SOLANUMS**, **ADIANTUM CUNEATUM**, Vines, &c.
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FOR PRESENT SOWING
POST-FREE.  POST-FREE.

DANIELS' DEFIANCE CABBAGE. The most magnificent variety ever sent out, weight 12 to 15 lb., remarkably early, short-legged and compact, and of the most delicious marrow flavour. Should be in every garden. Per packet, 1s. 6d.



DANIELS' DEFIANCE CABBAGE.
From Mr. THOS. FORTUNE, Gardener to Sir Thos. Butler:—
"Last year Daniels' Defiance Cabbage did very well with me. It is very distinct and superior to the old standard varieties." s. d.
CARROT, Early Scarlet Horn per ounce 0 6
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" Giant Red Tripoli " 1 6
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Special quotations for larger quantities on application.
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Illustrated CATALOGUES Gratis and Post-free.

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EARLY WHITE ROMAN HYACINTHS.
DOUBLE ROMAN AND PAPER WHITE NARCISS.

**JAMES VEITCH & SONS**

Beg to announce that they have received their usual consignments of the above valuable **BULBS** for **EARLY FORCING**, and will be pleased to receive Orders for immediate delivery.

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CHELSEA, LONDON, S.W.

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BEGS TO ANNOUNCE THAT HE HAS RECEIVED HIS ANNUAL IMPORTATION OF

HYACINTHS, TULIPS, CROCUS, NARCISSUS,

And other **BULBOUS ROOTS**, in fine condition. Early Orders are respectfully solicited.

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DUTCH BULBS.

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HYACINTHS, TULIPS, NARCISSI, LILIUMS, and other FLOWER ROOTS,

Imported direct from the most renowned Growers in Holland and elsewhere.

Also a List of **VEGETABLE and FLOWER SEEDS** for Autumn Sowing; **MUSHROOM SPAWN, ARCHANGEL MATS**, and sundry **GARDEN REQUISITES.**

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PATENT

TUBULAR RIB SYSTEM:

The First Prize, Original,
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CURVED ROOFS

WITHOUT THE USE OF BENT GLASS,

By which means a considerable Saving
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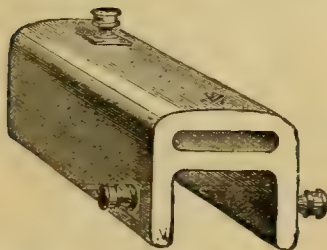
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Which is the Lightest and Strongest Form
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As being the most powerful and economical
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13a, GREAT GEORGE STREET,
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THE

Gardeners' Chronicle.

SATURDAY, AUGUST 14, 1880.

STOCKS AND THEIR CHARACTERISTICS.

THE old Stock Gillyflower of our gardens—the most admired, popular, and useful of the family of Cruciferae—is said to have received its generic name from an Italian physician of the name of Mathioli. The Stock is a native of Greece, was introduced into Russia, and being grown there came to be known as the Russian Stock. From Russia it found its way into Denmark and the north of Europe; and since our unrestricted intercourse with the Continent, and particularly with Germany, which became the home of the Stock, the seed has for a long time reached England, bringing with it the name of the country from which it was imported, so that now our finest strains are known as German Stocks. The Germans, who grow Stocks largely for the English market, make a considerable number of types, and a large number of varieties of each; but they are not so truly distinct as many suppose.

It would be interesting to have set forth in a popular form, the characteristics of the leading types of Stocks in cultivation. It is perhaps not easy to do this, but we may attempt something of the kind, though in a necessarily imperfect form, and commence with the ordinary German Stocks, of which there are two main divisions—the Woolly-leaved and the Smooth or Wallflower-leaved; the Cape Stocks, as they are termed, which are later and much more branching than the former, blooming freely and continuously, and which appear to include the Emperor, Imperial, Autumn-flowering, and East Lothian Stocks; the Queen Stocks, which are so largely grown by our London market gardeners for bunching in early summer; the large and majestic Brompton Stocks, and the Intermediate Stocks. Here there are five distinct groups, that may bear reduction or extension according as experience warrants. We may perhaps be warranted in stating that the two first and last are properly annual Stocks, and the third and fourth biennial Stocks.

The German Stocks have been greatly improved of late. We owe much to the enterprise of the German growers, who grow Stocks for seed in enormous quantities, and all in pots. The number of pots grown by some of the largest producers of Stock seeds is so astounding as to border on the romantic. We have heard of one of the Quedlinburg seed firms having this season 50 acres of Asters for seed purposes. There is considerable rivalry in the trade, and each grower does his best to produce the finest strains. It is this competition that leads to improvements, and some of the more recent are surprisingly fine.

When at Messrs. Sutton & Sons' florists' flower seed grounds, at Reading, a few days ago, we saw there examples of the ordinary German Stocks represented by plants of even

growth and average height—say 2 to 12 inches—of compact habit, fully double, and bright and attractive as to colour. All are of good value for garden purposes. The next step in advance was the large-flowered, dwarf pyramidal Stocks of taller and robust growth, but yet dwarf and compact: the bettermost forms represented by plants having a central spike, surrounded by a circle of others forming a good pyramid of blossoms; the flowers large, fully double, and of many highly acceptable colours. This strain of Stocks is a very good one indeed for general garden purposes, and includes a very large percentage of double flowers.

But the most perfect outcome of a large-flowering Stock was represented by Sutton's Giant Large-flowered Pyramidal. It is a strain in course of being fixed, magnificent in spike and individual blossoms, of true pyramidal form, with a broad base, tapering upwards to an apex some 18 inches from the ground. This is the Stock for exhibition purposes *par excellence*, representing the Giant Brompton in massiveness, but of a much more compact growth. This is in our opinion the finest strain of a large-flowered Stock yet seen.

The autumn-flowering Stocks are remarkable for the dense growth they make, putting forth many side shoots, all of which flower, and coming successively are very useful indeed to cut from. The flowers and colours are good also, and the average height is 15 inches. They are valuable in that, though sown at the same time as the large-flowered German varieties, they succeed them in blooming, and so "the time of the Stocks" is greatly prolonged.

The Emperor and Imperial Stocks, the latter being a bastard term employed by London seed houses of late years, are early autumn-flowering types, coming in between the latter and the Ten-weeks. The Cape Stocks, and the East Lothian Intermediate Stocks, belong to the same section, and are generally of a good average double character. They require to be planted wider apart than the large-flowered German types, because of their more freely branching character.

It is worthy of notice that the large trial of Stocks at Reading represented plants raised from seed sown in the open ground from April 12 to the end of the month, as the weather permitted. This is all the more deserving of record, because there has grown up with our horticultural practice a conviction, generally acted upon, that Stock seeds should be sown in warmth, or on a mild hotbed, and be transplanted to the open ground. Those who follow this plan know by bitter experience the losses sustained by damp and mildew when the young plants appeared most promising. No such losses come to seed sown in the open ground, and there is no check like those experienced in many cases when the seedlings are transplanted.

It might be added as a matter of precaution that the seed when sown in the open ground should be placed in a light, free, warm soil; and this kind of soil, pretty well enriched, is best adapted for the Stock.

In old gardening books, as also in the still older Greek works of Dioscorides, the Stock will be found under the head of *Leucojum*. Miller's *Gardeners' Dictionary* is a case in point. The old English name was the Stock-July-flower, probably because of its blooming during that month, and in course of time changed to Gillyflower, by which name it is best known in country districts. There is also to be met with in old books a good deal of interesting lore anent the Gillyflower, as also about other homely garden plants. Gardeners of a century and a-half ago make a great point of sowing their seeds, and transplanting the plants always at the same time—when the

moon was in the full, in order to obtain a greater number of double flowers; but this practice is now abandoned as a means to an end. Some held the opinion that the frequent removal of the plants helped the production of double flowers; but many must have found to their cost that the size and beauty of the flowers were diminished thereby. It was also held that a change of seed worked out this desired end, but it is much more a question of the value of the strain than of mere distance. Perhaps the best thing to do is to save seed from any single flower showing a tendency to produce a larger number of petals than is usual, and so secure higher and more fully double types. We have heard of one grower who years ago saved seed only from flowers having six and more petals, and thereby secured a very fine strain. He was particular in rejecting as seed bearers all flowers with only four petals. Some have fancied that the juxtaposition of double to single flowers assisted the impregnation of the latter with pollen, and in this way the production of double blossoms was furthered. On the other hand, it is asserted that the double flowers do not affect the single ones in this way in the slightest degree; and that if the blossoms of the double Stock be carefully examined, no such thing as stamens or anthers will be found, consequently no pollen; therefore the single flowers are not affected. A writer of two or three generations ago once stated that it was his constant practice to mark all flowers that had five, six, or seven petals, and to the footstalks of each of these a piece of coloured worsted was tied; when the seeds were ripe, the pods so marked were laid by themselves, and when sown were found to produce 80 per cent. of double blossoms.

It was an old practice to raise plants of double Stocks by means of cuttings made from the side-shoots, taking them off before they showed flower. This was a tedious and tiresome process, and the plants so raised were invariably weaker than those raised from seed, and never produced their flowers so large in size, fair to the sight, and so decided in colour. R. D.

New Garden Plants.

ALBUCA NELSONI, N. E. Br. (Fig. 41.)

The entire plant quite glabrous. Bulb large. Leaves bright green, very concave at the basal part, nearly flat in the upper part, 3—3½ feet long, 1½ to 2½ inches broad at about one-third the way up, whence they are gradually narrowed to an acute point. Scape 4—5 feet high, stout, firm, terete, green, floriferous for nearly half its length. Bracts attenuate from the rather broad base to an acute point, ascending, concave, submembranous, dull reddish on the back; the lower ones are 3—3½ inches long, and half an inch broad at the base, getting gradually smaller as they are nearer the top of the scape. Pedicels stout, ascending, lower ones 2—2½ inches long or longer, upper ones shorter. Flowers 1½ inch long, erect, pure white, with a broad dull brick-red stripe reaching about half way down the back of each segment, fainter on the inner segments; outer segments with a small hood or pocket at apex, inner segments all connivent, with a rather large and shortly bilobed hood at apex. Stamens all fertile, filaments white, anthers with ochre-coloured pollen. Ovary green, with three rounded angles, seated on a short, white, trigonous stipes, which at the angles is produced into short horizontal bifid processes, and between the angles of the ovary is carried up as three thin projecting plates to near the top of the ovary; style clavate-trigonous, minutely papillose, the middle portion green, the base and apex yellowish. Ovules numerous, biseriate in each cell of the ovary.

This fine addition to our cultivated bulbs was discovered, introduced, and flowered by Mr. Nelson, of Bradway (son of Mr. John Nelson, Thornbank Nurseries, Catcliffe, Rotherham), after whom it has been named, and to whose kindness we are indebted for the opportunity of figuring and describing it. A. Nelsoni is a native of Natal, where it was found in an open glade near the Umlazi River. It is unquestionably the finest species of *Albuca* yet discovered, for whilst equalling in size the fine *Albuca angolensis*, it is superior to that in respect to its

flowers, which are larger, arranged in a more imposing manner, and of a more attractive colour. When Mr. Baker first described *Albuca abyssinica* in this journal (see vol. for 1872, p. 392), he remarked that it was "only equalled in interest of late years by Mr. Cooper's giant white Hyacinth from Natal." That sentence might equally as well have been written of the present species, for it is quite as much a giant, and for effect will form a much better companion plant to *Hyacinthus candicans* than does *Albuca abyssinica*. As a species it will rank in the group characterised by having all the stamens fertile, which contains *A. angolensis*, *A. major*, *A. altissima*, &c., to which last-named species A. Nelsoni seems most nearly allied. Like *Hyacinthus candicans* it will no doubt be found to prove half-hardy in the South of England.

Our illustration (fig. 41) represents a portion of the leaf and the upper part of a flower-stem that is just going out of flower; regarding the outer perianth segments, we are not quite certain whether they are shown sufficiently spreading, as they may have partly closed when they reached us: they are drawn as we saw them. At A is shown one of the inner perianth segments seen from the inside; B, stamen of outer whorl; C, stamen of inner whorl; D, pistil; all natural size. N. E. Brown, Herbarium, Kew.

[Having seen fresh specimens of this noble species, we are enabled to confirm all that Mr. Brown says of it. The figure here given, being taken from imperfect material, does not do justice to the plant. Mr. Nelson, writing to us, states that his plants in cultivation have eleven strong breaks from three strong bulbs. The foliage attains a height of 2 feet above the pot. Mr. Nelson is about to proceed to Basutoland, of the flora of which district but little is known, so that we trust he may find time to favour us with some notes on the vegetation of that region, and be enabled to send home many as good things as this *Albuca*, which is decidedly one of the finest recent introductions of its class. EDS.]

SAUROMATUM PUNCTATUM: ante, p. 134.

In my note upon this plant last week, I stated that no specimen of it exists in the late Karl Koch's herbarium: that statement I wish to correct. When Professor Koch's herbarium was loaned to Kew in 1878 I made drawings and notes of all his types and placed them in the Kew herbarium; and as, when I wrote the note of last week, I could find no note or drawing of *S. punctatum* there, I concluded that there was no specimen in Koch's herbarium, but I have just found a memorandum of my own in a book to the effect that in Koch's herbarium is a specimen labelled *S. punctatum*, which I supposed to be the same as *S. venosum*, Schott and as I could find no reference to its publication at the time, the *Wochen-schrift* not being then in the Kew library, no further notice was taken of it. Whether I was wrong in assuming Koch's specimen to be *S. venosum*, or whether that specimen is really that plant, and not the type of his *S. punctatum*, I leave for those who now have access to Koch's herbarium to decide. N. E. Brown, Kew.

NEW LILIES.

MR. MARIES, whilst exploring for Messrs. Veitch in China and Japan, found three new varieties of *Lilium auratum* and *speciosum*, and was successful in bringing home bulbs in a living state, which have produced plants flowering at the present time at Chelsea, and which were exhibited at the Royal Horticultural Society on Tuesday last. The three plants may be named and described as follows:—

LILIAM SPECIOSUM, var. *GLORIOSOIDES*, Baker.

Stems slender, green, 2—3 feet long. Leaves 20 to 25, lanceolate, suberect, with the usual short flattened petiole, the lower ones 5-nerved, 3—4 inches long, ¾—1 inch broad, the upper ones dwindling down gradually to a length of an inch. Flower solitary in the specimen seen, the divisions oblong-lanceolate, 4 inches long, 1 inch broad in the lower part, sharply reflexed in the upper three quarters, much crisped in the reflexed part, pure white in the upper half with a green keel down the back, copiously covered in the reflexing portion of the lower half with scarlet papillose spots, which in the neighbourhood of the keel are exaggerated into columnar papillæ ¼—½ inch long, the basal connivent portion of the segment not at all papillose. Filaments spreading equally from the centre of the flower, more than half as long as the segments; anthers under an inch long. Ovary, style and stigma as in typical *speciosum*. This was found wild in the mountains of Central China. It differs from the previously known varieties of *speciosum* by its narrow leaves, much reflexed crisped perianth segments (remining one of those of *Gloriosa superba*, whence the name), and the scarlet rather than crimson spots and papillæ, which

are mainly confined to the third quarter of the segment, beginning to count from the top downwards.

LILIAM AURATUM var. *TRICOLOR*, Baker.

Stem 1½ inch long, stout, green, terete. Leaves about thirty, oblong-lanceolate, suberect, dark green, the lower 5—6 inches long, 1½ inch broad, with 7—9 pellucid ribs. The few upper ones 6—8 inches long, 2 inches broad at the middle, with 11—13 pellucid ribs. Flowers two in the specimens seen, broadly funnel-shaped, 7 inches long, the expanded flower 8—9 inches in diameter. The segments reflexing in the upper quarter, white, with a lemon-yellow keel tinted with green down the centre towards the base, the inner segments oblong, 2 inches broad at the middle, the outer oblong-lanceolate, 1½ inch broad at the middle; purplish-brown dots none; spots scattered all over the face except the tip, yellow or white, those in the neighbourhood of the keel in the lower part exaggerated into slender columnar papillæ ¼ inch long. Filaments green, half as long as the perianth-segments; anthers nearly black, 1 inch long. Curved style overtopping the anthers considerably. This came from a small island on the south-east side of Nippon. Its distinctive marks are its robust habit, broad sub-erect leaves, and large flowers, without any brown dots, but with copious spots and papillæ of just the same colour as the lamina.

LILIAM AURATUM var. *PLATYPHYLLUM*, Baker.

Stem stout, green, not more than 2 feet long. Leaves oblong-lanceolate, suberect, the lower 5—6 inches long, 1½ inch broad, 7—9-nerved, the upper 6—8 inches long, 2 inches broad, 11—13-nerved. Flower solitary, on a very short peduncle, ½ foot long, broadly funnel-shaped, 8—9 inches in diameter at the throat when fully expanded; segments white, with a broad yellow keel, tinged green down the centre towards the base, with copious purple-brown papillæ scattered over the face, but not extending to the tip and the edges, the inner segments oblong, 3 inches broad at the middle, the outer oblong-lanceolate, 2 inches broad; anthers 15—16 lines long.

This variety comes from the same station as the last, and comes nearer to the typical *auratum*. Its points are its comparatively dwarf habit, broad leaves, and very broad perianth segments, with spots like those of typical *auratum*, but less copious and more concentrated towards the centre of the segments.

LILIAM NITIDUM, Hort. Bull.*

When I first saw this at the great show of the Royal Horticultural Society in June I thought it was a variety of *parvum*, but the bulb is totally different, resembling those of *Washingtonianum* and *Humboldtii*. It was imported by Mr. Bull from California.

Bulb transversely oblong, subrhizomatous, with crowded, adpressed, lanceolate, white scales, 1½ inch long. Stem 1½ foot long below the inflorescence, stout, terete, glabrous, purple in the lower part, green upwards, bearing four whorls of leaves and several additional scattered ones. Leaves up to twenty in a whorl, lanceolate, bright green, glabrous, 1½—2 inches long, under ½ inch broad at the middle. Panicle deltoid, ½—1 foot long, made up of 10—20 flowers; lower pedicels 2—3 inches long, spreading with cernuous tips in the flowering stage, arcuate, ascending in the fruiting stage, the small green lanceolate bracts confined to the base. Perianth bright yellow, 1½ inch long; segments lanceolate, under ½ inch broad, permanently connivent in a cup in the lower half, revolute in the upper half, furnished with copious small red-brown dots. Filaments above 1 inch long; anthers oblong, bright yellow; ovary oblong, ½ inch long; style as long as the ovary, much curved. J. G. Baker.

ORCHARD PLANTING AT MENTMORE.

THE late Baron M. de Rothschild held clear and practical views respecting hardy fruit growing in this country, and for some years before his death gave effect to them by planting new orchards extensively. His ideas were, that each farm on his estate should have as much as 6 or 10 acres of orchard, or even more. As much as 40 acres in one piece were planted about nine years ago, with smaller breadths in other places. Far the greater portion of the trees planted are free bearing hardy-constituted kinds, such as the Prune Damson, which has been used in immense num-

* *Lilium nitidum*, sp. n., Hort. Bull.—Bulbo transversaliter oblongo, obliquo subrhizomatoso squamis albis lanceolatis acute imbricatis; caule valido sesquipedali; foliis parvis lanceolatis glabris periculis verticillatis; floribus in paniculam amplam deltoideam dispositis; perianthii splendide lutei segmentis lanceolatis 1½ poll. longis, maculis parvis copiosis rubro-brunneis decoratis dimidio inferiori diu conniventibus, dimidio inferiori revolutis; filamentis perianthio valde brevioribus; stylo curvato ovario æquilongis. J. G. B.

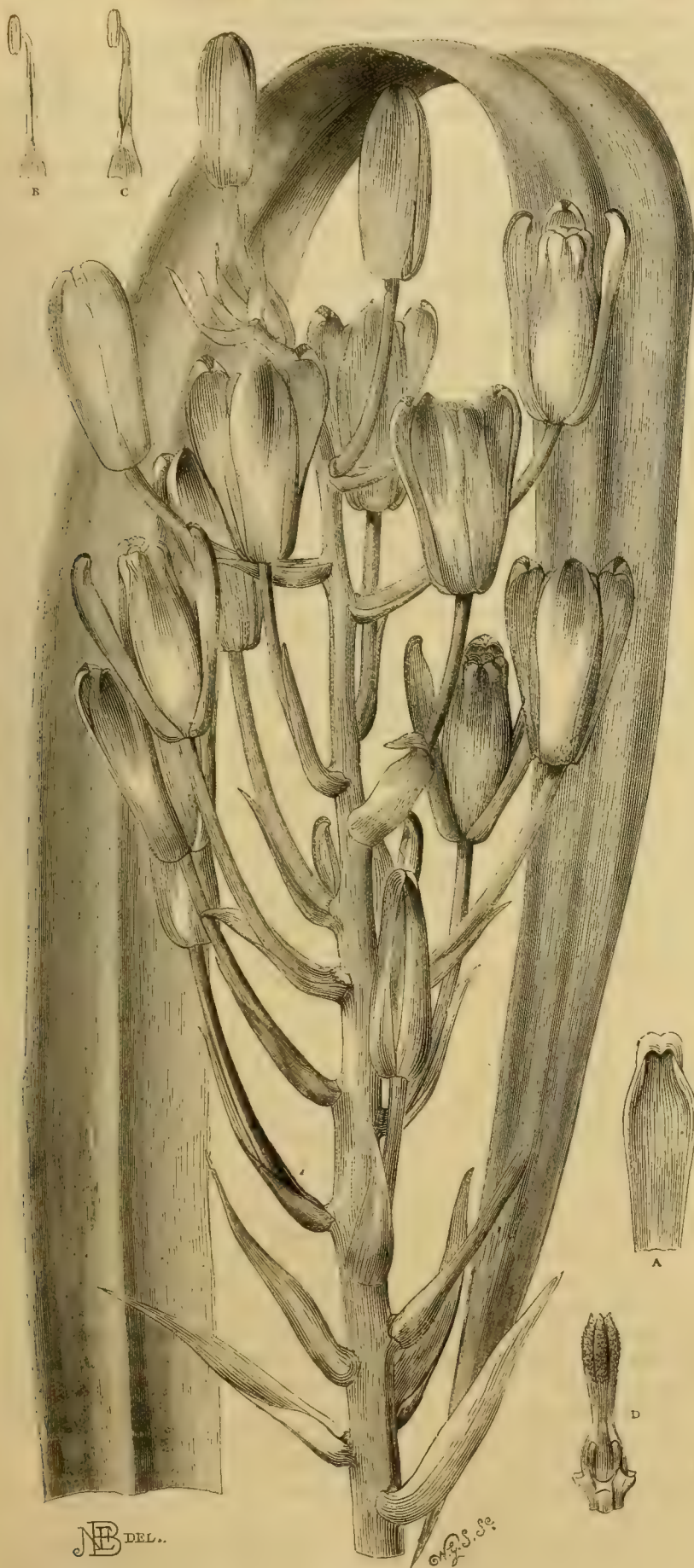


FIG. 41.—ALBUCA NELSONI. (SEE P. 198.)

bers. Apples in a few of the best free-fruited sorts have been planted. Lord Rosebery entertains similar views on this question, and orchard planting on an extensive scale is still being carried out on the Mentmore estate. Last year 16 acres were planted in some three different places.

Mr. Smith, under whose charge the extensive and well-managed gardens at Mentmore are, superintends the planting of these orchards; and, in addition to being particular in the selection of the varieties and quality of the trees planted, is also mindful to keep them well up. Each row of trees occupies the middle of the butt or land on which they stand, and which, as left by the plough, is higher than the alleys; so situated they are naturally in the driest position, which is requisite, for although the land is sufficiently drained, still the soil, being of a heavy retentive character, entails the necessity for this. The trees are planted at long distances apart, 25 to 30 feet each way, on prepared stations; all the land planted is under grass, and by their standing so far asunder as this they will, for a good many years, interfere little with it, and even as they get bigger there will always be something in the shape of a grass crop to rely upon in such years as the trees fail to fruit. As a matter of course the trees are all standards. A few large Thorns are thrust in the ground near the collar of each tree, and bound tightly to the stem above so as to protect it from the animals turned in to graze. This protection takes little time in the first instance, and will last a couple of years. It is so effectual that there is not visible a single tree that has been injured. The first planted have now reached a good sized bearing condition, and are sufficiently free in growth without any tendency to over-luxuriance.

Orchard planting on a scale such as is being carried out here is an important matter in its relation to the fruit supply for the population, and is of still more importance in its bearing upon the farming interest, now so sorely pressed by the competition of foreign-grown corn, and to a less extent with other produce. The importation of foreign fruit has been now for a long time continually on the increase, until it has attained a proportion which takes no inconsiderable sum yearly out of the country. It is not alone to the interest of the farmers of this kingdom to grow all the fruit they possibly can profitably, but it is a matter of no slight importance to the country collectively that this money should be kept at home.

An inability to fully estimate the effects of what at first sight seem comparatively small sums being drained out of the country, and which in the aggregate amount to a great deal, is one of the short-sighted weaknesses which Englishmen never seem able to bring home to themselves, except in times when some particular interest is suffering, as agriculture is doing at the present time. The lengthened period of fair prosperity which until the last few years farming enjoyed, caused both occupiers and owners of land alike to lose sight of or shut their eyes to the smaller matters, such as fruit-growing, by which something considerable may be made to compensate for deficient grain crops, or the low price of corn. In fact, it has been the old mistake of "all the eggs in one basket"—all corn on the corn land, or all cattle on the grazing land; and when failure or low prices come to one, or disease to the other, there is then nothing to lessen the evil.

In the columns of the *Gardeners' Chronicle* for years over and over again, has been urged the advisability of greatly extending orchards throughout the kingdom in those parts where soil and climate are of a nature to grow fruit; but it was like crying to the winds. Landlords and farmers with too much cause are now at their wits' end to know what they can grow that will pay, not alone for the time being, for unfortunately it is not only a matter of the present moment or of a few years, but for the entire future. And the question is now being taken up by those whom it most intimately concerns; the first of statesmen and the leaders of thought in that which is for the good of the country are discussing what can be grown in addition to that which has so long been thought sufficient for farmers to attempt, and it is to be hoped that a movement will be made. But whatever is done in fruit-tree planting on an extensive scale, it should be done with caution and judgment, in the way that has been followed at Mentmore, by confining the selection to a few kinds, and these such as are found to thrive and bear best in the district.

T. Baines.

REPORT ON THE CONDITION OF THE FRUIT CROPS.

[FROM OUR OWN CORRESPONDENTS, AUGUST, 1880.]

COUNTY.	APRICOTS.	PLUMS.	CHERRIES.	PEACHES AND NEC- TARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAW- BERRIES.	NUTS.	NAME AND ADDRESS.
SCOTLAND.										
ABERDEEN	Under	Over on walls; good	Average	....	Under	Under	Average	Average	....	George Donaldson, Keith Hall
.....	....	Under	Average; very good	....	Average; good	Under	Average; good	Over; very good	....	John Proctor, Slains Castle
ARGYLL .....	....	....	....	....	....	....	Under	Under	....	—, Balmoral
AYR .....	....	Under average	Under average	....	Under average	Under average	Average	Average	....	A. Brown, Kilmorey, Loch- gilthead
.....	....	Very fine	....	Fine crop	....	....	Full average	Average	....	N. McKinnon, Dumfries House, Cumnock
BERWICK	Under	Under	Average	Under	Under	Under	Under	Average	....	D. S. Bagnay, Girvan
.....	Almost a total failure	Bad; only a few Orleans and Victorias	Very scarce	Trees all killed	Total failure; except Lord Suffield	Total failure	Fair crop	Very abun- dant	....	William Fowler, Mertoun Gardens, St. Boswell
CAITHNESS	Under; bad	Under; good	Under average;	....	Under average;	Under average;	Average; good	Under average;	....	James Whitton, Thirlestane Castle
CLACKMANNAN	Under	Under; bad	Under; bad	....	Under; bad	Under; bad	Under; good	Average; good	Under; bad	John Sutherland, Langwell
CROMARTY	Under average;	Average	Very good	Bad	Under	Under	Average	Over	Under	Thomas Ormiston, Alloa Park
DUMBARTON	Under average;	Under average;	Average; good	No fruit on walls	Under average on walls	Far under average	Average; bad	Average	....	James Laing, New Tartet, Park Hill
.....	....	Very few	Average;	....	Under	Under	Average;	Average;	....	Alex. Scott, Auchendenan, Alexandria
.....	....	Under	Very good	None outside	Very scarce	Very scarce	very good	very good	....	Jas. Mitchell, Camis Estean, Helensburgh
DUMFRIES .....	....	Under	Average	Average	Very few	Failure	except Black Currants	Under	....	James Dickson, Askleton, Langholm
.....	....	Under; good	Under	....	Complete failure	Complete failure	Average;	Over; good	....	James Smart, Raehills, Lockerbie
EAST LoTHIAN	Average; good	Under; good	Over; good	....	Under; good	....	Average; good	Average;	....	George Goodfellow, Newbyth Gardens
.....	Under; good	Under; good	Average; good	....	....	Under; good	Over; good	Over; very good	....	T. Gellatly, Gosford, Long- niddry
FIFE .....	....	Under	Average; good	None on wall	Under	....	Abundant and good	Average	....	Wm. Henderson, Balbirnie Gardens, Markinch
FORFAR	Under	Under	Under, except Morellos	....	Under	Under	Full average	Average	....	Geo. Johnston, Glamis Castle
.....	....	Under; bad	Under; bad	....	Under; bad	Under; bad	Raspberries average; good	Over average;	....	James Mitchell, Panmure, Carnoustie
INVERNESS	Bad	Under	Bad	....	Bad; scarcely any	Bad; very bad	Average	Under average	....	William Anderson, Beaufort Gardens, Beaulie
KINCARDINE .....	....	Under	Average	....	Bad	....	Under average	Good	....	George Wighton, Fasque
LANARK	Under; bad	Under; bad	Under; good	....	Under; good	Under; bad	Average; good	Average; very good	....	Francis Davidson, The Palace Gardens, Hamilton
MIDLoTHIAN	Very thin crop; good	Average;	Average;	Almost none	Much under average	Scarce; bad	Abundant;	Under	Scarce	Malcolm Dunn, Dalkeith Palace Gardens
NAIRN	Bad	very good	Good	Bad	Bad	Bad	very good	average; good	....	James Manson, Kilravock Castle
ORKNEY .....	....	Average	Average; good	Over; good under glass	Very thin	Good	Average	Very good	....	Thos. McDonald, Balfour Castle Gardens
PEEBLES .....	....	Under	Average; good	....	Under; bad	Under; bad	Over; very good	Average; good	....	Malcolm McIntyre, The Glen, Innerleithen
PERTH	Over average	Over average	Under, except Morellos	Not grown in open air	Under average	Under average	Abundance;	Splendid crop;	....	Donald Matheson, Meikleour, Perth
.....	Over; very good	Average on standards;	Under; bad	Under; bad	Under; good	Average; on walls good	Average; very good	Over; very good	....	P. W. Fairgrieve, Dunkeld Gardens, Dunkeld
.....	....	Poor crop	Full average	None outside	Almost a failure.	Very poor crop	Abundant	Abundant and fine	....	George Croucher, Ochtertyre, Creff
RENFREW .....	....	Average	Over	Under	Under; bad	Under; bad	Average; good	Over; very good	....	James Bell, Erskine Gardens
ROSS-SHIRE	Under	Under	Under	Under	Under	Under	Average; good	Average; good	....	D. Harvey, Invergordon Castle
SUTHERLAND .....	....	Under	Average	....	Under	Under	Average	Average	Average	D. Melville, Duoroabin Castle Gardens
WEST LoTHIAN	Under; very good	Under; good	Under; bad	Under; good	Under; bad	Under; very bad	Average; very good	Under; good	....	John Moyes, Dalmeny Park Gardens, Edinburgh
ENGLAND— NORTHERN COUNTIES.										
NORTHUMBERLAND	Under	Under	Under	Under	Under	Under	Average	Average	Under	Robert Bowie, Chillingham Castle
.....	....	Under	Under	Under	Under	Under	Average	Over	Average	W. Turner, Capheaton
.....	Under; bad	Average; good	Over; very good	Under; bad	Under; good	Under; bad	Average; very good	Average; very good	Under; bad	David Inglis, Howick, Les- bury
CUMBERLAND	Under; good	Average; very good	Under; bad	Houses, good crop	Under; bad	Under; bad	Over; very good	Under; good	Under; bad	F. Blackwood, The Gardens, Eden Hall
WESTMORELAND	Under	Average	Under	Good inside	Under	Under	Average; very good	Average	....	William Shand, Lowther, Penrith
.....	Under	Under	Very good	Bad	Bad	Bad	Very good	Average	Under	Samuel Searle, The Gardens, Dallam Tower
.....	....	Under	Under	....	Next to none	Next to none	Average; very good	Average; good	....	Wm. A. Miller, Underly Gardens
DURHAM	Under; bad	Under; bad	Under; good	Under	Under; bad	Under; bad	Average; very good	Average; very good	....	J. Lyall, Wynyard Park, Stockton-on-Tees
VORKSHIRE .....	....	Under	Average; very good	....	Very light	Very thin	Average	Average; fine	....	Michael Saul, The Gardens, Stourton Park
.....	....	Under	Average	....	Under	Under	Over	Over	....	James Fowler, Harewood House
.....	Very light	Very light	Very good	None outside	About half a crop	Very light	A good crop	A very heavy crop	....	Joseph Shaw, Nun Appleton, Bolton Percy
.....	Bad	Good	Good	Bad	Bad	Bad	Good; except Black Currants	Very good	Bad	William Lewin, Aske Gardens, Richmond
.....	Failure	Under, except Victorias	Average	Failure	Under average	Much under average	Average	Over average	....	William Wallis, Kirby Hall, York
.....	None outside	Under	Under	None grown outside	Under	....	Over; very good	Average; good	....	Wm. Stephens, The Gardens, Eudcliffe Hall, Sheffield
LANCASHIRE	A fair crop	A thin crop	Under average	Very thin	A fair crop	A scanty crop	Abundant	Abundant, but damaged	....	Edwd. Hall, Bolton Hall Gardens, Bedale
.....	....	Average	Average	....	Average	Under	Fair	Under	....	W. B. Upjohn, Worsley Hall, Manchester
.....	....	Under	Average	....	Under	Under	Average and good	Average; good	....	W. P. Roberts, Cuerden Hall, Preston
.....	Average; good	Average; good	Average; good	Under; bad	Under; bad	Under; bad	Over average;	Average; good	....	F. Harrison, Knowsley Gar- dens, Prescott
MIDLAND COUNTIES.										
CHESHIRE	Bad	Bad	Average	....	Bad	Bad	Plentiful	Much blighted	Under	W. Muir, Oulton Park
.....	Under	Under	Average	....	Under	Under	Average	Average	Under	T. Selwood, Eaton Hall, Chester
.....	Under	Under	Average	....	Under, except early kinds	Under; bad	Abundance	Under	But few grown	Alfred Jas. Grant, Withing- ton Hall, Chelford
DERBYSHIRE	Under	Under	Average; good	Failure	Under	Under	Average; good	Average; good	Under	J. H. Goodacre, Elvaston
.....	Under	Under	Average	Under	Under	Under	Average	Average	Entire failure	William Brown, Bretby Park

CONDITION OF THE FRUIT CROPS—(Continued).

COUNTY.	APRICOTS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAW- BERRIES.	NUTS.	NAME AND ADDRESS.
MIDLAND COUNTIES.										
NOTTINGHAM	A failure	Very good; Green Gages especially Scarce	Very good; Morellos abundant Average	Failure	Under	Under	Over	Over	Bad	S. A. Woods, The Gardens, Osberton Hall
	....	....	....	....	Scarce	Very scarce	Average	Average	None; Walnuts none Very few	Henry Gadd, Wollaton Hall, Nottingham
	....	Light on walls	Morellos plentiful and good	None out-of-doors; many trees killed	Light crop; trees blighted	Very few	Plentiful and good	Plentiful; many spoilt by rain	....	Thos. H. Sutton, The Gardens, Worksop Manor
	None; many trees killed	Average; good	Average	None; many trees killed	Under	Under; bad	Average; very good	Average; good	....	John Edmonds, Bestwood Lodge
SALOP .....	....	Full crop; good	Full crop; very good	Under average; bad	Under average; good	Under average; bad	Average; except Black Currants	Full crop; good	Very thin	A. S. Kemp, Haughton Hall, Shifnal
	Under average; good	Average; good	Over average; good	Very bad	Under; very bad	Under; very bad	Over average; very good	Over average; very good	Under; very bad	J. McLean, Pitchford Hall Gardens, Shrewsbury
	Under; good	Over; good	Over; good	Under; good	Under; good	Under; good	Over; good	Average; fair	Under; bad	J. Loudon, Quinta, Chirk
	Under	Average	Over	None out-of-doors	Under	Under	Over	Average	Under	W. Pratt, Hawkstone Gardens
STAFFORD	Failure	Under average	Average; good	Failure	Failure	Failure	Average; good	Over average	....	W. Davidson, Sandon, Stone
	Under	Average	Average	Under	Under	Under	Over; good	Over; very good	Under	E. Simpson, Wrottesley, Wolverhampton
	Under; poor	Average; good	Average; good	....	Average; good	Under	Average; good	Average; good	Average	W. Bennett, Rangemore
	Under average	Under; Damsons average	Under; Morellos	Under	Under; bad	Bad	Average; good; heavy crop	Over; very good	Under average	W. Ward, Little Aston Hall Gardens
	Under	Under	Average	Under	Under	Under	Average	Average	Under	W. Chapman, Hawkesyard Park, Rugeley
LEICESTER .....	....	Plentiful	Average	Very bad	Very bad	Very bad	Very good	Very good	....	James Maclean, Beau Manor, Park
	Under average; bad	Over average; very good	Over average; very good	Under average; bad	Under average; good	Under average; bad	Over average	Average; good	Under average	John Hatfield, Calthorpe Towers
RUTLAND	Under	Average	Over	....	....	....	Over	Average	....	John Kitley, Wanlip Hall
	Under	Under	Average; good	Under	Under; bad	Under; bad	Over average; good	Over average; good	....	John Grey, Normanton Park, Stamford
	Under	Under	Under	Failure	Very few	Very few	Abundant; very good	Abundant; very good	Under	M. Aherns, The Gardens, Eston Park
WARWICK .....	....	Very few	Plentiful	Failure out-of-doors	Very thin	Very thin	Plentiful	Plentiful	A failure	Wm. Miller, Combe Abbey Gardens
	Under average	Under average	Under average	Under average	Under average	Under average	Average	Over average; good	Under average	Daniel Judd, Castle Gardens, Warwick
NORTHAMPTON	Under	Under	Under; bad	Failure	Very few	Under	Over; good	Average; good	Very few	Jas. Trigger, Milton Gardens, Peterborough
	Under	Average; good	Average; good	....	Under; bad	Under; bad	Over; good	Average	Under	Edmund Cole, The Gardens, Althorp Park
HUNTINGDON	Over average; good	Average	Under average	....	Under average	Under; good	Over average; very good	Over average; very good	....	J. J. Bowie, The Gardens, Hinchingsbrook
BEDS	Under average; good	Average; very good	Under average; bad	Much under average; good	Much under average; bad	Much under average; bad	Much over average; good	Over average; good	Under average; Walnuts scarce	George Ford, Wrest Park, Amptill
	Average	Under	Average; good	....	Under; bad	Under	Over; good	Over; good	Under	Charles Turner, Cranfield Court, Newport Pagnell
OXFORD	Average; indifferent	Average; good	Average; good	Under	Under	Under	Over average; good	Over average; good	Under	J. Watson, Nuneham Park Gardens, Abingdon
	....	Average; good	....	....	Under average	Under average	Over average; good	Abundant and fine	....	John Greenhields, Sarsden House, Chipping Norton
	Under average	Abundant and good	Average	....	Under	Under	Abundant; good	Abundant; good	Filberts bad; Walnuts average	Thos. Buckfield, Shirburn Castle Gardens
	Under	Standards average	Over; spoiled by wet	....	Under	Under	Over, and very fine	Over, and good	....	William Finlay, The Gardens, Wroxton Abbey
BUCKS	Under average	Average	Average	Under average	Under average	Under average	Over average	Over average	Under average	Thomas Bailey, Shardeoles Gardens, Amersham
	Bad	Average	Average	Failure	Failure	Failure	Good	Very good	Bad	J. F., Cliveden
	....	Under	Good average	....	....	....	Plentiful; good	Average; good	....	J. Smith, Mentmore
HERTS	Good	Good	Under	Bad	Bad	Bad	Good	Good	Good	A. Donaldson, Latimers
	Under average	Over average	Average	Bad	Under average	Under average	Good	Good	Bad	G. Norman, The Gardens, Hatfield House
	Over average	Under average	Average	....	Much under average	Much under average	Over average	Over average	Much under average	George Sage, Ashridge Gardens, Berkhamstead
	Under	Very good	Good	Bad	Good	Bad	Very good	Very good	Bad	J. C. Mundell, Moor Park Gardens, Rickmansworth
	Very few; trees healthy	Half a crop	Very thin	Trees dead	....	....	Plenty	Good crop	....	Anthony Parsons, Danesbury, Welwyn
EASTERN COUNTIES.										
LINCOLN	Much under	Much under	....	None outside	Much under	Much under	Over and good	Over	....	Isaac Dell, Stoke Rochford
	Very scarce; much blighted	Generally a poor crop	Poor, except Morellos	Bad, some trees killed	The worst crop I remember	Very poor crop	Good, but much injured	Good crop; flavour bad	Light; injured by late frosts	G. B. Tillyard, Brocklesby Park, Ulceby
NORFOLK	Under average; bad	Under average; bad	Average; good	....	Under average; bad	Under average; bad	Over average; very good	Over average; very good	....	Henry Batchelor, Catton Park, Norwich
	Over average; very good	Average; good	Average; good	Total failure	Under average; not very good	Under average; not very good	Over average; very good	Over average; very good	Almost a failure	William Bishop, Taverham Hall, Norwich
	Under average; good	Over average	Morellos over; others under	Very few	Average	Under average	Abundant; good	Over average; good	Half a crop	A. Lancaster, Holkham Gardens
	Average; very good	Average; very good	Over average; good	Under average	Under average	Under average	Over average; good	Average crop	Under average	Joseph Clarke, Melton Constable, East Dereham
SUFFOLK	Failure	Under; good	Under; good	Under; bad	Under; good	Under; good	Over; very good	Over; good	Under; good	G. Bethell, Sudbourn Hall, Wickham Market
	Under	Average	Average	Under	Average	Under	Over	Average	Under	John Wallis, Orwell Park Gardens, Ipswich
	Under	On walls good	Morellos good	Much under	Total failure	Under; a very bad crop	Over; good	Average; good	Total failure	Robert Squibbs, Ickworth Park
	Under average; good	Over average; very good	Average; good	Under average; bad	Average; good	Average on walls; good	Over average; very good	Over average; very good	Under average; good	Jethro Mill, Rendlesham Hall, Woodbridge
ESSEX	Average	Under	Average	Under	Under	Under	Average	Average	....	D. Donald, Knotts Green, Leyton
	Under	Under	Good	Under	Average	Under	Very good	Very good	....	W. Bones, Havering Park
	Over	Over; good	Average; good	Average	Under	Under	Over; good	Over; good	Average	William Smith, Birch Hall, Colchester
SOUTHERN COUNTIES.										
BERKS	Under average	Over average; very good	Over average; Morellos good	Under average	Scarce	Under average	Over average; very good	Average; good	Scarcely any	S. Haines, Coleshill House, Highwood
	Average	Average	Over; very good	....	Under; bad	Under; bad	Over; very good	Over; very good	Very few	Alexander Galt, Aldermaston Court, Reading
	Poor	Good	Good	Thin	....	....	Good	Good	....	Jas. Tegg, Bearwood
	Average; good	Average; good	Thin crop	....	Half a crop	Thin crop	Good	Fine; injured	....	Joshua Atkins, Lockinge Gardens, Wantage
MIDDLESEX	Under average	Average; good	Under; good	Under average	Average; good	Under average	Average; good	Average; good	....	Chas. Lee, Hounslow
	Under	Average; very good	Under	Under; very bad	Under	Under	Under	Over	Under	F. F. Barron, Royal Horticultural Gardens, Chiswick
	Under	Average	Under	Under	Average	Under	Average; good	Average; very good	Under	T. Baines, Southgate
	Much under average	Over average	Half average	Entire failure	Much under average	A few on the walls	Average; and very good	Very good; full average	Failure	T. P. Warren House, Stanmore
	Average; good	Over average; very good	Under; bad	Under average	Under average; very good	Under average	Abundant; very good	Over average; very good	....	George Ramsay, Cambridge House, Twickenham

CONDITION OF THE FRUIT CROPS—(Continued).

COUNTY.	APRICOTS.	PLUMS.	CHERRIES.	PEACHES AND NEC- TARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAW- BERRIES.	NUTS.	NAME AND ADDRESS.
SOUTHERN COUNTRIES.										
MIDDLESEX	Average; quality good	Over average; good	Over; very good	Average; very good	Over average	Average	Over average; good	Over average; bad	....	Wm. Knight, Gordon House, Isleworth
SURREY .....	.....	Average	Average	.....	Under average	Under average	Under average	Over and good	....	J. Beesley, Denbies, Dorking
	Total failure	Over average; very good	Average; good	Average; good	Average; very good	Average; good	Average; very good	Average; very good	Total failure	W. Denning, The Gardens, Coombe Lane, Norbiton
	Under; bad	Average; good	Average; good	Average; late	Under; good	Scarce	Over; good	Average; good	Under; scarce	Jas. Child, The Gardens, Garbrand Hall, Ewell
	Under average	Average; but small	Average; good	Total failure	Much under average	Failure	Over average; good	Abundant and fine	Under	Alfred Evans, Lythe Hill, Haslemere
	Under average	Average; good	Average; good	Under average	Under average	Under average	Over average; very good	Average; good	Under	F. Corbould, Tandridge
	Under	Over	Plentiful	Not good	Under	Under	Plentiful and good	Abundant and good	Under	Court, Redhill
	Under	Average	Under	Under	Average	Average	Under	Under	Under	Charles Green, Pendell Court, Blethingly
KENT	Under average; good	Over average; very good	Over average; very good	Under average; good	Under average; good	Under average; good	Over average; very good	Average; very good	Under average; good	T. W. Foote, Leigham Court, Streatham Hill
	Under average; good	Over average; good	Over average; good	Under average; good	Under average; good	Under average; good	Average; very good	Over average; very good	Under average; good	John Cox, Redleaf, Penhurst
	Under	Average	Under; bad	Under	Average; good	Under; bad	Average; good	Average; very good	Under; bad	R. Gray, Chevening, Sevenoaks
	Scarce	Partial; Damsons plentiful	Average	Under average	Partial	Very scarce	Average	Average	Very scarce	W. W. Wood, Leybourne Grange, Maidstone
	Bad crop	Good	Morellos good, others under	Bad	Under	Bad	Under	Average	Bad	Henry Cannell, Swanley
	....	Average	Under; bad	Under	Under	Under	Average	Average; good	Average	F. Deuxberry, Cobham Hall, Gravesend
	Under; good	Under; not good	Under	Under; not good	Under	Under	Average; very good	Average; good	Average	J. Butt, Torry Hill, Sittingbourne
	Under average	Under average	Over average; good	....	Under average; good	Under average	Over average; very good	Over average; very good	Under average; very thin	—, Canterbury
SUSSEX	Very good	Good	Good	Under average	Under average	Under average	Over average; very good	Over average; very good	Under average; very thin	D. Buchanan, Sherwood Park, Tunbridge Wells
	Under average	Over average	Excellent	Under average	Average	Under average	Plentiful and good	Most excellent	Under average	John Wilson, Castle Gardens, Arundel
	Under average	Over average	Very good	Under average	Average	Under average	Over average	Over average	Under average	Joseph Rust, Eridge Castle, Tunbridge Wells
	Under	Very good	Very good	Under	Under	Under	Very good	Very good	....	F. Rutland, Goodwood
HANTS.	Moderate	Average crop	Abundant crop	Poor crop	Moderate	Under average	A heavy crop	Plentiful	Very few	Geo. Breese, The Gardens, Petworth
	Bad	Under	Very good	Bad	Under average	Under	Very good	Very good	Very few	George Jones, Mottisfont
	Average; bad	Average on walls	Average; very good	Average; bad	Average; bad	Average; bad	Average; good	Average; good	Average; bad	Philip Edwards, Fowley, Liphook
WILTS.	Average	Under	Very good	Average	Very bad	Bad	Very good	Very good	Bad	Wm. Smythe, The Gardens, Basing Park
	Under	Over; good	Average	Under	Under	Under	Over; good	Over; good	Under	W. Phipps, Bywood, Calne
	Average; good	Average	Morellos good	Under	Under; bad	Under	P. plentiful and good	Over average	Under	Wm. Taylor, Longleat
	Under	Over	Average; good	Under	Under	Under	Over; good	Average; good	....	H. W. Ward, Longford Castle, Salisbury
DORSET	Under; good	Average; very good	Average; very good	Under; good	Under; good	Under; good	Over; very good	Over; very good	....	J. Horsefield, The Gardens, Heytesbury
	Average	Over	Good	Bad out-of-doors	Very bad	Under	Very good	Very good and fine	Very bad	W. Hinds, Canford Gardens, Wimborne
	Average	Average	Good	Very bad	Very bad	Very bad	Very good	Never better or finer	Very bad	John Saltford, Hisington Gardens, Puddletown
	Average; good	Average; under	Good	Average; good	Under average; bad	Average	Over average	Over average; good	Scarce	C. Hazel, The Gardens, Leweston, Sherborne
										W. P. Leach, Bryanston Gardens, Blandford
WESTERN COUNTRIES.										
HEREFORD	Average; good	Average	Average; good	Under	Under average; bad	Under average; bad	Over average; good	Average	....	Alfred Bye, Hampton Court, Leominster
	Under average; good	Under average; good	Average; good	Very few	Under average; good	Under average; good	Abundant; good	Abundant; good	....	W. Ward, The Gardens, Stoke Edith Park
	Under	Average; good	Average; good	Under	Under	Under	Average; good	Over; very good	....	Arthur Young, The Gardens, Holme Lacy
	Under	Average	Average	....	Under	Under	Over	Over	....	Edward Jones, Perrystone, Ross
WORCESTER .....	....	Under; good	Average; good	Under; bad	Under; bad	Under; bad	Over; very good	Over; very good	Under	Arthur Barker, The Gardens, Hindlip Hall
	Very bad	Average	Average of Morellos	Very bad	Under average; bad	Under average; bad	Good average	Above average; good	Bad	Robert Palmer, Hagley Gardens
	Under; good	Average; good	Under; good	Under; moderate	Under; good	Under; moderate	Average; very good	Average; good	Under; bad	Walter Child, Croome Court, Severn Stoke
	Average; good	Under average; good	Average; good	Under; bad	Under; good	Under; good	Average; very good	Over; very good	Under; bad	M. Temple, Impney Hall
GLOUCESTER	Average; good	Average; good	Average; very good	Under	Under; bad	Under; very bad	Over; very good	Over; very good	Under	Alex. Scott, The Gardens, Sherborne Park
	Under average	Average	Very good	Bad	Under average	Average	Very good	Over average	Bad	Samuel Wathen, Kingscote Park, Wotton-under-Edge
	Very scarce	Average and fine	Very good	Very scarce	Under average and small	Very scarce	Very good and fine	Very good and fine	Poor crop of all sorts	G. Turner, Fetherne Court, Stonehouse
	Under average; good	Under average; good	Over average; very good	Under average	Under average; bad	Under average	Over average; very good	Over average; good	Under average	William Loader, Blaize Castle, near Bristol
MONMOUTH	Good crops on old trees	An average crop	A full crop	....	Almost a failure	Almost a failure	Abundant	Abundant	Under average	Thos. Coomber, Hendre Gardens
SOMERSET	Under average; good	Under average; good	Over average; very good	Under; bad	Under; fine	Very scarce and small	Abundant and fine	Abundant	Scarcely any	John Austen, Ashton Court, Bristol
	Bad	Under an average	Under an average	Bad	Under an average	Bad	Good	Very good	Bad	E. Miller, Old Sneed Park, Bristol
	Under	Average	Under	Average	Under	Average	Average	Good	Under	W. Hallett, Cossington Farm
	Bad	Very good	Good	Good	Very bad	Good	Very good	Very good	Bad	W. A. Beale, Cricket St. Thomas
DEVON	Over; good	Average	Over; good	Under	Under	Under	Over; very good	Over	Average	Alex. Ayson, Oxtou House Gardens, Kington
	Very good	Under average	Very good	Bad	Bad	Quite a failure	Very heavy crop	Very good	Plentiful	David C. Powell, Powderham Castle, Exeter
	Bad	Average	Very good	Bad	Under	Under	Very good	Very good	....	F. Geary, Eggesford Gardens
	....	Under	Moderate; Morellos good	Under; bad	Under; bad	Under	Average except Black Currants	Over; very good	Under; bad	C. Salway, The Gardens, Membland Hall
CORNWALL .....	....	Over; good	Over; good	Under; bad	Thin; bad	Under; bad	Over; good	Over; bad	Bad	Charles Lee, Boconnoc
	....	Under; good	Over; good	Under; good	Under; good	Under; good	Over; very good	Over; very good	Under	W. N. Carne, Rosemundy, Saint Agnes
	Average; good	Average; good	Over average; good	Under	Under	Under	Over; good	Over; good	Under	James Merton, Tredrea, Penararworthal
WALES.										
ANGLESEY	Average	Under	Under	Under	Under	Under	Average; good	Average; good	Under	Robt. Webster, Glyn Garth
	All under glass	Under; good	Average; good	All under glass	Under	Under	Gooseberries over; other fruits average	Over; good	....	J. E. Bodorgan Gardens, Anglesey
BRECON	Under average; good	Over average; very good	Average; good	Under average; bad	Under average; good	Under average; good	Over average; very good	Over average; very good	....	A. Ballard, Glanusk Park, Crickhowell
CARDIGAN .....	....	Under average	Very good	Under average	Very bad	Under average	Very good	Very good	Bad	J. Knigh, Gr. to Sir M. Lloyd, Bart, Bronwydd
CARMARTHEN	Very few trees grown	Average	Good	Under; bad	Under; bad	Under	Very good, and plentiful	Very good	Bad; almost a failure	Lewis Bowen, Edwinstow, Llandilo
CARNAEVON .....	....	Under	Average	....	Under	Under	Average	Average	....	Allan Calder, Vaynol Park

CONDITION OF THE FRUIT CROPS—(Continued.)

COUNTY.	APRICOTS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APPLES.	PEARS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
WALES.										
DENBIGH	Generally poor; unripe	Generally very fair crop	Heavy crops of all sorts	Almost a failure	Fair crop, but small	Under average	Heavy crop	Heavy crop, but small	Almost a failure	P. Middleton, The Garden, Wynnstay, Rhylion
GLAMORGAN	Under	Under	Average	Under	Under	Under	Over	Over	Under	Jas. Harris, Singleton, Swansea
MERIONETH	Failure	Average; good	Average; very good	Failure	Under	Under	Over; good	Average; very good	Under	James Bennett, Rhug Gardens, Corwen
MONTGOMERY	Very few	Average	Good	Failure	Very few	Under	Abundant	Plentiful	....	Wm. Lee, Powis Castle Gardens
PEMBROKE .....	....	A fair crop; average	Very good; over	Bad; under	Bad generally; under	Very few; under	Very abundant; over	Very good; over	Almost nil	Geo. Griffin, The Gardens, Slebeck Park
IRELAND.										
ANTRIM .....	....	....	Average	....	Bad	Bad	Very good	Good	....	George Porteous, Carron Tower, Belfast
ARMAGH	Under	Under	Average; good	Under	Under	Under	Average; good	Average; good	....	W. Allan, Brownlow Gardens, Lurgan
CARLOW	Under	Average	Under; good	Under	Under	Under	Average; good	Average; good	Under	Thomas Turner, Oak Park, Carlow
CAVAN .....	....	Under average	Very scarce	Under average	Under average	Scarce	Under average	Average	....	W. I.
CORK	Under	Over	Average	Under	Under	Under	Average; very good	Over; good	Under	W. Osborne, Fota Island
DUBLIN	Small sprinkling	Moderate crop	Moderate crop	None out-of-doors	Very few	A sprinkling upon walls	Heavy and good	Very good	....	G. Smith, Vice-Regal Gardens
	Under; bad	Average; small	Average; good	....	Under; bad	Under; bad	Over average; good	Over average; good	Under average	John Ellam, Brenanstown House
	Under; bad	Over; good	Over; good	Under	Under	Under	Average; good	Average; good	....	David Pressly, Knockmaroon Lodge
GALWAY .....	....	Very good	Morellos good; other sorts under	....	Quite a failure	Quite a failure	Average	Average	....	James Garnier, The Gardens, Kylemore Castle
KILDARE	Under	Average	Average	Under	Under	Under	Average	Average	Under	Philip Wadds, Moore Abbey Gardens
KILKENNY .....	....	....	Average; good	....	Very few	Very few	Average; good	Average; good	....	I. A., Palmerstown, Straffan
LOUTH	Much under	Much over; good	Over; very good	....	Under; good	Much under	Average; good	Over average; good	Under average	Wm. Gray, Woodstock Park
MEATH .....	....	Average; under	Average; good	Under average; bad	Under average; bad	Under average; bad	Average; good	Average; very good	Average; good	Frank Fowler, Ravensdale Park, New York
QUEEN'S CO.	Under; good	Under; bad	Average; good	Under	Under; good	Under; bad	Average; good	Average; good	....	C. G.
TIPPERARY	Under	Average	Average; good	Under	Under	Under	Average; good	Very good	Under	J. Ennis, Emo Park
TYRONE .....	....	Good	Good	....	Very bad	Very bad	Good	Good	....	Jesse Wilsher, Shanbally
WATERFORD	Under average	Under; bad	Good average	Under	Under; bad	Under; bad	Average; good	Average; good	Average	W. H. Rew, Caledon
	Under average	Average; good	Average; good	Under average	Under average; good	Under average; good	Over average; very good	Over average; very good	....	G. Farbairn, Curraghmore Gardens, Portlaw
WESTMEATH	Under; good	Over; very good	Over; very good	Under; bad	Under; good	Under; good	Average; good	Average; very good	Under; bad	John Igo, Moydrum, Ath-lone
WEXFORD .....	....	Over; very good	Average; very good	Under; good	Under; very good	Under; good	Over; very good	Over; very good	....	P. Braund, Gardens, Court-town House
WICKLOW	Partial crop	Full average; good	Full average; good	....	Under average; bad	Under average; bad	Average; good	Full average; good	....	William Moore, The Gardens, Kilruddery Castle
CHANNEL ISLANDS.										
GUERNSEY	Under; bad	Under; good	Average; good	Under; bad	Average; good	Under; bad	Average; good	Average; good	....	Charles Smith & Son
JERSEY	Under average	Almost a failure	Under average	Under; not many grown	Under average	Under; Chaulmonts a poor crop	Average; quality good	Average; quality very good	....	James Pond, The Vineries
SCILLY ISLES .....	....	One tree, abundant crop	....	....	Under average	Under average	Above average; good	Above average; good	....	Geo. D. Vallance, Tresco Abbey Gardens

THE POTATO CROPS OF 1880. (Concluded from p. 172.)

SCOTLAND.

ABERDEEN.—The Potato crop in general throughout the country is all that could be desired. They made a very unequal start in the spring, but have come well up since, and now are three weeks ahead of what they were this time last year. The disease made its appearance about July 20 in a field in this neighbourhood—not in the usual way of a patch here and there, but in a line right across the drills, as if some evil spirit with a giant hand had scattered a quantity of burning liquid from one side of the field to the other. The early sorts (in the same field) are now much diseased—the late ones partially. Strange to say, another plot belonging to the same farmer has not a diseased leaf on them, although there is only a ditch and hedge between the two fields. *G. Donaldson, Keith Hall.*

I never saw the Potato crops look better than they are at present in this locality. They are all strong and healthy, and there is not the least symptom of disease amongst them. All I have dug in the garden here are a very heavy crop, and of first-class quality. *John Proctor, Slains Castle, Aug. 4.*

AYR.—The Potatoes are very fine, with great appearance, and free from disease. *N. McKinnon, Dumfries House, Cummock, Aug. 4.*

BERWICK.—The season so far has been good for the Potato crop, the early varieties in gardens having done well, but during the rains of last week we had symptoms of disease in some of those whose thick, bushy tops are lying flat on the ground, while those of more erect growth, amongst which the air circulates more freely, are quite healthy and growing finely in the fields, where a more than usually large breadth has been planted. They never looked better, and with a good season give promise of a large yield. *William Fowler, Merloun Gardens, St. Boswells.*

— The Potato crops in this district are splendid, and the quality of the early varieties excellent. There is not the slightest appearance of disease up to this date. *James Whitton, Thirlestane Castle, Aug. 6.*

CAITHNESS.—The Potato crop promises to be good; if they escape the disease it will be the best we have had for many years. *John Sutherland, Langwell, Aug. 5.*

CROMARTY.—The Potato crops never looked better, are very forward, and no appearance of disease. *James Laing, New Tarbet, Parkhill, Aug. 3.*

DUMFRIES.—Potatoes in this locality promise to be an excellent crop; indeed, I never saw them looking better. The earlier varieties that we have been using are exceedingly good both in quantity and quality. We have twenty varieties in the garden, the whole of which have a fine appearance—no signs of disease; and should we be favoured with dry weather, the Potato yield in this district will be the heaviest we have had for many years both in field and garden. Champion still keeps up its name as a favourite field Potato; the tubers are not of the best shape, but its properties otherwise, such as resisting the disease and its qualities for the table, strongly recommend it, and indeed it is not surpassed by any other late variety that I am acquainted with. *James Dickson, Arkleton, Aug. 5.*

I wrote to you ten days ago remarking on the excellent appearance of the Potato crop, and saying that I had not then heard of any disease in this neighbourhood. The subsequent wet has told its tale, and to-day I observe signs of the disease on Red-skinned Kidney Flourball, and Myatt's Early Prolific, of the last of which I was keeping a row or two for seed. I expect a few days more will show the disease more strongly. The weather has taken a change at noon to-day, but I fear it is only transitory, as the glass has a down-

ward tendency. This will be too late for Saturday's *Gardeners' Chronicle*, but I will write again early next week. *J. A. C., Northfield, Annan, Aug. 5.*

FIFE.—Garden Potatoes are an excellent crop, with no sign of disease. Small Potatoes look well, and I never saw so much bloom—Scotch Champion like a flower-garden. *Wm. Henderson, Balbirnie, Markinch, Aug. 4.*

INVERNESS.—A good crop, and healthy up to the present time. *Wm. Anderson, Beaufort Gardens, Beauly, Aug. 4.*

LANARK.—Potatoes everywhere look splendid, and in this district very little disease has made its appearance. *Francis Davidson, Lesser Palace Gardens, Hamilton, Aug. 5.*

NAIRN.—The Potato crops promise well at present; but this dull weather is not in their favour. *James Manson, Gr., Kilravock Castle, Fort George, Aug. 3.*

ORKNEY.—The crop in this district is so far very good, and no disease has yet appeared; all crops are fully a month earlier than last year. *Thomas McDonald, Balfour Castle Gardens, Kirkwall, Aug. 3.*

PERTH.—In fine condition at present, quality extra. There is yet no appearance of disease; rust shows a little only upon Snowflake. I heard of disease in this locality, and have just discovered it to be false, hence my delay. Rainfall from January 1 to July 31, 18.51 inches. Average of twenty-one years 25.09 inches; evaporation from January 1 to July 31, 22.34 inches: in striking contrast to the floods reported from England. *George Croucher, Ochiltrey, Crieff, Aug. 6.*

RENFREW.—Potatoes in gardens and fields in this district are very good; no appearance of disease at present. *James Bell, Erskine Gardens, Glasgow, Aug. 4.*

SUTHERLAND.—Good crops and of good quality. I have seen no disease as yet. One or two fields in the neighbourhood have assumed a suspicious appearance in the haulm during the last few days, so we may look for the blight spreading. The weather during the last week has been close and showery, with occasional peals of thunder. *D. Melville, Dunrobin, Aug. 6.*

ENGLAND.—NORTHERN COUNTIES.

NORTHUMBERLAND.—The Potatos never looked better for many years in this district than they are doing at the present time. There is scarcely any disease. *W. Turner, Capheaton, Newcastle-on-Tyne, Aug. 4.*

— Now that the early Potato crops are being lifted, I find that they are much better this season than they have been for the last two or three years. Early rounds are not much thought of in this locality; Myatt's is now the most extensively planted for an early crop with the cottagers, as they are generally to be depended on being ripe and lifted before the disease is developed, which made its first appearance here about ten days ago. In the field the Champion is the only one planted by the cottagers, and from reports to hand they are not to be depended on. The haulm in several cases is quite 6 feet high with no signs of bulbing, so much so that the cottagers are pulling them out, and planting the ground with Cabbage for their cows. The farmers about Berwick-on-Tweed will not grow the Champion for the same reason; it cannot be depended on. *David Inglis, Howick, Aug. 4.*

CUMBERLAND.—Potatoes are a good crop in gardens. Several kinds of kidneys have been planted here, which turned out well, and we are now using Red Kidney, which is one of the best in this neighbourhood, both for crops and table use. Fields are looking well, and as yet no appearance of disease. *F. Blackwood, The Garden, Eden Hall, Aug. 5.*

WESTMORELAND.—Early varieties, such as Myatt's Prolific, Mona's Pride, and Veitch's Improved Kidneys, have been very fine, and continue sound. Late kinds, on the whole look remarkably well; but should the wet weather continue I fear they will soon show signs of disease. *S. Sarpie, The Gardens, Dallam Tower, Milnthorpe, Aug. 4.*

YORK.—We are lifting such Potatoes as the old Ashleaf, Rivers', Myatt's, and other early varieties, and find the tubers large and fine. No disease at present; Potatoes in cottagers' gardens much diseased in our neighbourhood. *James Fowler, Harewood House, Aug. 6.*

— The disease has made its appearance here, also in different parts of the neighbourhood. *Wm. Lewin, Aske Gardens, Richmond, Aug. 5.*

— Early Potatoes are a good crop, but very much diseased. *Jos. Shaw, New Appleton, Bolton Percy, Aug. 5.*

LANCASHIRE.—Potatoes promise well; the haulm keeps a good colour, and there are no signs of disease. The tubers in use are the soundest and best we have lifted for years. *W. B. Upjohn, Worsley Hall, Manchester, Aug. 6.*

MIDLAND COUNTIES.

CHESHIRE.—The crops are excellent, both early and late; but early sorts are getting much affected by disease. *W. Muir, Oulton Park, Aug. 4.*

— The Potato crops are very good, especially early kinds, and very few are diseased up to the present time, but great fears are entertained respecting the disease should the present inclement weather continue. Second earlies are good, with a small admixture of diseased ones. Late crops look well on all sides. *Alfred J. Grant, Withington Hall, Chelford, Aug. 7.*

NOTTS.—Early Potatoes are a good crop, but slightly affected with disease. Late varieties growing in fields are looking remarkably well, and there are no signs of disease on them yet. *John Edmonds, Bestwood Lodge, Aug. 5.*

— The Potato crop in this district was very promising until this last week, when the disease appears to have shown itself. *S. A. Woods, The Gardens, Osberton Hall, Aug. 5.*

— Symptoms of the disease have been apparent from July 30, but no diseased tubers were seen until to-day. Crops very good. I find the earliest to be —1st, Hammersmith Kidney; 2d, Empress Eugénie; 3d, Covent Garden Favourite (enormous crop); 4th,

American Breadfruit, very handsome, but have not tested the quality. Late Potatoes looking well and making enormous tops. *H. Gadd, Wollaton Hall, Aug. 5.*

SALOP.—The Potato crops looked well and promised an abundant yield and were free from disease up to the middle of July, but now the disease has attacked all the first and second earlies, and some of them are scarcely worth digging. Late sorts do not show any signs of disease at present. *J. McLean, Pitchford Hall Gardens, Shrewsbury, Aug. 6.*

STAFFORD.—The Potato crops here at present are plentiful, and good in quality. The disease has made its appearance amongst the haulm, but not to a serious extent amongst the tubers as yet. *W. Ward, Little Aston Hall Gardens, Aug. 5.*

LEICESTER.—The crops of Potatoes are fine and plentiful, but the disease set in a few days ago, and is doing much injury. *James Maclean, Beau Manor Park, near Loughborough, Aug. 6.*

— Early Potatoes are an excellent crop, and have been free from disease up to the past week; but are now going as bad as they were ever known to be. Late kinds are very promising, especially Magnum Bonum and Champion. Not a sign of disease as yet; the later ones however, in many places have tops from 3 to 4 feet high, and little sign of anything at the roots. They should evidently have poor ground. *John Kitley, Wanlip Hall, Aug. 6.*

RUTLAND.—Early Potatoes have given a good produce in this neighbourhood. Late kinds will not be so good on account of the disease setting in earlier than usual. In a home garden in this neighbourhood the disease was noticed about the middle of June last. *M. Aherne, Exton Park, Rutland.*

— The Potato crops in this neighbourhood were never more promising than they have been this year until, about three weeks ago, when the disease made its appearance amongst early sorts in gardens, and I see it is now attacking the later sorts in fields—Champions, Regents, Victorias, &c. The weather in the Midland Counties during the last month was most serious, thunder and heavy rains occurring almost daily—very trying for the delicate tuber, and I am afraid the results will be most disastrous. *John Gray, Normanton Park, Stamford, Aug. 4.*

NORTHAMPTON.—The Potato crops in this district are extra fine, but the disease is now raging very fast, and I hear great complaints. On July 24 I first saw it; since then it has spread very fast. The tops of the early sorts are nearly gone, and I find it in the tubers. *Edmund Cole, The Gardens, Althorp Park, Aug. 4.*

HUNTINGDON.—Potatoes generally are a very heavy crop. Disease began to show about the middle of July after heavy storms of thunder and rain, and is now very bad: some varieties are quite one-half diseased. *J. F. Bowie, The Gardens, Hinchbrook, Aug. 5.*

BEDS.—Abundant crop, but very much diseased. All kinds very large, especially the early varieties. *Geo. Ford, Wrest Park, Ampthill, Aug. 5.*

BUCKS.—Very fine crops of all varieties, and no disease till a few days ago, when the tops showed signs of the spot, and now the early varieties that are not lifted are three parts diseased. We are having the tops pulled off all varieties showing the least sign of disease, and hope to prevent it spreading. Magnum Bonum is showing the disease slightly. Scotch Champions at present are very healthy, and the tops nearly 6 feet high. *J. Smith, Mentmore, Aug. 5.*

HERTS.—All the sorts grown here looked wonderfully well till about July 20, when disease made its first appearance. Magnum Bonum was the first to show it to any extent. Then came Ashleaf, Fenn's Early Market, and Schoolmaster. Victorias are a little spotted, Scotch Champions are very strong and entirely free at present. *G. Sage, Ashridge, Aug. 5.*

— The Potato crops promise to be good, particularly the Champion and Magnum Bonum, which are quite free from disease. *Geo. Norman, The Gardens, Hatfield House, Aug. 5.*

EASTERN COUNTIES.

LINCOLN.—Although all early Potato tops are much affected by the disease, I have not, as yet, seen a diseased tuber. Crops are remarkably good; the Potatoes planted in the fields, which consist chiefly of Regents, Scotch Champion, Flourball, and Magnum Bonum, look well, and show no signs of disease. *Isaac Dell, Stoke Rochford, Aug. 4.*

NORFOLK.—The first spot of disease appeared here on July 18 on Early Rose, then on Mona's Pride, succeeded by Snowflake and Lapstone Kidney. Fortunately after the first two or three days it progressed but slowly, and as it now appears stationary, I believe, with fine dry weather, the Potato crops this year will be excellent, both in quality and quantity. *A. Lancaster, Holkham Gardens, Aug. 4.*

— Potatoes looked very promising till the third week in July—in fact, I never saw them look better—when the disease made its appearance on Early Rose and Beauty of Hebron, since which time it has been gradually spreading to other sorts, such as Snowflake, Paterson's Victoria, Schoolmaster, &c.; the last day or two I see it showing itself on Magnum Bonum: Scotch Champion has escaped at present. *Henry Batchelor, Catton Park, Aug. 5.*

— I am sorry to have report the appearance of the Potato disease, with which early and late kinds are badly affected. Magnum Bonum and Scotch Champion are the least hurt. Lifting having commenced in earnest here, Potatoes on the whole will be small. At one time I never saw more promise of a good harvest. Out of 50 varieties the two named above are looking well, and promise a good crop both in the gardens and in the fields. *J. Clarke, Melton Constable, Aug. 4.*

SUFFOLK.—Since writing on August 2 the Potato disease has made rapid progress, completely blighting our hopes and destroying one of the brightest prospects of an abundant crop that we remember to have seen. At present, everywhere round here, all varieties, early and late, have their leaves blackened and singed, or the mischief is in active progress towards completion, and all this, as it were, within a few days. No doubt the weather we have had is in a great measure chargeable with the rapid and fatal march of this disease; for the last fortnight, at least, it appears to have been eminently suitable for producing the greatest and direct effect in the shortest possible time. The fall of rain, as recorded here, from July 25 to August 8, amounts to 2.93 inches for this period of fifteen days; the average highest daily temperature in the shade was 70½°, and the average lowest 50½°. There was also a great absence of sunshine, and very little drying air or wind. Had the latter part of the month of July proved hot and dry, no doubt we should still have had our eyes gladdened by the prospect of an abundant crop of sound Potatoes instead of the wreck that is now, on all sides, staring us in the face. Some of Veitch's Ashleaf Kidneys that were lifted previous to July 25 are keeping sound and good, while others, including Rector of Woodstock, taken up a week later, and which at the time of lifting appeared sound, have since gone diseased to the extent of one-half the quantity lifted. *John Wallis, Orwell Park Gardens, near Ipswich, Aug. 10.*

ESSEX.—The Potato crops up to the present very good and promise a large yield; but the disease is beginning to show itself, especially on wet and undrained land. *Wm. Smith, Birch Hall, Colchester, Aug. 4.*

SOUTHERN COUNTIES.

BERKS.—Potato crops in this neighbourhood are remarkably good this season, most kinds yielding splendid crops. Early sorts are being got up almost quite free from the disease, and with a continuance of the present favourable weather, later kinds it is hoped will also turn out well. *Alex. Galt, Aldermaston Court, Aug. 5.*

— Our Potatoes up to within this last week were everything one could wish for—fine crop, good tubers, sound, and fine flavour; since then the disease has set in with terrible severity. I find the early kinds are smitten with it just as bad as the late ones. *Jas. Tegg, Bearwood, Aug. 5.*

MIDDLESEX.—The Potato crops are very good, Veitch's Ashleaf Kidney is very fine both in quality and sample, and so far free from disease. Within the last few days Early Rose has been struck with disease. Scotch Champion, Magnum Bonum, Dunbar Regents, and Red-skin Flourball, are looking well and show no sign of disease. The crops of all these varieties are very fine. *T. P., Stanmore, Aug. 3.*

SURREY.—The quality of the Potatoes in this neighbourhood is excellent, but the disease has lately appeared amongst the early kinds, such as American Rose and the Ashleaf varieties. Magnum Bonum and Flukes are up to the present date quite free from it. *F. Corbould, Tandridge Court, Godstone, Aug. 5.*

— The early and second early Potatoes are a fine

crop, without the slightest sign of any disease, and are in good condition for storing. The late varieties have also attained a good size, so that I consider the crop of 1880 will be generally an exceptionally good one. Should the disease make its appearance I shall immediately pull and clear off the haulm. This (after many years' practical experience and after trying many methods) is to my mind the easiest and surest plan of saving the crop from destruction by the ravages of the *Peronospora*. *Thomas Foote, Leigham Court, Aug. 6.*

KENT.—There are slight traces of the disease on American Rose and Rivers' Ashleaf in the garden, but Magnum Bonum is quite free. There is no trace of it yet in the field sorts, such as Magnum Bonum, Champion, and Victoria. The two first-named are splendid in appearance, but the latter are weak. *D. Buchanan, Sherwood Park, Tunbridge Wells, Aug. 3.*

—There is a heavy crop of early kidneys about here, but the blight has set in. It has also affected the early rounds. With regard to late sorts there is every appearance of a good crop; the haulm is strong and looking vigorous. *F. Deuxberry, Cobham Hall, Gravesend, Aug. 5.*

SUSSEX.—The Potato crops in this neighbourhood are very fine; kidneys large and good. With good weather now, I anticipate a large crop of late Potatos. *John Wilson, Castle Garden, Arundel, Aug. 5.*

—Excellent crops, but showing signs of disease in the tops. *F. Rutland, Goodwood, Aug. 5.*

HANTS.—All the early crops, such as Ashleaf, are much above the average, and first-class in quality. Late sorts look well, and all are free from disease. *Wm. Smythe, The Gardens, Basing Park, Alton, Aug. 4.*

WILTS.—Potatos in this locality have done extremely well, and for quality and quantity the crop of the current year (early sorts) far surpasses many of its immediate predecessors. The disease made its first appearance in the haulm of Early Rose on July 14, and two days later on Mona's Pride and Myatt's Ashleaf. As an advocate for cutting off the tops I may mention that that operation was done without delay, and since then the crop has been lifted, sorted over twice (not a diseased tuber found), and stored away. On the 23d the late varieties were attacked, Champion and Schoolmaster being the first to show it, and to-day (Aug. 4) I find it has spread to Magnum Bonum and Paterson's Victoria. As the tubers of these sorts are quite large enough for use, the tops will be cut off forthwith, and by that means we hope, comparatively speaking, to have a crop for once in a way free from disease. *J. Horsefield, Heytesbury, Aug. 4.*

DORSET.—No event of recent years has had a greater tendency to buoy up the spirits of the millions in these islands, than the prospect of having an abundant Potato harvest this season. The early crops, such as the old Ashleaf and Veitch's Ashleaf, have been so prolific, and of such excellent quality, that nothing remains to be desired. The crops of Early Rose, which is largely grown by cottagers in this locality, are simply enormous, and later crops promise to be equally good. The *Peronospora* did not make its appearance in this neighbourhood until the end of last month—and I am pleased to say owners of cottage gardens are acting upon the advice so frequently inculcated in the columns of the *Gardeners' Chronicle*, viz., to localise the disease by cutting away the affected haulm before the disease passes down to the tubers, or by destroying the plant altogether. The season has now so far advanced, and the disease is of such a comparatively light character, that if a dry period should set in there will be such a Potato harvest as has not been seen for years. *W. Hinds, Canford, Aug. 4.*

—The Potato crops here are wonderfully prolific and good, but the disease is now making its appearance fast all around here, and if the very wet weather continues, I fear Potatos will be very bad. I never saw such growth as the Scotch Champions have made; the stalks are from 5 to 6 feet high; Paterson's are also fine. Veitch's Early Ashleaf and the Rector of Woodstock are excellent, and up to now very free from disease. *C. Hazel, The Gardens, Lewiston, Aug. 4.*

WESTERN COUNTIES.

HEREFORD.—Until the disease showed itself about three weeks ago nothing could look more promising, but now not a clean patch can be seen (Scotch Champions and Magnum Bonum have it in the haulm);

diseased tubers increase every day. *Ed. Jones, Perry-stone, Aug. 6.*

—Potatos in this neighbourhood are very much diseased. The excessively heavy rains of last month (7 inches), and the sudden changes in the atmosphere, have been so favourable to the spread of the disease that quite half the crop will be lost. *Alfred Bye, Hampton Court, Leominster, Aug. 5.*

GLOUCESTER.—Early Potato crops here are very good, but the haulm is now becoming spotted, and growers generally are pulling them up, as the tubers are large and good in quality; late kinds are also strong and very promising. Those who have pulled the haulms as soon as attacked by blight, during the last two or three years, strongly recommend it. *William Loader, Blaize Castle, Aug. 5.*

MONMOUTH.—Early varieties in this neighbourhood are an excellent crop, and are of unusually good quality. The tops of the late sorts are very much overgrown. The fatal disease-spot first made its appearance on the haulm of the Ashleaf on July 26, and on Magnum Bonum on August 7. We have stored a splendid lot of Veitch's Ashleaf. *Thos. Coomber, Hendre Gardens, Aug. 9.*

SOMERSET.—The Potato crop has been more promising than for many years past until within the last fortnight, when, with so much rain, the disease has spread so rapidly that the haulm has died quite away, and it has affected the tubers considerably. The tubers this year are very fine. *W. Hallett, Cosington Farm, Bridgewater, Aug. 5.*

—The disease is again raging in all the gardens in this neighbourhood. The one sort looking well at present is Magnum Bonum; all others are more or less affected. I am pulling the haulm up to try and check it a little. The Rector of Woodstock is the Potato it first appeared on here, about ten days ago, and now nine out of ten Potatos are badly affected. *E. Miller, Old Sneed Park, Aug. 5.*

—The early Potato crop in this locality has not been finer or better in quality for years, but I am sorry to report that since July 23 the disease has appeared, and is spreading very rapidly. At present I have seen no trace of it in Magnum Bonum or Scotch Champion. *John Austen, Ashton Court, Aug. 4.*

DEVON.—Potatos, early and late, never looked better. The early crops are enormous, and of fair quality. The haulm of some of the early sorts has shown signs of disease within the last few days, but I have not yet seen a diseased tuber; and as all early sorts in this neighbourhood are fit for storing they should be taken up at once. If this is inconvenient all diseased tops should at least be cut off and burnt. I am in hopes, if this precaution is taken and the weather continues fine, we shall feel but slightly the effects of this terrible disease. *Alex. Ayson, Oxtou House Gardens, Kenton, Aug. 4.*

—Myatt's Ashleaf and Rivers' Royal Ashleaf are very fine; those lifted in the middle of July are not diseased, but of those left in the ground half are diseased. Late Potatos look very promising. *F. Geary, Eggesford Gardens, Aug. 5.*

CORNWALL.—A very abundant crop, and quality excellent. Much less disease than usual. *W. N. Carne, Rosemundy, St. Agnes, Aug. 5.*

WALES.

CARNARVON.—Good crop, but disease appearing in some places. *Allan Calder, Vaynol Park, Bangor, Aug. 5.*

DENBIGH.—Where change of seed was looked to they are a splendid healthy crop, but where seed has been used from the same ground year after year disease has appeared. Some sorts are flowering splendidly, and some have shaws 5 and 6 feet, and 1½ inch in diameter in the stem. Considering the amount of rain and electricity in the atmosphere during the last two months, they are doing remarkably well. All other vegetable crops are doing well excepting Carrots, which are being carried off by wholesale, notwithstanding applications previous to sowing and after soot, tar-water and gas-lime. *P. Middleton, The Gardens, Wynnistay, Aug. 6.*

MERIONETH.—The Early Potatos were lifted here without any disease, and late varieties look grand. At the other end of the county the disease is very bad amongst the early sorts. *James Bennett, Rhug Gardens, Corwen, Aug. 5.*

IRELAND.

ANTRIM.—The Potato crops, both in garden and

field, are excellent with me. *G. Porteus, Garron Tower, Belfast, Aug. 3.*

ARMAGH.—Ireland has seldom seen her favourite (the Potato) look to such advantage as this season. Nothing could be more encouraging than the present appearance of this crop. Old varieties, condemned as worn out, are this year looking as vigorous as the renowned Champion. The yield so far is satisfactory to the grower, but I am sorry to say the disease, favoured by the wet close weather we are having, is spreading fast in this district. *W. Allan, Broxton Gardens, Lurgan, Aug. 4.*

CORK.—The crop of early kinds has been remarkably good and heavy, and later kinds promise to be much above the average. I have not seen one diseased tuber of Ashleaf, of which I have taken up more than 2 tons, but it is showing itself on the leaves of later kinds, though it has done no harm as yet. Champions are the chief kind planted in fields in this county. Rainfall much below the average. *W. Osborn, Fota Island, Aug. 4.*

DUBLIN.—The early sorts—Kemp's and American Rose—are a full crop, and excellent in quality throughout the country. The Champion has been very extensively planted everywhere, and up to this time exhibits no signs of disease; but being very late, no opinion can be formed concerning the produce. *David Pressly, Knockmaroon Lodge, Aug. 6.*

GALWAY.—The sea-coast of Connemara is generally the first place in Galway visited by the disease. Last year at this time there was scarcely a green leaf to be seen: this year it is very different. Although within the past ten days the blight has shown itself in many places, it has not made the usually rapid progress in the stems. In several fields I have examined, the leaves of which have been blighted for nearly a fortnight, the stems are still untouched, and of course the tubers. The crop is an excellent one everywhere, and should we be blessed with one month of fine weather, will be the best harvested for many years. The Champions are everywhere, as yet, untouched by disease; but the peasantry here—and most probably in many other places—have committed the sad mistake of planting them too thickly by one-half. They require 3 feet between the drills, and at least 2 feet from set to set in the drills; but this is an evil that will correct itself another year, as they all see it now. *James Garnier, The Gardens, Kylemore Castle, Aug. 4.*

KILKENNY.—The crop in this district was all that could be desired until within the last two weeks, when the disease made its appearance on early varieties, which are now quite black in the tops, and a few of the tubers are a little touched. Late crops are also a little damaged. *Wm. Gray, Woodstock Park, Inistiogue, Aug. 5.*

MEATH.—We have very good crops in this district. The disease is showing much in the haulm, and a few of the tubers are bad. *C. G., Aug. 5.*

TIPPERARY.—The crop in this district is looking remarkably well, with very little sign of the disease at present. The tubers are very large and of good quality. *Jesse Wilsher, Shanbally Castle, Clogheen, Aug. 3.*

WEXFORD.—The Potato crop in this neighbourhood has not looked so well for a great many years, if there is a complaint at all it is that they are growing too fast; but the way in which the Champions are growing is something wonderful, and should it be able to resist the disease, and so put a stop to distress in Ireland, it would be a Champion indeed. The disease first made its appearance here on all the early kinds about July 1; for three weeks after its progress was very slow, notwithstanding the great prevalence of thunderstorms at that time. On being lifted the crop was found most abundant and tubers very large; but within the last week the disease is spreading very fast through all the late kinds, and unless the weather changes for the better soon I fear the crop will be greatly damaged. *P. Braund, The Gardens, Courtown House, Aug. 5.*

GALUM PURPUREUM.—This is neither more nor less than a Bedstraw, but its exceedingly fine linear leaves and loose habit give it a very light feathery appearance. It is well suited to mix in bouquets where some light spray is required to break up the solid monotonous appearance which bouquets are apt to have. It is a hardy perennial, native of France, with no other good quality than that we have mentioned, but it is amply worth growing for the purpose indicated and for similar uses.

Foreign Correspondence.

CANADIAN NOTES: *Minesing*, July 15.—We have had an extraordinarily wet spring, and a catching hay-time. The hay crop is about an average one; a large portion of the fall Wheat in many districts was destroyed by frost, and has been replaced by Barley principally, and spring Wheat and seeds. The spring crops look well, and with the exception of Wheat promise an abundant yield. The fall Wheat that was spared seems likely to do well. Garden Strawberries have been deficient, but wild ones very abundant. Wild Raspberries, Blackberries, and Thimble-berries, seem likely to be very plentiful. Plums also are very promising, but Apples will be only a poor crop. Grapes are showing well for fruit, but the Phylloxera has again made its appearance, as in the two last years; but Vines attacked with it then are now bearing vigorously. Should the Vines of Europe fail, we doubt not but our Vines will make plenty of excellent wine. We have wine made from the Isabella Grape last year, which we use as a substitute, medicinally, for brandy for summer complaints, and the body is so good that it answers remarkably well. Delaware and Catawba are delicious Grapes, either for the table or for wine; and Clinton and Concord are also highly commended, the former for wine, and the latter for both purposes. Some vineyardists in the United States grow the Delaware and Concord for wine, and say they prefer them to other descriptions. Our railway system has been recently developed by a leasing connection between the Northern and the Hamilton and North-Western, and so a more intimate union with the United States' lines is effected, and the result has been an immense trade in ice from the Bay at Barrie. Many carloads even of frogs have been taken from Muskoka to the States; and other industries have been favourably affected as far as our abominable tariff would allow it. *E. M.*

ANTIBES.—For a month past we have been complaining of the drought, which has punished us severely. The heat has been intense. Scarcely a day passes in which the Centigrade thermometer does not rise to 32°, 33°, 34°, and sometimes 36° (89°.6, 91°.4, 93°.2, 96°.8 Fahrenheit). Hence it happens that the growth of many trees is entirely arrested, and that of herbaceous plants is only sustained by frequent watering. Tomatoes are so abundant here this year that they are sold at 5 francs for 100 kilogrammes (2 lb. for a halfpenny), and the gardeners still gain profit by the sale.

Fubæa spectabilis.—By lovers of those Palms that will grow out-of-doors and in the open ground this species should be placed in the first rank. Much more hardy than the Date-Palm, with more beautiful foliage, requiring less water, and even flourishing in dry soils, it is not subject to the sort of fungus leprosy (*Graphiola Phœnicis*) which often renders the Date-Palms of our gardens hideous when they get insufficient moisture; it also attains to a much larger size. We may judge of this by the size of the stem of the oldest of those planted by M. Thuret in his celebrated garden. The tree is twenty-two years old, or at least it is twenty-two years since it was placed in the situation it now occupies, but we may perhaps add three or four years for the time it was in a pot before being transplanted. Its stem resembles a gigantic bulb; it is entirely stripped of the old leaves, which fall off of themselves. It is perfectly clean, and measures at the present time 3.80 m. in circumference, which is equal to 12.46 English feet. They tell me there are some still larger in Algiers. We may judge by this of the enormous size the tubes must be when we wish to grow this Palm in a hot-house. *C. Naudin.*

THE PEA THIRPS.

THE various species of the genus Thrips of Linnæus are, notwithstanding their very minute size (scarcely any of them exceeding a line or one-twelfth of an inch in length), amongst the most troublesome of the insect pests which attack our garden and field produce of different kinds. In the early numbers of the *Gardeners' Chronicle* several species were described and figured by Mr. Curtis, including the Thrips Adonidum, common in hot-houses, attacking tropical plants by piercing the undersides of the leaves and discolouring them by the emission of a blackish glutin-

ous fluid which they deposit, by which the pores of the leaves are choked up and large portions of the surface become blotched (*Gardeners' Chronicle*, 1841, p. 228). Another species, *T. ochraceus*, Curt., is found occasionally on Plums in July and August, the growth of which is checked by their punctures (*ibid.*); and a third species, *T. minutissima*, Linn., is described and figured in the *Gardeners' Chronicle*, 1846, p. 564, which is found abundantly on diseased Potatoes. This species is entirely of a ferruginous or ochreous tint, except the abdomen, which is brown above with ochreous spots.

We have now to record the existence of another

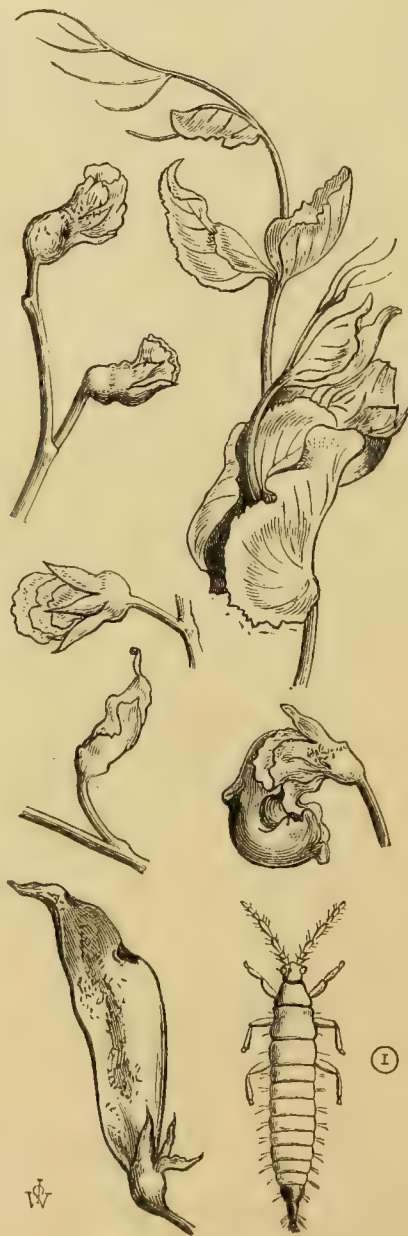


FIG. 42.—THE PEA THIRPS.

species which, during the month of July last, has done much mischief to a crop of Premier Peas in our garden at Walton Manor, Oxford, by getting into the flower-buds and sucking the orange-coloured pollen and the embryo Pea in its soft and tender undeveloped condition. During several preceding weeks of frequent and heavy rain the plants had made a strong growth, but many of the blooms were completely crippled, and where the pods had pushed forward at all they were shrivelled and distorted. In our illustration (fig. 42) we have shown the different stages of the disease produced by the action of these little creatures; the large upper right-hand figure shows the end of a shoot in which the leaves and flower-buds were all shrivelled up into a shapeless mass, out of which a weak terminal sprig had been developed.

This drawing was made in the early part of the month of June. A small flower, with its curved pistil, will be seen pushing through the middle of the mass on the right side of the figure. In the top figure on the left hand will be seen two blooms, completely crippled, and incapable of development by the punctures of the thrips. In the next lower figure the flower has pushed itself somewhat more open, but with the petals all shrivelled. In the next figure the pod has been formed, but is weak and distorted; whilst in the right-hand middle figure the pod has grown to a considerable size, but is contorted; and in the bottom left-hand figure the pod has been only partially developed, the apical half shrivelled up, and the outer surface of the pod wrinkled by the punctures of the insects.

This species of thrips is scarcely one-twelfth of an inch in length, of an orange colour, and closely resembles the pollen of the Pea, in the midst of which it must be looked for. We have in vain sought for any previous account of its attacks on the Pea, and are inclined to regard it as an undescribed species to which the name of *Thrips pisivora* may be applied. The antennæ are 7-jointed, the fourth joint appearing as though formed of a series of rings, and the fifth, sixth, and seventh joints are gradually smaller and slenderer; the extremity of the body is dark chestnut coloured, terminated by a cylindrical horny borer. The vast number of specimens which we met with agreed with our figure in their structural details, and appeared to be fully-developed females although destitute of wings. We met with no males, unless, indeed, a very few other black fully-winged specimens may be of that sex. The females closely resemble those of Thrips (*Ap-tinothrips*) rufa, Haliday (*Brit. Mus. Cat.*, Homopt., pl. v., pp. 5—11), but differ in the dark coloured extremity of the body. *I. O. W.*

Notices of Books.

Nature's Byepaths; a Series of Recreative Papers in Natural History. By J. E. Tayler. (Bogue.)

This book consists of a series of pleasantly written articles on various subjects in natural history and geology, much more correctly written than such popular effusions are wont to be. We can confidently recommend the book as a good one to be packed up among the impedimenta of those now about to seek recreation and health in the country or at the seaside, and it would form a useful addition to the library-shelf of the school-room or of the amateur naturalist. Alluding to the dimorphic condition of such flowers as the Primrose and the Loosestrife the author writes:—

"Now a truly reverent and philosophical naturalist will not be content with regarding this law of dimorphism or trimorphism as simply curious. Whatever Darwinism has done, it has at all events given the death-blow to that spurious theology-in-science which deemed it possible for the Creator to indulge in capricious zoological and botanical freaks! Those who believe in the meaning, either in present activity or representing a former active condition of every organ or character, are much more likely to be nearer the truth than those who ascribe all they cannot understand to a mystic caprice more difficult to understand still."

We would commend the principle here alluded to to the upholders of an arbitrary standard of perfection in florists' flowers.

Garden Operations.

KITCHEN GARDEN.

MUSHROOMS.—In order to be successful in the cultivation of these much esteemed edibles, it is absolutely indispensable in the first place to have spawn of the very best description in an active state; and such being the case, the quality of it should be tested when it comes to hand, and care should be taken of it afterwards by storing it away where it will keep properly. For this object any place which is moderately dry and temperate will answer, and it should be packed closely together until it is wanted for use. At this time it will have to be broken up into pieces about 2 inches in diameter, and only those pieces which contain spawn in a proper state should be used for planting in the beds prepared for it. If this course were more generally insisted on, many failures of a vexatious and disappointing nature would be avoided, as, in my opinion, these more often than otherwise may justly

be ascribed to using spawn in an inert state than to any other cause in connection with the mode of cultivation practised. I advise that only a sufficient supply of it adequate in quantity for the season's use be obtained, and this should be got early in the season. We make a point of having ours delivered by the beginning of August in every year.

Mushrooms are indigenous, and naturally appear at their proper season, namely, during August and September, in pastures and other places where cattle are kept; these provide a supply not only adequate for ordinary wants, but also for such purposes as bottling, pickling, and making ketchup. With the exception of this period, the supply for the rest of the year is mainly dependent on the supplies which are produced by means of artificial cultivation, a process in which the details in management have considerably altered of late years, particularly in the way of preparing the manure. This material had much time and trouble bestowed on it formerly, in order to get it into a proper condition, as was thought, to prolong the supply of heat in it in a subdued form, and, as a matter of course, by the frequent turnings to which it was subjected, and repeated fermentations, the vitality and strength it once contained became evaporated, or otherwise exhausted by the time it was to be used for making the beds. This process in a certain measure is now somewhat relaxed or dispensed with by many growers. I amongst others have found out that it is not altogether expedient, and therefore have relinquished it, and use the manure in a fresher state than was heretofore thought to be orthodox. We now make a point, as far as possible, of having manure which has accumulated at the midden within a fortnight or so. This is sorted, the chief of the long stuff is taken out, and the rest is then spread out. To this is added some fresh friable loam in a broken state, at the rate of about a barrowful or so to every cubic yard of the material, with which it is well incorporated; and in this state it is put into the beds 18 or 20 inches deep. When the heat in the stuff is generated sufficiently and before it becomes dry from that process, the beds should be well beaten down, and the spawn, in pieces, as before described, be planted just beneath the surface when the temperature is at about 90°, at from 6 to 9 inches apart every way. About 3 or 4 inches thickness of good turfy loam, in a proper state of moisture, should be laid over the surface; this also should be hammered down firmly, and the surface of it afterwards made smooth with the back of a spade. To prevent it from becoming dry and cracking, a layer of about 6 inches of hay should be put on the top, and kept there until the Mushrooms begin to appear, which will be in about six weeks from the time of spawning, at which time it should be removed altogether, and the soil be kept equally moist by waterings whenever required. To obtain a supply of Mushrooms by the time those from out-of-doors are over, beds should be made up without any further delay, and for these at this period the coolest places in the house should be selected. I am, of course, assuming that before these beds are introduced the house has been cleared out entirely, and proper means have been employed to eradicate pests, such as woodlice, slugs, &c. If this be not done once in every year the chances are that much trouble and annoyance will ensue in consequence of their damaging the crops. A temperature of about 50° meets the general requirements in Mushroom cultivation; if, therefore, the house will stand at about that degree no fire-heat at all will be needed.

ORDINARY WORK.—On or about August 20 Cauliflower seed should be sown on an open space, and not too thickly, lest when the plants come up they speedily disappear through too much damp surrounding them. The sorts we prefer are Frogmore Forcing, Early London, and Walcheren. These seeds should be preserved from the attacks of birds, and daily attention should be given to prevent the depredations of slugs. At the same time, and under similar conditions, the seed for next season's early crop of Lettuce should also be got in. We at this season restrict our choice to two varieties, namely, a very superior strain of the old type of the Black-seeded Brown Cos, which we perpetuate annually, and Stansted Winter Cabbage Lettuce. Seedbeds of Cabbage, which were sown July 24, will soon be fit to prick out; this operation is very needful to secure sturdy plants, and particularly so when they stand thickly together. As the seedling plants of Lettuce and Endive become fit, let good breadths of them be planted out for autumn and early winter use. Also on sunny days tie up those which are fit for blanching, and attend to advanced crops of Celery under the same conditions, in order to have this fit for use at the earliest date. Radishes should also be sown in sunny places, and if Mustard and Cress is appreciated during the early autumn months, sowings in sunny spots should now be made. All vegetable subjects are most luxuriant and fine in quality this year; but we have, nevertheless, to deplore the loss of so many fine tubers out of the Potato crop. As the lifting of these proceeds, the virulence of the disease becomes

more apparent. Our early lifted tubers of the Ash-leaf section are, however, still keeping well. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

ORCHARD-HOUSES.—The early house will now be denuded of fruit, and any trees that require re-potting should be seen to at once. The trees do not succeed well in light sandy loam. It is better to send a considerable distance for good clayey loam than to use unsuitable material merely because it can be had with little trouble. Good clayey loam, with a fourth part of rotten stable-manure, is by far the best potting material. I have frequently described our method of potting, and need not further allude to it. See that the trees if well furnished with healthy leaves are well exposed to the light, they cannot get too much of it in our cloudy clime. The best way to destroy the red-spider is to thoroughly syringe the trees after the fruit is gathered. It has been recommended by some to throw flowers of sulphur or hot lime in the house to destroy red-spider, but this must be used with great caution, as the lime can be made so hot that it will cause the sulphur to flame, when the leaves would be killed. This practice is so dangerous that I never recommend it. If any of the trees are considered to be too old or are getting misshapen, they should be thrown away as soon as the fruit is gathered. Now is the time to take stock of the trees, and to decide on the number and variety that are to be purchased in the autumn. It is very desirable to order them early. The rule with the trade is, to select the best plants first. Amongst Peaches, the old varieties still hold a high position, and there are no mid-season varieties to surpass the Royal George, Grosse Mignonne, and Bellegarde. The Noblesse, too, though not one of the best for pot culture, is a grand variety. Early York is a fine early Peach, and Early Grosse Mignonne, which is nearly as early, is also very valuable. Barrington and Walburton Admirable are amongst the best of the late varieties. Princess of Wales is very good as a pot-tree; and latest of all, though only sometimes good, is the Salwey: we have picked very large fruit in November. Amongst Nectarines, Lord Napier stands out prominently as one of the very best early varieties. Pine-apple is the best of the yellow-fleshed varieties; and one of the finest of Nectarines; Stanwick Elruge is also distinct, and a good variety for pot culture. Victoria is the best late Nectarine. These four have all been raised at the Sawbridgeworth Nurseries; and if we add to them the Violette Hâtive, no better selection of Nectarines can be made for any purpose. It is now time to see that the Strawberry plants are potted for fruiting in pots on the shelves. They are layered in 3-inch pots and potted into 6-inch, using a similar compost to that recommended for the Peach trees. They should be placed in an open position, well exposed to the sun, with a good space between each plant. I allow 14 inches, and each plant is placed on a brick, which causes a greater heat around the plants than if they were placed on the ground. In the late orchard-house the work is merely to keep the trees fairly well supplied with water at the roots, and if any vigorous shoots are still thrown up on young trees they ought to be stopped back. Gather the fruit carefully and lay it in a cool place until it is required. Pear trees must have abundance of air. Plums require very similar treatment; they can stand as much sun as the Peaches, but they require more air at all seasons. *J. Douglas, Loxford.*

PLANT HOUSES.

ORCHIDS.—In the house or division devoted principally to Mexican Orchids, such plants as *Lælia majalis*, *L. autumnalis*, *L. furfuracea*, *L. albidia*, *Epidendrum nemorale*, *E. Parkinsonianum*, *Odontoglossum citrosimum*, *O. Londesboroughianum*, and *Oncidium unguiculatum* will be making rapid growth, and must receive generous treatment in every respect. As a rule no doubt these plants get far too much water given them during the winter months, and in all probability get too little just for the few months in which they make their growth. Where the plants named and also the *Barkerias* are grown with but little material around their roots, a good syringing overhead during the afternoon of sunny days will be very beneficial. Draw up the blind and close the house early, so that the sun may raise the temperature to between 80° and 90°. Strong light and sun-heat, combined with a saturated atmosphere, suit these Mexicans better than any other treatment. Of course the ventilators must be freely used during the day, and the bottom ones should be left open on warm nights. On no account syringe these plants overhead on dull days, for their young growths are easily rotted by water standing in them. *O. Londesboroughianum* will be pushing from the current year's growth both spikes and roots. Take every care of the latter, for this plant is rather a shy-rooting subject under cultivation, so that not a root can be spared. Keep the tips of the spikes almost touching the roof-glass, or they will get much too long to look well when in

flower. I have heard more than one complain of the want of compactness in this plant. *Vanda teres* and *Dendrobium Falconeri* will grow thoroughly well in this house provided they are syringed thoroughly at least three times a day. A few very interesting Mexican plants are now flowering in the East Indian-house. These consist of *Cynoches ventricosa*, *C. Egertoniae*, *Mormodes pardinum*, *M. unicolor*, and *M. luxatum eburneum*. These are all deserving of attention from cultivators, as they throw either very showy flowers or, as is the case with the *Cynoches*, very wonderful ones. As these plants pass out of flower place them in the Mexican-house, where the sun and light will thoroughly ripen up this year's growth. Give for the present just enough water to keep their roots moist, but later on water will have to be almost entirely withheld, as the leaves and also many of the roots of these plants are annual. The whole of the *Mormodes* can be grown perfectly well in a light warm position in the Cattleya-house, but the *Cynoches* are decidedly heat-loving plants. Liberal and frequent supplies of water must now be given to *Cœlogyne cristata*, *C. barbata*, *C. Gardneriana*, *C. conferta*, &c. Dryness at the root, or in the atmosphere surrounding these plants is only too sure to be followed by weak, insect-troubled growths. *C. flaccida* and the new *C. Massangeana* flower with such long pendulous spikes, that it is almost impossible to do them justice unless they are suspended from the roof. Choose a shady position for them, as their leaves soon lose colour if too much exposed to light. The nearly related *Pleiones* will, on the contrary, now require plenty of light, and also air; given these, there is not the slightest necessity to roast and dry them up to induce them to flower. The compost in which these plants are grown ought never to be otherwise than moist, and during the growing season it should be kept really wet. The pretty *Cypripedium Schlimii*, now flowering, is another Orchid that suffers greatly if allowed to get the least dry at the root. If potted in peat and sphagnum and well drained it will enjoy a thorough watering every day during the summer months, and but a little less often even through the winter. It is besides a shade-loving plant that cannot stand the least sunshine. Almost identical in its likes and dislikes is the pigmy *C. Fairrieanum*. Very rare indeed has this little gem become in collections of Orchids, a circumstance which should make us all greatly value Mr. Dominy's charming hybrid, *C. vexillarium* x, which had for its parents *C. Fairrieanum* and *C. barbatum*. While this really summer weather lasts abundance of atmospheric moisture must be given in every department. The cool-house, with the exception of an hour or two in the middle of each day, should be kept as nearly as possible to the saturation point. Ventilate freely through the bottom ventilators both night and day, and use the side and top ventilators whenever the external air is warm and moist. Avoid giving too much air when the day is extra hot and drying. The *Cattleya* and intermediate houses will require plenty of air through the day and a trifle through the night. A little fire-heat must be given on all chilly nights, as the breaks of such plants as *Lælia elegans* are easily checked by a slight fall in the temperature. Give also plenty of air to the East Indian-house through the middle hours of the day, and at the same time allow all three divisions to dry up considerably. *J. C. Spyers, Burford Lodge, Dorking.*

FLOWERS AS EMBLEMS.—While the Sweet Brier suggests to our minds the national emblem, the Rose of England, the badge of Yorkist and Lancastrian, and the device of the Tudors at the close of the desolating wars that bore its name, the Broom no less recalls to our mind the line of Plantagenet. While we find the praises of the Brier sung by our greatest poets, we find, too, that the golden Broom shares almost equally their regard. As a device, the Broom was from a very early period the chosen plant of Bretagne. Fulke of Anjou bore it as his personal cognisance; and Henry II. of England, his grandson, as a claimant of that province, also adopted it, and it was henceforth borne by the rest of his race, its mediæval name, *Planta genista*, giving the family title, Plantagenet. It may be seen on the great seal of Richard I., this being what we may term its first recognised and official heraldic appearance. In the chapel of the Tudor Henry VII., at Westminster, we find the Broom introduced in the stained glass of the windows, but here it would probably be employed simply from its beauty, apart from any symbolic significance. Another interesting use of it may be seen in the order of knighthood, the "Cosse de Genest," established by St. Louis of France, on the occasion of his marriage, in the year 1234. The collar of the order was composed alternately of the *fleurs-de-llys* of France and the Broom-flower, the motto being *Exaltat humiles*—"He exalteth the lowly." This order was for a long time held in high esteem; and amongst the foreign potentates who received it we find the name of our own Richard II. From Cassell's "Familiar Wild Flowers" for August.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, Aug. 17	Commencement of the Sale of Lord Londesborough's Orchids, at Stevens' Rooms.
WEDNESDAY, Aug. 18	Shropshire Horticultural Society's Summer Show (two days.)
THURSDAY, Aug. 19	Trowbridge Horticultural Society's Show.
THURSDAY, Aug. 19	Reading Horticultural Society's Show.
THURSDAY, Aug. 19	Sevenoaks Horticultural Society's Show.
THURSDAY, Aug. 19	Wantage Horticultural Society's Show.
FRIDAY, Aug. 20	Barnard Castle Horticultural Society's Show.
FRIDAY, Aug. 20	St. Alban's Horticultural Society's Show (two days.)

KENSINGTON GARDENS, or rather the trees that are dead and dying within it, have often been a subject for comment in these columns. Various causes for the death of the trees have been assigned, by those who have expressed their views upon the subject; but there can be no difference of opinion as to their highly unsatisfactory state. Like most other spaces of similar extent in this part of the kingdom, it is evident that the land within the area is not all alike in its suitability for the growth of trees; yet, allowing for this difference, those conversant with arboriculture will not have long to seek for the cause of that decay, which for a number of years has been slowly but surely going on. This is so evident, that it seems strange there could be any difference of opinion as to what has been mainly instrumental in bringing about the present state of premature decay; for it is well to observe that the decline is not the result of old age, nor of the capability of the soil to grow and maintain trees in a healthy condition to a much greater age than those now barely existing. Acquaintance with them extending over a quarter of a century, supplemented by frequent visits in recent years, and a close inspection lately, both of the trees still standing and of those that have been recently felled, all go to confirm the first opinion formed, which was, that want of timely thinning is one of the principal causes that has brought about the mischief. The generally impoverished condition of the soil, resulting from clearing away the fallen leaves—Nature's means of returning to the earth something to compensate for that which has been extracted from it—has further aggravated the evil. There is no need for doubt or speculation in the matter. Any one who understands the subject, and will take the trouble to walk leisurely through the Park and Kensington Gardens, will meet with abundant evidence to confirm the views here expressed. Entering at the Marble Arch, and following the walk leading westward, we find the trees to the right next the Bayswater Road, and also those to the left, on both sides of the Park Road running in the same direction, in a condition which leaves little to be desired so far as their present health goes, but still they are standing somewhat too close to admit of their having enough head-room and also sufficient root-space. There is likewise another evil the trees have to contend with in some parts of the Park—that is, the thick clothing of useless shrubs, particularly Lilacs and Privet, growing amongst them, both of which are the most hungry and soil-impoverishing plants that can be grown, and which as they exist here add little or nothing to the appearance, but simply rob the trees of the best elements the soil contains, and which they can ill spare. As the trees are of most consequence, it is a grave mistake to grow anything with them that can in any way interfere with their well-being. Away from the smoke and dust of a town like London, trees and shrubs can thrive well enough together, but here the trees ought to have all the ground they occupy to themselves; and if shrubs are wanted they should also be in a great measure kept to themselves. That even evergreen shrubs can grow well in the Park where they have room enough, and are not overhung, is evident from the Hollies and Boxes that are to be seen near the Lodge a little higher up than Lancaster Gate. Lower down in

Kensington Gardens, next the road leading to Notting Hill, the old Elms have evidently always had more room, as shown by the size they have attained—the strength of their lower branches, and generally healthy state, contrasting with the dead and dying starvelings lower down and further away from the road. The worst of these are to the left of the Broad Walk, leading from the Bayswater side to the Knightsbridge Road; they occupy a space near upon 2 acres in extent: some of those all but dead are being rooted up. Here, instead of peddling with a few the whole breadth should be cleared out at once, the ground trenched, all the old roots in the depth dug taken out and the space replanted, or, better still, especially where the gravel is near the surface, a new plantation made elsewhere with proper precautions. Half measures in this case are worse than useless. A few young trees planted in small spaces here and there within reach of the roots of those left standing cannot have more than a dwindling existence, as has been proved a thousand times in a thousand other places. A similar course to that which we have indicated should be followed in every part of Kensington Gardens where the trees are worst, doing the work thoroughly and completely. It is, as we have said, neither necessary nor desirable that the whole of the ground now occupied with trees at the lower end should be replanted; if a portion were left open the appearance would be less formal than it is at present. Eastward, above the Round Pond, the trees are almost as far gone as at the Notting Hill end, already noticed, and here the renewal should also be at once carried out; it has been a grievous error to delay the replanting so long. The work of restoration would occupy a considerable number of years before all was replanted. Yet done it will have to be, sooner or later, and the sooner it is begun in earnest the sooner will the young trees assume an appearance such as they would have now had if the work had been carried out when it was first required. Towards the south or Knightsbridge side of the ground the trees are in better condition; they have always stood thinner here, and the land seems to suit them better. Horse Chestnuts have been planted in quantity in the more central part of the garden; these want some thinning-out, or the ill-effects of crowding will show itself in time to come. There is enough evidence in the space already mentioned of the effect of trees standing too thick on the ground. Keep all, and the ultimate result is to lose all. Crossing over again into the Park on the south side of the ornamental water, some of the Elms are dying of old age. Some attempt has been made to supply their places by dotting in a few young ones in small prepared spaces for each. This is a bad system in retentive soils such as the land in the neighbourhood of London is composed of; the holes, filled as they are with more open porous soil, act as receptacles for the water which runs into them from the surrounding ground, keeping the material in which the unfortunate young trees have their roots saturated with moisture. Whatever planting of new trees is done, the whole space for each group should be trenched over, and a drain if necessary put to take away the water that percolates into it. At the eastern end of the Park approaching to and in the vicinity of Park Lane, the trees are much younger, and in a thriving state, affording still further evidence, if more were needed, that there is nothing in either the soil or atmosphere to prevent their flourishing if the one thing indispensable is present—enough room from the first, and a due supply of surface food and air for the roots.

The soil in many places is a hungry gravel, which keeps the roots near the surface; here the soil is baked by the sun and trampled hard

and denuded of grass by countless feet. Where the grass does grow the poverty of the soil is evidenced by the fact that the herbage is poor and weak, consisting almost wholly of *Poa annua*, the seeds of which scattered yearly keep up a semblance of green where the perennial grasses could not or do not exist. That this poverty of soil, engendered by the constant removal of plant food, and the neglect of supplying any substitute, has much to do with the lamentable state of the trees, is obvious enough by examining the soil where the trees are in better condition, and more especially those bounding the Flower-walk. Here there is apparently a considerable depth of made soil or of vegetable mould, which is protected from the wear and tear of trampling feet, and here accordingly we find the trees doing well. We advise any one fond of trees, for their own sake, as well as any one who wishes to know what trees will do under proper care in large towns, to stroll up this flower-walk. The herbaceous plants have been allowed to get muddled, so that the flower border is not so good as it was twenty years ago; but the trees have improved with age, and though none are of large size, they are for the most part in good health and of a very interesting character. Even after the hard thrust of the last winter we only noticed two of the Cork Oaks dead. Let us just specify a few of the trees we saw a few days since, taking them at random just as they occur in our note-book:—*Diospyros Lotus*, with rich deep green shining foliage; Oaks, American, of various kinds, evergreen and Turkey, all doing well; Weeping Beeches, two fine specimens; Weeping Ashes, *Sophoras* and Mountain Ashes, most effective; Birch, *Gymnocladus canadensis*, various species of *Pyrus*, Tulip-trees, Catalpas, *Pavias*, *Gleditschias*, with their rich feathery foliage; fastigate Oaks and Robinias, good specimens of *Amelanchier*, *Cotoneaster nepalensis*, *Ptelea trifoliata* in fruit; *Smilax caduca* [?], *Cerasus caroliniana*, a drooping tree with bright cheerful deciduous foliage. These are only a few of those we noted, but we mention them as evidence that trees and shrubs—good ones, too, not ordinary hardy stuff, such as one may see anywhere and everywhere—will thrive and do well a few paces from the spot where Elms and Limes and Beeches and Scots Firs are perishing from want of food and light and air, which latter are indeed to them food in even a larger degree than with ourselves. If such trees as we have mentioned, and which constitute a real joy to the lover of plants, can grow in Hyde Park, it stands to reason that the commoner things would grow too, were common care and common sense brought to bear.

Such, then, are the simple facts connected with the Park and Kensington Gardens, anent which so much has been said, and so little done. This is no fault of those who have charge of the routine work, and who are powerless to carry out those measures which their knowledge and experience would dictate. As already urged, it is a question of the trees and little else. The condition of those that are dying is simply the result of that kind of mismanagement to be met with in hundreds of other places throughout the country—an attempt to grow two or three on a space only large enough to afford root-food and head-room for one. The younger portion, that are yet thriving freely, should never for a single year be allowed to stand closer than is conducive to their well-being. Better have one healthy example than two starvelings. Many there are that have done growing, the existence of which would be much prolonged by the assistance of more food, in the shape of surface-dressings with manure, such, for instance, as the horse-droppings which active boys sweep up from the asphalt and wooden pavement—highly concentrated stuff, which, if laid on over the roots in winter

to have its virtue washed down by the rains, would not be offensive in any way, and would be much more potent in its effects than the limited quantity of loam it would be safe to put over the roots.

So far as the general keeping of the Park goes there is little fault to find, and much to commend. The bedding is not excessive in quantity, and it is well done, both as regards the spring and summer occupants. As a matter of course, this style of flower-gardening involves expense in labour and materials; but confined as it very properly is, to the immediate neighbourhood of Park Lane, it could not well be much less in extent, and the beds are well

plants look best as isolated specimens, backed up by belts of shrubs, which serve to protect them. Mixed in with ordinary London shrubs, as is done in some parts of the Park, they look incongruous and out of place. The dell at the head of the Serpentine is pretty enough, but there is not much of it, and the banks of the pool want reconstructing, the curves of the shrubberies being meaningless and ugly, and the planting near the water patchy and puerile. These, however, are minor matters compared with the state of the trees at the western end of the Park. With them we urge again no half measures, or in ten years' time we shall have a waste where we used to have one of the most charming bits of woodland to be seen near any town.

wilderness walks; it would also do as game cover; and we can speak well of it as an evergreen for town gardens, its thick foliage enabling it to withstand with impunity the impure air of towns. It is a near ally of the common Spurge Laurel, *Daphne Laureola*, which is found in woods on chalky soil.

— MARKET GARDENERS' GRIEVANCES.—On Tuesday last a numerously-attended meeting of the principal market gardeners of the suburbs was held at the Bedford Head Hotel, Covent Garden, under the auspices of the Market Gardeners, Nurserymen, and Farmers' Association, to take into consideration their position in connection with future legislation affecting the cultivation of land. Mr. DECIMUS CLARKE, of Twickenham, presided. Mr. M. SEARLE, the secretary, produced a letter which he had received from Mr.



FIG. 43.—*DAPHNE PONTICA*.

planted. The mosaic beds, to our taste, are impertinent masses of ugliness, but they give variety and are popular, and it is right that the public taste should be consulted and—let us hope—improved. As regards the borders in other parts of the Park, that are now each spring partially planted with summer bedders, and which, from the unfavourable conditions of being overhung with trees and shrubs, do not look prepossessing—it would be better in every way if all such spaces were filled with perennial herbaceous plants, well chosen for their fitness for the places they have to fill. Spring bulbs in quantity would also be in all respects more suitable.

The summer planting-out on the lawns of subtropical plants with fine foliage, such as *Dracænas*, Tree Ferns, Palms, Musas, &c., is a thing to be done with judgment. Such

— TWO HARDY SHRUBS.—To those who know the two plants here figured (figs. 43, 44), no apology will be required for bringing them under their notice again, while those who do not know them will have reason to thank us. *Berberis stenophylla* × (fig. 44, p. 213) is a hybrid sent out by Messrs. FISHER, HOLMES & Co., of Sheffield, several years ago. It is a hybrid between *B. Darwinii* and *B. empetrifolia*. In our experience it is harder than *B. Darwinii*, of which it has the free-flowering character, combined with a most elegant drooping habit. It is one of the most desirable of evergreen shrubs, being at all times graceful, and in springtime a veritable cascade of gold. It has the habit of flowering twice in the season, but the second bloom is very inferior. *Daphne pontica* is a very old inhabitant of our gardens, where its hardy constitution, free-flowering tendency, and fragrant green flowers, are great recommendations. It is an excellent plant for the front of shrubberies, and also in woods and

HORACE SEYMOUR, in answer to a request that Mr. GLADSTONE would be pleased to receive a deputation upon the subject. The Right. Hon. gentleman intimated through his secretary that he should much wish to receive from the Association a written statement of their general object, when he could then consider whether the time had come for oral communication. He fully recognised the importance and propriety of full consideration of this branch of the case, which, as he took for granted, would not escape the attention of the Royal Commission on Agriculture. The meeting unanimously resolved to appoint a committee to draw up a statement of the grievances under which market-gardeners were at present suffering, and to represent the same to Mr. GLADSTONE.

— MARKET RETURNS.—Fortunes are not just now being made by the market gardeners. Lettuces, said a grower, a few days since, are fetching about 1½d. per score; Early Rose Potatoes 1s., and

Regents 2s. per bushel respectively; and a four-horse load of Cabbage brought a couple of pounds—barely enough to pay for the labour of the horses and men in going to market. Lettuces have been most abundant, Potatoes are marvellously so, and Cabbages are spoiling on the ground for lack of sale. Runner Beans are just now getting a very fair price of about 5s. per bushel, but presently there will be enormous quantities of these put upon the market, and growers will be fortunate if they get 2s. 6d., or less. Turnips are plentiful, and will be more so; Marrows are getting abundant; ridge Cucumbers are plentiful, the plants having made fine growth during the summer. Of all kinds of winter greens there will be large quantities. There are splendid breadths of Brussels Sprouts, Savoy, and Autumn Giant Cauliflowers, with sprouting Broccoli, white Broccoli, Coleworts *ad infinitum*. With such a prospect for abundance, market growers ought to be doing well; but, though one may take a load of produce to market, a thousand cannot get more than the ruling market price, and that, owing to the abundance, is far too low to be remunerative. It is to be feared that market-gardening is being overdone, especially in the metropolitan district, where rent and rates are high and labour is dear—so many have rushed in to make a fortune where it is now found difficult for experienced men to live. Fortunes are now sooner lost than made. No one complains as to the prices obtainable for fruit; these have been fairly good, but with most kinds there has not been more than half a crop, the exceptions being those which must be sold at once or spoil. But one-third or half crops of fruit will not alone keep a market gardener on his legs, and it will no doubt happen that when we shall be favoured with a general fruit crop it will be found that the abundance will render the returns anything but profitable.

— NEWS OF PRZEWALSKI.—The safety of this intrepid traveller was announced some time ago, after a long period of suspense and many disquieting rumours: and the *Gartenflora* for June contains some particulars of his adventures and intended future movements. Through the treachery of a guide, they found themselves in a very difficult and dangerous country in the vicinity of the Blue River. The party was attacked by a band of robbers in a pass over the Tanla ridge, at an elevation of 16,800 feet, but whom they dispersed by means of the rapid-firing rifles with which they were fortunately armed. They tried in vain to reach Hlassa, and were obliged to return without accomplishing their wishes, although within 250 versts of their goal. The return in winter through the highlands of Northern Tibet, at an absolute height of 14,000 to 16,000 feet, was very toilsome; but all the members arrived well and hearty in the town of Ssinin. It was PRZEWALSKI's intention to spend the spring, and a part of the present summer, in exploring the sources of the Yellow River, permission for which had only been obtained from the Chinese after much persistence.

— RECENT ADDITIONS TO KEW HERBARIUM.—Madagascar is at last yielding up its floral treasures more freely. For a long time we have known sufficient of its flora to wish to know more. Even amongst cultivated plants we have long had such remarkable things as *Ouvirandra fenestralis* and *Angræcum sesquipedale* to stimulate our curiosity. Hitherto the French have received the best collections, and these have been only in part elaborated. Many of DU PETIT THOUARS' genera were unknown to the authors of the *Genera Plantarum*, although they were founded at the beginning of the present century; but good collections have recently come to hand. Mr. BAKER had scarcely finished naming a small collection of Madagascar plants made by Mr. LANGLEY KITCHING, and numbering about 200 species, before two other consignments were received from the same country—one from Mr. HILDEBRANDT comprising 450 species, the other of about 300 species from Mr. BARON. Mr. KITCHING's collection contains some interesting novelties, which will form the subject of a paper for probably the next meeting of the Linnean Society. HILDEBRANDT's collection was made, we believe, chiefly in Nossi-be, and BARON's in the interior and the east of the country. Another important collection has lately arrived at Kew. We allude to a collection of about 600 species, formed on the Corentyne River, in British Guiana, by Mr. G. S. JENMAN, Colonial botanist. Its importance consists

in a great measure in the good specimens of Palms it contains. Mr. JENMAN estimates the number of species at twenty-seven or twenty-nine, and much time, he states in his official report of the expedition, was devoted to the preparation of as complete material as could be collected.

— ESCHSCHOLTZIA CALIFORNICA AT HOME.—Under the title of "A Botanist in Southern California," J. F. JAMES contributes to *The American Naturalist* some interesting word-sketches of the vegetation of the country in the vicinity of Los Angeles. Rain falls only from November to March, and the rest of the year is hot and dry. By the middle of June or July vegetation is parched up, and the country has a very depressing aspect; but the spring is glorious. Then the plains surrounding the city, the hills and the valleys, are one mass of gorgeous, brilliant flowers. They are there by thousands upon thousands, says this enthusiastic writer, and of almost endless variety. Most conspicuous of all, both for its abundance and its colour, is the Californian Poppy, *Eschscholtzia californica*. It covers acres of ground, and the bright golden-yellow or orange of its flowers is visible for miles. When the sun is shining full upon it it is too dazzling for the eye. In places where the ground was ploughed paths of it had been left, and they seemed like tongues of fire running over the ground. Among other showy plants are *Sidalcea malvæflora*, with large, purple flowers; *Platystemon californicus*, called Cream-cups; *Dodecatheon Meadia*, *Bæria gracilis*, a Composite with bright yellow flowers, covering acres of ground; *Pæonia Brownii*, in tufts, with large purple or reddish flowers; various species of *Gilia*, *Pentstemon*, *Lobelia*, *Phacelia*, *Nemophila*, together with *Clarkia*, *Salvia*, *Castilleja*, *Convolvulus*, and *Calochortus*, making up such a wealth of colour as is rarely seen elsewhere.

— NEW BROMELIACEÆ FROM BRAZIL.—How very little, comparatively, the Bromeliaceæ have been collected appears from a series of new species, many of them exceedingly ornamental plants, now in course of being published in the *Österreichische Botanische Zeitschrift*, by Dr. WAWRA. They form a part of the collections made in 1879 by Dr. WAWRA in the expedition of the Princes AUGUST and FERDINAND, of Saxe-Coburg. Special attention was directed to this family, and although they were only six weeks in Brazil, and in the least favourable season of the year, they collected no fewer than forty-five species, a large proportion of which prove to be undescribed. Preceding the descriptive part Dr. WAWRA gives some interesting details respecting the limitation of the genera, &c. With regard to the species he asserts that they exhibit very little variability in a wild condition, and each species is well defined and distinct from its allies. The majority of the new species belong to the ornamental genera, *Æchmea*, *Vriesia*, *Bilbergia*, *Nidularium*, &c. One *Vriesia* is particularly singled out, and it is no doubt a very magnificent plant; but unfortunately Dr. WAWRA has given it the dreadful name of *V. philippocoburgi*. It has blood-red spikes and unilateral flowers, and it belongs to the same group as *V. regina*. There should be little difficulty in introducing it, as it is said to be commonly cultivated in the gardens of Petropolis.

— ENGLISH FRUITS IN CANADA.—That Canada is not altogether the huge iceberg many people erroneously imagine the country to be, is proved, among other things, by the earliness and excellence of the various European fruits which are grown there. As a matter of fact, a much larger variety of fruits will grow in perfection in the open air in a given area in Canada than in a similar area in England. At the beginning of July Gooseberries were selling at Montreal at the rate of 60 cents (2s. 6d.) per gallon, while red and black Currants could be had, freshly gathered, for 40 cents (1s. 8d.) per gallon. As an instance of the earliness at which even more delicate fruits than these ripen, we may quote an advertisement which appeared in a Toronto paper of the second week in April, to the effect that the "first Strawberry picnic" of the season would take place on the 14th of that month. But Gooseberries and Strawberries are not the only fruits which Canada can produce in abundance. The more delicate stone fruits and Grapes are grown in many districts [see a letter from a valued correspondent at p. 206], and if the cost of transport could be reduced within reasonable limits, these fruits, packed in

refrigerators, or otherwise preserved, would form a welcome addition to the scanty native supply of sun-forsaken England. *Colonies and India*.

— ERODIUM MANESCAVI.—A few days ago we noticed a large clump of this showy Heron's-bill in a small villa garden near York, and we were very much struck by its attractiveness. For well-drained garden borders we know of nothing in its way that could be more useful. It had, we were informed, been in flower for more than a month, and there was every appearance of its continuing for at least two months longer. The plant is quite hardy, of easy culture. The flowers are large, reddish-purple in colour.

— THE AREA OF THE GREATEST COLD IN EUROPE DURING THE PAST WINTER.—The reports from various sources go to show that the area of the greatest cold in Europe during last winter, as in the very severe winter of 1709, was singularly delimited, and, in a manner of speaking, independent of attitude. In the neighbourhood of Paris and in the Lower Rhine Valley it was most destructive, killing nearly all evergreen trees and shrubs, including the tenderer Conifers, standard Roses, and many other plants. During the period of the most intense cold in the regions indicated it was comparatively warm at St. Petersburg. In Switzerland, too, and northward through Eastern Germany, the cold did comparatively little injury. According to Dr. REGEL (*Gartenflora*, p. 159), a thaw set in in January at St. Petersburg, and continued into the beginning of February, and was so great that the passage over the ice on the Neva was closed to vehicles. On the same authority the lowest temperature in Western Europe was —22° R. (or 17°·5 below FAHRENHEIT's zero). However, as late as the night of March 30 the thermometer fell to within half a degree of FAHRENHEIT's zero, though the fruit trees and ornamental trees and shrubs regarded as hardy there were not damaged. This was not so with herbaceous plants, many having perished in consequence of a deficiency in the covering of snow. Austria and Bohemia have suffered severely, and there is great distress amongst the poorer people in the wine-growing districts both in these countries and in some parts of the Rhineland, and that, moreover, after two bad seasons.

— CAMPANULA ZOYSII.—This rare and singular little alpine we saw in flower in the York Nurseries a week or ten days ago. The plants were only small, and the flowers sparse, yet nevertheless we were pleased to meet with so rare a plant. Have any of our readers succeeded in growing it well, and does it bear our cold wet winters? Messrs. BACKHOUSE & SON informed us that they place the plants in a somewhat warm house in early spring, but keep them dry and quiet during the dullest portions of the winter.

— NEW PLANTS OF 1879.—M. ANDRÉ DE VOS has published his systematic enumeration of ornamental or interesting plants described in various horticultural journals in 1879, arranged under their respective natural orders. It is to be regretted that M. DE VOS does not add an index of the names of the genera to each annual list. In any case horticulturists and botanists alike are under considerable obligations to M. DE VOS, and to the Editor of the *Belgique Horticole* for this annual record of new or interesting plants.

— THE BRITISH MOSS FLORA.—We are glad to announce the publication, by Dr. BRAITHWAITE (303, Clapham Road), of two parts of his illustrated monograph of the British mosses. The first part is devoted to the *Andreaea*, the second to the *Buxbaumiacæ*, and *Georgiacæ*. The text is conscientiously elaborated in accordance with Prof. LINDBERG's views, and comprises ample descriptions, profuse references to literature and synonyms, as well as localities. The work is small 4to, with neatly executed lithographs by BLAIR, after the author's own drawings. We strongly advise all who are interested in mosses to avail themselves of this fine monograph.

— LYSIMACHIA CLETHROIDES.—In Mr. WARE's nursery at Tottenham the *Lysimachia clethroides*, now in flower, is very pretty; its peculiar spikes of white flowers are very singular in their formation. The *Linaria alpina* on the rockwork is a very neat and pretty Toad-flax; it is producing its racemes of blue flowers very freely. *Mazus Pumilio* is an interesting dwarf plant with pale purple flowers.

— *SPIRÆA CALLOSA ALBA*.—Amongst flowering shrubs there are few more graceful and pretty than some of the species of *Spiræa*; and in the nurseries of Messrs. PAUL & SONS, Cheshunt, one of the prettiest, *S. callosa alba*, is now in flower. The whole plant is not much more than a foot high, and forms a compact bush well furnished with its pretty spikes of white flowers. *S. Lindleyana* is at present in flower, and forms very handsome specimens in good soil.

— *PHYLLOXERA-PROOF VINES*.—The *American Entomologist* notes the "Uhländ," which makes a good wine, and millions of cuttings of which have been sent to France for stocks for grafting, owing to its being one of those Vines uninjured by the *Phylloxera*.

— *THE FRUIT CROPS*.—After the terrible year 1879, and the scarcely less disastrous spring of 1880, it was hardly to be expected that we should have a good fruit year. Our uncertain climate should lead those who advocate the extension of fruit culture to pause ere they embark too largely in what, in the face of ever increasing foreign competition, may prove as unfortunate as Wheat or Hop culture. In fact, glancing through the returns with which we have been favoured, it is obvious that, while small fruits and Strawberries have been generally abundant and good, there has been a general failure in most other cases. Apricots were almost an entire failure, Plums were about a half a crop, the returns being nearly evenly balanced; Cherries have been more plentiful than we should have expected—our country friends must have eaten them all, for not many appeared in our markets; Peaches and Nectarines outdoors have been almost entirely absent, Apples are not much better; Pears are conspicuous by their absence, and Nuts are not much better. Under the circumstances it is best to look forward rather than backward, and the fine weather we are now experiencing gives hopes for next year. Let us hope spring frosts will not blast this faint promise.

— *THE WORDSLEY SEED ESTABLISHMENT*.—The *Builder* states that new offices, seed warehouse, and a manager's residence, are being erected by Messrs. WEBB & SONS, at Wordsley. The former comprise, on the ground-floor, an entrance-hall and staircase, with general waiting-room attached; a ledger-office, 60 ft. by 24 ft., with manager's office at one end; a suite of offices for the Messrs. WEBB and heads of the several departments, together with sample-room, cashier's office, and a spacious reading-room and library for the use of the *employés*, which is approached from the entrance-hall by a staircase of polished pitch-pine. The seed warehouse is in continuation of the present buildings, and is five storeys high, each floor having an open space of 88 ft. by 40 ft. Steam lifts and staircases are provided, together with offices for warehousemen, lavatory, &c. The communications betwixt the new and present warehouses are to be closed by fireproof doors. Speaking-tubes are provided to all the offices, and the telephone is to connect them with the seed warehouses, which are on the opposite side of the courtyard.

— *AN ANNUAL EXCURSION*.—Messrs. SUTTON & SONS on Thursday last gave to the workmen in their employ their annual excursion. The party, numbering about 400, left the Great Western Station at 7.30 A.M., and reached Portsmouth at a quarter to 10. A large number at once proceeded to the Isle of Wight by steamer. Some few, attracted by the dockyard, &c., spent their day at Portsmouth and in the neighbourhood, or went over to Ryde later in the day. The weather was all that could be desired, and the day was thoroughly enjoyed by every one.

— *PENTSTEMON MURRAYANUS*.—This very striking herbaceous plant is now in flower at Kew. Its stem is between 6 and 7 feet in height, bearing large connate, roundish, glaucous leaves, and long, tubular, scarlet flowers.

— *REPORT OF THE ROYAL SOCIETY OF TASMANIA*.—From the General Report for 1879 we learn that the principal new work performed in the gardens has been the laying out, forming, and planting of an arboretum. The work is now nearly complete, and nearly all the planting is done. The estimated number of visitors to the gardens for the year is 55,956. The museum has again been opened to the public from

half-past 2 o'clock to 5 o'clock on Sunday afternoons, the attendance during the year being, on Sundays, 12,369, on week days, 12,620, or nearly equal numbers. The report of a learned society should not be blemished by numerous misprints, or misspellings, such as *florabundum*, *Pithocolobium*, *Brachicheton rupestre*, *Davallea*, *Phytolacca*, &c.

— *THE GARDEN OF THE TROCADERO PALACE, PARIS*.—From the *Revue Horticole* we learn that this garden is completed, and has been delivered to the public, and it is now open to all comers, without let or hindrance, day and night. The Editor of the journal in question asks why should the gardens of the squares of Paris be closed at night? Possibly, we may answer, for the same reasons that it is considered necessary or desirable to close London gardens. But we are told that the public enjoys full liberty in the Trocadero garden, and does not abuse the privilege, therefore it is presumed that the other gardens might safely be thrown open at all hours. At the present time, it is stated, the Trocadero garden is the prettiest in Paris. Water in abundance issues from the rocks erected at opposite extremities of the grounds, falling into winding rivulets, one of which flows into the aquarium, and the other is carried away in a drain. It would have been easy, says the Editor, to have conveyed it by means of a cascade into the Seine, and thus have added greatly to the grandeur of the garden. In spite of the severe weather of the past winter the plantations are looking well, and the turf is described as of incomparable beauty.

— *GLOXINIA CULTURE*.—If any one desires to see comparative perfection in the culture of the *Gloxinia*, a striking example is now furnished at the London Road florist-flower seed grounds of Messrs. SUTTON & SONS at Reading. In two or three of the span-roofed houses that appear to be so well adapted for growing these plants, there are to be seen some 5000 plants, the great majority of them in large 60-pots, not only flowering profusely, but yielding blossoms of prodigious size, fine quality, and most attractive colours. In the face of such a display one comes to realise something of the value of the *Gloxinia* as a plant for house decoration; and the question arises—Are not *Gloxinias* too much over-potted? Some of these plants, quite tiny in comparison with the heads of bloom, bore nine, twelve, and fifteen blossoms of superb beauty. Some of the blue varieties with white throats and regularly laced white margins were highly attractive. The size of the flowers may be inferred from the fact that not a few had six lobes, five being the usual number. We have heard of flowers having seven lobes, but they are only of very infrequent occurrence. Nearly all these plants were of the erect flowering types, and as they stood closely together, the miniature sea of bloom was of an imposing character. Let it be remembered that the seed was sown in January, the young plants pricked off in February and March, and potted into the pots in which they were flowering in due course. Cultivation and strain alike were all that could be desired.

— *HYACINTHUS [GALTONIA] CANDICANS*.—This very fine subject is flowering finely in the open ground in Messrs. SUTTON & SONS' seed grounds at Reading. As it passed safely through the rigours of last winter without any protection whatever, its hardihood is placed beyond doubt. It is a fine subject for the mixed border, throwing up fine spikes of tubular-shaped white fragrant flowers that will in all probability be found very useful by the bouquetists. It appears to do best in a light loamy soil, and as it is a vigorous grower, should be well enriched with suitable manure.

— *GARDEN ALTERATIONS AT MENTMORE*.—Those who have not seen Mentmore for the last three or four years would now perceive a great alteration on the north-east side; all the buildings connected with the hunting establishment as it formerly existed have been cleared away, and a number of cottages that constituted a portion of the village of Cheddington have been completely cleared away also, and others built to the north of the road which leads past the place in this direction. The ground on which these buildings stood has been planted with deciduous and evergreen trees and shrubs; many of

the former were from 20 to 25 feet high. They were thinned out where getting too much crowded in other plantations and planted here by Mr. SMITH, and very well they have done, in but few cases showing much effect of removal. The principal entrance is marked by a very handsome lodge, and beautiful wrought-iron gates in keeping with the palatial mansion to which they lead have been erected. In addition to the cottages already alluded to as having been built, at some distance northwards workshops of a decorative character in the Revived style, with pointed gables, have been built—the materials red bricks with tile roofs. The arrangement of these is such that, seen from the road near which they stand, there is nothing to show the purpose they are used for. In front they look like so many prettily arranged cottages similar to those in which the people employed on the estate live, and with which they are associated. The whole of these alterations have been well done, and go to still further improve this fine place.

— *DELPHINIUM BELLA DONNA*.—This fine variety is deserving of notice as a very pretty dwarf-growing form, the flowers quite pale blue; the spikes of bloom being specially attractive. It is said to have become scarce, but we saw a large plantation of it at Messrs. SUTTON & SONS' London Road Nursery, at Reading, a few days ago; for, finding a considerable demand for it, they have worked up a good stock. It is said to be a very shy seeder, producing but few, if any, seeds. D. Barlowi, D. Hendersoni, and others, are shy seeders, while other varieties mature their seeds in a very free manner.

— *THE YELLOW SWEET SULTAN*.—As this fine old plant is just receiving some attention, and as its soft clear yellow blossoms appear to be unknown to many, it may be stated that it proved a very hardy subject during the past winter. Some large patches of it, growing in a very exposed place, and where the soil was inclined to dampness, stood unharmed, and are now blooming with great profusion. Probably it does best treated as a biennial. There is many a gardener, up and down the country, who will find this a most acceptable subject for cutting from during the summer months.

— *THE WEATHER*.—General remarks on the weather during the week ending Aug. 9, issued by the Meteorological Office, London:—The weather during the greater part of this period was dull, very showery, and in some places thundery. On the 8th, however, the sky cleared considerably, and the following day was very fine and bright in all parts of the country. The temperature was slightly above the mean in "Scotland, E.," and equal to it in "England, N.E.," but elsewhere readings were again a little below the mean. The thermometer was highest on the 9th, when it rose to 78° in London, but no higher than 76° at any other station. The lowest of the minima occurred in most districts on the 7th, but over central Ireland readings were lowest early on the morning of the 9th, when at Markree Castle the temperature went down to 40°. The rainfall was less than the mean in "Scotland, E.," and "England, S.W.," and equal to it in "England, S." and "Scotland, W.," but in all other districts the fall was more than the average. The amount collected over England on the 7th was rather heavy, and at some stations exceeded an inch. Bright sunshine was less prevalent than during last week in nearly all parts of the country. The number of hours recorded shows great uniformity, the percentage of total possible duration ranging from thirty-nine in "England, N.E.," to thirty-three in the "Midland Counties" and "Ireland, N." The wind was generally light or moderate from the S.W. till the 7th, when, after blowing a gale at some of our southern stations, it veered to W. or W.N.W., and continued to blow with moderate force from that quarter until the close of the period.

— *GARDENING APPOINTMENTS*.—Mr. REUBEN ELEY, late Foreman at Sudbourn Hall, Suffolk, has been appointed Head Gardener to C. ROSE, Esq., Hardwick House, near Reading, Berks.—Mr. J. J. LOWRY, late Foreman at Melton Abbey, Blandford, Dorsetshire, has been appointed Head Gardener to W. GASCOIGNE ROY, Esq., The Byams, Marchwood, Southampton.—Mr. SAMUEL JAMES, late Foreman at Possingworth, has been appointed Head Gardener to F. W. ARKWRIGHT, Esq., at High Eastgate House, Warwick.

THE SEED FARMS AT ST. OSYTH.

AMONGST the sights which, once seen, are for ever imprinted on the memory, is that of a seed farm when the "annuals" are in their full glory. The immense stretches of glowing colour—now blue, now crimson, now yellow, now white—oftentimes acres in extent, have an effect which is indescribable. Talk of the massing of colours, you have it here to an extent which dwarfs the most comprehensive parterre into nothingness, and which, as it opens to the view, holds the wondering spectator in mingled surprise and admiration. The *coup-d'œil* is, indeed, so startlingly gorgeous that though in ordinary matters "seeing is believing," one can in this case scarcely believe the evidence of one's own senses. These were very much the feelings which came over us on the occasion of a recent visit to the Messrs. Carter & Co.'s seed farms at St. Osyth.

In an immense establishment of this kind there is, however, necessarily a succession of effects throughout the flowering season, and consequently at any one period it may be expected that while some things have gone past, and others have not reached their prime, it will, nevertheless, be certain that some of the enormous areas devoted to particular kinds will be in their full splendour. And so we found it on the occasion referred to. *Nemophila* was past, and the crop lay heaped in "cocks" ready for the garner; but *Godetia* was in all her glory, and a sheet of the crimson-lake, or rich magenta flowers of the variety called *Lady Albemarle*, and of the newer form selected from it called *Princess of Wales*, was so extremely fascinating that the picture was many days in passing from the mind's eye. So of certain vegetable crops. We lighted on a drift of the new Pea called *Stratagem*, just in the condition to show its characteristics to advantage, and most certainly the stratagem, if stratagem there were, was most convincing as to the vast merit of this novelty, both as a market cropper and for private gardens.

One thing which strikes the visitor to this seed-growing establishment is the great care and perseverance with which "rogueing" must be carried out, for when one sees acres upon acres of a particular kind of crop, whether decorative or culinary, in which there is no difference perceptible from end to end, the conclusion is irresistible that so far as strict scrutiny can secure purity in the crop, that which is harvested from such a "plant" as this must be true and reliable. In the immense stretch of land over which we were piloted by trusty guides we did not see a single crop, at that time in a state for criticism; to which this remark does not apply. Of course if this care were not exercised without stint and without cessation, the "stocks" of the different kinds of flowers and vegetables—the last, perhaps, more especially—would go to the bad; but our chief wonder was, how it could be possible that rogueing, though in theory so essential, could be so thoroughly and efficiently carried out in practice.

We have already referred to the new Pea named *Stratagem*, which there can be no doubt is destined to take a high place amongst the novelties of recent years. This Pea, which belongs to the pale blue slightly wrinkled Marrows, grows about 2 feet high, the plant being very true and even as to height over a large area; it is very productive, producing a heavy crop of large pods completely filled out, with an average of nine or ten Peas in each. Both for market purposes and for private use it will be a real acquisition, being so extremely prolific and of such fine quality. If its flavour is equal to its other merits, as we are assured is the case, this variety will come into the front rank amongst the many good novelties of recent years. Another Pea, called *Strength*, selected from *Stratagem*, will prove to be a useful variety for market growers, being a still more abundant cropper than *Stratagem*, though not quite equalling it in quality. It is a curious fact that many of the new hybrid Peas yield two forms of seed, wrinkled and indented, and that the former are invariably the better as to flavour. *Strength* is one of these indented forms, selected from the more truly wrinkled *Stratagem*, and, taking the usual character, is not equal to it in flavour. Another case of this kind was noticed. Amongst many Peas under critical observation was one called *Marvellous*; now this was a selection from *Marvel*, which is a fine Pea of good quality and excellent flavour; and in this case again the selection which has indented seeds is

not so good in quality as its twin brother *Marvel*. Near these Peas we came upon a Parsley bed, provided, we suppose, as some of our great guns have suggested, as a relief to the glare of the annuals in blossom hard by. The variety was the moss-leaved, one which has very finely cut, as well as beautiful crisped leaves. Nothing could be more satisfying as a curled Parsley than this moss-leaved variety, as seen on this occasion at St. Osyth.

But we must move on to the flowers, and as a complete history of them would be more than we can compass, we shall just transcribe from our notebook the comments to which the successive groups gave rise. The first to be noticed is the *Oxalis valdiviana*, which formed a deep yellow mass of flowers, some 6 or 8 inches high, and had a very striking appearance. The next subject in our notes is a bed of *Sweet Williams*, a light strain of great merit, the whole of the flowers being good and true, and some of the individual plants being of remarkable excellence, both as to habit and quality of the individual flowers. A type frequently repeated formed a close pyramid of flowers about 2 feet high and fully 1½ foot across at the base; they were white with the colour ring of various shades of crimson or purple, and of various widths, some of them perfectly rose-edged, that is, without any notches or indentations at the margin. Broad patches of *Sweet Sultan* and *Yellow Sultan* deserve record, not only for their own beauty and fragrance, but to advertise the neglect of modern days, which to a great extent passes them over uncared for and uncultivated, to take up with far less beautiful subjects. A glowing bed of crimson *Snapdragons* was almost too bright to look upon. We may add here, that these and other plants are grown in patches of separate colours, kept wide apart on the ground, so that by a mental bound we may here note a charming dwarf sulphur-yellow *Snapdragon* which was very pleasing.

One of the brightest and showiest subjects we met with was a fine bed of *Viscaria cardinalis*, the intensity of whose deep crimson flowers was almost overpowering; this fine annual is not half enough appreciated. Of an equally brilliant but softer tint was a new *Godetia* named *Princess of Wales*, a selection from *Lady Albemarle*; the flowers were very large, of a rich crimson-lake, paler at the base, and thoroughly attractive; it is a well-marked form, and a decided improvement as regards the size of the flowers, while the colours are equally attractive. Not far off was a similar patch of *Lady Albemarle*, which as here seen was exquisitely beautiful; as compared with *Princess of Wales*, its flowers are smaller, and the rich crimson-lake colour more universally distributed over the petals. *Godetia Whitneyi*, from which both have sprung, is one of the best of the ordinary type of *Godetias*, its pleasing French grey ground colour and intense spotting giving it a well marked character of its own. The *Eschscholtzia* called *Mandarin* was in good condition and very attractive, the crimson exterior and orange-coloured interior of the flowers being thoroughly well marked and very ornamental. When in its proper and best form *Clarkia Mrs. Langtry* is very handsome; it is one of the entire-petalled race, with a bright rosy or magenta centre, and an even white edge which often extends to half the width of the petal; from this best state it varies so that the white edging becomes less and less pronounced.

Several varieties of dwarf *Tropæolums* were found in good condition. One named *Spotted King* has golden-yellow flowers with deep maroon spots, and is very showy; *King of Tom Thumbs* is a brilliant scarlet and very effective; *King Theodore* is of a dark maroon hue, rather dull; while *Ruby King* is remarkable for its bright ruby-red colour. The *Purple Iberis* or *Candytuft* was one of the richest masses of colour we fell in with, and the carmine *Candytuft* was one of the most pleasing. A *Mignonette* which is first-rate in every respect was seen in the variety called *Bouquet pyramidal*; it is remarkable for its compact not sprawling growth, its erect close-growing habit, and its brownish red anthers, which together render it neat and pleasing in its style of growth and effective in its colouring, while in fragrance it is equal to the sweetest of the older sorts; it is a *Mignonette* much to be remembered.

We were glad to see that the old-fashioned *Saponaria calabrica* was not gone out of fashion, as so many good old things have done. The evidence of this was here furnished in the great drifts grown to provide a

supply of seed for public requirements. This lovely plant with its singular hummocky growth and undulating surface line, was as usual dotted over with innumerable little stars of the softest hue of rosy-pink, and is certainly of the most compact and pleasing of the whole race. *Salpiglossis sinuata nigra* was remarkable for its brown-black flowers, one of the darkest of floral hues, and about ranging with that of the blossoms of *Lotus Jacobaeus*. As a contrast to this came in the hummocky *Saponaria calabrica alba*, an exact counterpart of its pink prototype, except in regard to the pure white colour of its flowers.

Among the choicer elegancies which were met with, and to which brief allusion must be made, was the double-flowered *Rhodanthe Manglesii*, an exceedingly pretty and desirable plant; the double-flowered forms of *Clarkia pulchella integrifolia*, and the choice old *Nycteria Lychnidea*, with its cushion-like tufts of soft and pretty lilac flowers, of which the white-flowered variety is also rendered effective by the brilliant orange-coloured eye.

Such is a very brief and imperfect sketch of what we saw at St. Osyth—imperfect, for in truth time did not permit us to see, except in the distance, one half of the attractions of the establishment. What we did, however, convinces us that while seed-growing on the scale here indicated needs clever organisation to carry out successfully all the numerous details which demand attention, it is here most successfully accomplished by Messrs. Carter & Co.'s energetic staff. M.

HORTICULTURAL HINTS.

ROSES.—My garden at Weybridge is on a bit of reclaimed common, part of the Bagshot Sands, and although a first-rate locality for the health of human beings and of Conifers, is very disheartening as regards the cultivation of flowers, and especially of Roses. The soil has to be remade for the latter by the addition of stiff loam and of manure, and even then we are not at the end of our troubles. It is situated on a kind of ledge, at the bottom of a range of hills (St. George's), which protect us from north winds, as I intended they should; but then at night, in cold weather, the cold falls down the hill-side like water down a house-top, and we have 3°, 4°, and 5° of cold more than our neighbours on the heights. Under these combined influences I have great difficulty in growing Roses well, and they generally die off in the course of a few years, leaving only the hardiest old sorts. There is one Rose, however, that has proved both hardy and suited to the poor sandy soil—Charles Lawson; and I wish to make the fact known for the sake of those who have gardens on this extensive, wide-spread formation. Year after year it has stood its ground, surviving the coldest winters, flowering freely, profusely during the wettest summers, and proving to me an immense boon, consoling me for the loss of hosts of Roses its superiors in form and beauty. At the same time, Charles Lawson is by no means a Rose to be despised. When well grown it is a large, fine handsome pink Rose, with a heavenly perfume. The last winter killed two-thirds of my Rose trees, and the wet summer has dragged and mildewed most of the Roses that bloomed; but Charles Lawson has flowered as freely and as handsomely as ever, saving my Rose garden from desolation. The plants, too, are in luxuriant health, making masses of new shoots. The annual cuttings planted last autumn in a shallow pit, covered by a hurdle only, have all taken root and grown well, whilst most of the cuttings of choicer Roses, and of Teas, have died. These facts have reproduced themselves so regularly every year for the last ten or twelve all over my premises—in the flower garden, in the kitchen garden, in beds made in the wood—that I cannot be mistaken in attributing to this Rose a vigour of constitution, in sandy soils, not generally recognised.

GLOXINIAS.—Several years ago I became casually acquainted with the fact that *Gloxinias* thrive and bloom just as well indoors, in a sitting or bed-room, as they do in the conservatory or greenhouse. Two things are, however, necessary. There must be no gas burnt in the room, and the plants must be kept in the full light of a curtained window. They can do perfectly well without sunshine, but not without light. They also require daily and free watering. These conditions attended to, they will remain in perfect health during the entire period of flowering for many weeks. I have several in my drawing-room that have been flowering for nearly two months. One of them has had from twenty to thirty flowers in bloom at a time for the last month. The smallest buds develop and come out in succession. Owing

to the great variety and gorgeousness of colour of the latter class of Gloxinias now, half a dozen pots cast a radiance over a room. I know no flowering plant indeed that does as well indoors or produces so much effect. I bring into the house three-year plants, that is, plants three years old from seed. Younger plants producing fewer blooms are much less effective. Gloxinias have very different habits; some are erect, and they are the best for indoor cultivation, requiring no sticks, no support: others are more or less pendent, flowers and leaves—with these sticks are necessary to support the blooms. They can be placed on a higher elevation than the erect Gloxinias, and, although rather straggling are very lovely. The flowers seem to look at one with their large gorgeous eyes. They show very well, buried in Selaginella or Ferns, on the dinner-table. Gloxinias must grow in the shade, in marshy places, in their native country. They bloom and seem perfectly happy in a temperature of from 60° to 65° F.

PLANTS IN ROOMS.—I take this opportunity of cordially supporting and endorsing the remarks made in a recent number of this journal, p. 178, on the cultivation of plants in inhabited rooms. If a room is properly ventilated, a considerable number of plants or cut flowers, in due proportion, however, to its size, may be kept without the slightest risk to the health of the inhabitants. Plants, by withdrawing carbonic acid, must purify an atmosphere vitiated by human respiration, or by the combustion of lights. On the other hand, the amount of oxygen they withdraw is infinitesimal in a well-ventilated room. In a badly-ventilated room everything that has life, animal or vegetable, renders the vitiated atmosphere less fit for human respiration. If my patients and friends will only keep their rooms well-ventilated, I let them have nearly as many plants or flowers as they like in reason, both in their day-room and night-room, and have never seen any bad result. One lamp does more harm than a dozen plants to the atmosphere of a room.

RHODODENDRONS.—The soil of my garden being sandy is suited to Rhododendrons, but then we are subject to late spring frosts. Generally we have one or two sharp frosts at the latter end of May—often at the beginning of June. This year, on June 3, we had a frost that killed our Potatos, a foot high, down to the ground, and also blackened the Heliotrope, Perilla, Canna indica, Iresine Herbstii, planted out the day before. We never attempt to plant out until June 1, and are then often too soon, as this year. Such conditions embarrassed me greatly as regards Rhododendrons, for even the hardy *R. ponticum* often has its buds frozen. I have got over the difficulty, however, by planting the later-flowering hybrids, such as Minnie, Everestianum, Lady Cathcart, Mrs. Francis Dickson, Scipio, Hogarth, John Waterer, Gloriosum, Delicatissimum. All these flowering in June the buds are still so protected by their winter coverings when the late frosts take place that they escape even with me, and I thus get free bloom nearly every June. Lady Cathcart, Mrs. Francis Dickson, Everestianum, and Minnie are the best and truest bloomers with me. I give them all lots of liquid-manure, and empty every second year the residue or deposit of the cess-pool on a large central bed of Rhododendrons, which is very flourishing. This mode of meeting the spring frost difficulty is very simple; still it took me several years to arrive at it, and I felt and feel quite exasperated with myself for not having seen it sooner.

PEARS.—I made the same mistake with Pear trees. As I leave every year in October for the Mediterranean I wished to grow and ripen summer Pears, but they flower early, so the fruit is all but invariably destroyed by the frost. I could probably grow autumnal or winter fruit, as the trees flower later, but it would be of no use to me. In the South, on the contrary, I want autumn or winter Pears, but these do not succeed in warm summer climates in the South of France or in Algeria, as they dry up during the intense heat of summer. The only Pears that can there be raised with success are the early summer ones, which ripen before the intense heat has set in. The trees themselves seem to stand heat very well. I found in the forests of Southern Sardinia, where the heat is intense in summer, wild Pear trees in a flourishing condition, sown no doubt by birds. Henry Bennet, M.D., *The Ferns, Weybridge*.

THUJA OCCIDENTALIS ERECTA VIRIDIS is a very distinct and handsome form of the species. It reminds one of the erect form of the Lawson Cypress, and will be very valuable to plant as isolated specimens on lawns. This originated in Messrs. Paul's nurseries at Cheshunt.

EUCALYPTUS GLOBULUS.

(Continued from p. 138.)

THE timber of *E. globulus* is of rather a pale colour, hard, heavy, strong, and durable, more twisted than that of *E. obliqua*, *E. amygdalina*, and many other fissile kinds, but not so interlocked as that of *E. rostrata*, *E. melliodora*, and most of the species termed here Box trees. Its specific gravity varies. In transverse strain its strength is about equal to English Oak. In durability it occupies a medium position among that of its congeners, being more



FIG. 41.—*BERBERIS STENOPIHYLLA*. (SEE P. 209.)

lasting than that of most so-called White Gum-trees and all Stringybark-trees, but inferior to that of the Red Gum-tree, Ironbark-tree, and Box Eucalypts, especially when in contact with the soil or with water. In house-building it is one of our best timbers for joists, studs, rafters or any other heavy scantlings, and is very largely used for this purpose. The Australian Lloyds place the wood of the Blue Gum-tree in the second class of colonial timber, *E. rostrata*, *E. Leucoxylon*, and *E. marginata* ranking first. If the different parts of a vessel are constructed of any of the three latter species it is classed A for twelve years; the following is the number of years assigned to sound wood of *E. globulus*:—For floors of ships, first and second futtocks, main and rider keelson, beams and hooks, ten years; for third futtocks

and top-timbers, stem and stern-posts, transoms, knightheads, hawse-timbers, apron, deadwood, knees, rudder, windlass, timber and bilge strakes, and ceiling between clamps, stringers, shelf-pieces, and lower-deck waterways, nine years; for light water-mark to wales, topsides, sheer-strakes, upper-deck waterways, spirkiting and plank-sheers, eight years; keel to first futtock-heads, thence to light watermark, twelve years. The wood of the Blue Gum-tree is also very extensively used by carriage-builders and manufacturers of implements; for instance, for poles and shafts of light as well as heavy vehicles, for under-carriage work, swivel-trees, spokes and rims, axle-beds, plough-bars, handles of axes, picks, shovels, forks, hoes, and hammers, and all similar purposes. It is further used for telegraph-poles and for planking for bridges and jetties; for structures in water and for railway sleepers it was formerly largely employed, but during the latter years it has given place to the wood of *E. rostrata* for these purposes. Rural settlers use the Blue Gum wood for fencing, especially for rails, when readily attainable. The Marquis Chateauvieux and Sir George Bowen mentioned to the author, that *E. rostrata* is reared in such places of Bourbon and Mauritius as are exposed occasionally to violent storms, where *E. globulus*, through not really fragile, is more apt to break than *E. rostrata*.

The tensile strength, as given by Mr. Mitchell, is greatly in excess of that recorded by Laslett, but is fairly in accord with some recent observations by Mr. F. C. Campbell, of Geelong. (See *Proceedings of the Royal Society of Victoria*, 1879.)

The statements in reference to the specific gravity hitherto given fluctuate between .698 (Osborne) and 1.108 (Laslett). This great disparity finds its explanation in the different degrees of dryness (natural or artificial) and also in the age and quality of the timber from different localities. To render records of this kind most reliable the mean of a multitude of observations should be ascertained, and the samples reduced to an uniform complete dryness. Our experiments here on ordinary samples from timber yards ranged in their results from .845 to .992.

The following are the results of experiments on Blue Gum wood as regards its yield of potash:—One ton of green timber from the trunk stripped of the bark yielded 1 lb. 5 oz. of pure potash, or 2 lb. 3 oz. of soluble salts, which might be regarded as equal to pearlash; one ton of dry trunkwood yielded 2 lb. 11 oz. of pure potash, or 4 lb. 8 oz. soluble salts; one ton of branches with leaves as lopped off the tree yielded 4 lb. 12 oz. of pure potash, or 8 lb. 5 oz. of soluble salts. Difference of soil in which the tree grows will alter to some extent these proportions.

In the notes on *E. megacarpa* will be seen how very different Eucalyptus seeds of various species turn out in comparative size, and accordingly their weight as merchandise is also much diversified; thus 1 oz. of sifted seeds of *E. globulus* contains about 10,000 fertile grains. Seeds of this tree kept their vitality at least four years, according to our tests so far instituted, but perhaps they will keep much longer. The more minute seed-grains of *E. amygdalina* germinated here still after six years, whereas the comparatively large seeds of *E. miniata* proved in our experiments to have retained their power of germination fully thirteen years.

For mitigating the heat of arid treeless regions, subject to high summer temperature, *E. globulus* plays a most important part also. But the culture of the tree should be millionfold, as effected already by wise statesmanship and enlightened private enterprise in Algeria, Upper India, and some of the Western States of the North American Union. The rearing of forests of our Blue Gum-tree can be accomplished more cheaply and more easily than that of almost any other tree, while the return is twice or three times earlier than that of the most productive Pine or Oak forests; and this raising of Eucalyptus forests can be extended to regions in which most Pines and all Oaks would cope in vain with an almost rainless climate, though Eucalyptus culture can never advance to cold zones. In a few months seedlings can be raised of sufficient strength to be set out at the beginning of the cool season, and these will live already through the next summer without bestowal of any particular care. Sterile land, unless it be absolute sand, will soon be transformed into a verdant and salubrious grove, more particularly so if the substrata do not

consist of impenetrable layers or outcrops of rocks. While quietly the forest advances, almost without expenditure and care, its wood treasures increase from year to year without taxing the patience of generations, and within less than half the lifetime of man timber of conspicuous dimensions can be removed, after fuel had been provided annually long before, while the unpropitious original surface soil will have been converted into a stratum of fertility for agricultural or pastoral returns from successive storage of mineral aliments brought by the roots of the trees from far beneath, and accumulating through the decay of the dropping foliage. Colonel Playfair, British Consul-General in Algeria, informs me that there, on extensive arable lands of his estate, where scarcely the seed-grain of Wheat could be reaped in years of drought, the very young Eucalypt suffered in no way. It is not too much to assert that among rather more than 1000 different species of trees indigenous in Australia, *E. globulus* takes the first position in importance, and among its own kinds it is the prince of Eucalypts.

The first positive experiments upon the febrifugal virtues of leaves of *E. globulus* were made in Spain by Dr. Tristany, whose observations were published in the *Compendio Medico*, 1865; these confirmed the already popular reputation gained by the new remedy in the maritime provinces of that kingdom, where the opportunities for testing the therapeutic value of the leaves most readily arose in cases of ague, from which the native country of *E. globulus* is so singularly exempt. Dr. Tristany's observations were unexpected, all the more so as the common Cajuput tree of India (*Melaleuca Leucadendron*, which not only in natural affinities is closely allied to the Eucalypts, but also yields a medicinal oil of much resemblance to Eucalyptus oil) was never credited with any antipyretic power either by the ancient Indian population or by any of the European physicians, who had there to deal with fever cases of the worst type during the successive last centuries. The assurances of the Spanish physician incited the late Dr. Adolph Brunel, of Toulon, to make *E. globulus* the subject of careful clinical experiments, which gave affirmative results. Meanwhile and subsequently the researches of Dr. Gimbert, of Cannes, Drs. Carloti and Tedeschi, of Corsica, Drs. Mares, Bertherand, and Miergues, of Algeria, Professor Gubler, Dr. Leuglet and Dr. Pepin, of Paris, Dr. Maclean, of Netley, Professor Lorinser, of Vienna, Dr. Castan, of Montpellier, Dr. Saccherò, of Sicily, and several other medical practitioners (some early also in the La Plata States) placed the anti-febrile properties of the new medicament beyond a doubt. In the Universal Exhibitions of Philadelphia, Vienna, the last one of Paris, and in that of Sydney, numerous medicinal preparations emanating from Eucalypts have been brought before the world, our fellow-citizen, Mr. Jos. Bosisto, being foremost among those who have greatly and successfully striven to bring these Eucalyptus medicines under notice. In the comparatively limited ague-regions of north-east Australia, where Eucalyptus vegetation is very largely replaced by ordinary jungle trees of Indian type, travellers and settlers have also found in Eucalyptus preparations an effectual remedy against the fever. The idea of converting Eucalyptus leaves into cigarettes arose with Mons. Prosper Kamel, who also turned it first into practice, indeed, many years ago.

We have as yet no accurate pathologic data on the effect of the exhalation of Eucalyptus forests on phthisical patients; but I anticipate that in the same manner as the air of dense woods of Pines is apt to stay the inflammatory processes in diseases of the respiratory organs, so the vapours of our Eucalyptus forests, the odour of which we so readily perceive and recognise, will likewise arrest the progress of these sad diseases, more particularly in their earlier stages, and probably more so than sea-air, notwithstanding its pureness, the atoms of bromine and iodine carried with it, and the increased ozone which it evolves. Indeed I should assume that sanitarian dwellings could nowhere on the whole earth be provided for phthisical patients more auspiciously and more hopefully than in mountains clothed with Eucalyptus forests in extra-tropical Australia, and at elevations (varying according to latitude from 1000 to 3000 feet) where the slightly rarified air, of a very moderate humidity, pervaded by Eucalyptic vapour, together with the comparative equability of the temperature, would ease the respiration greatly. This assumption is largely based on the facts that no other gregarious

trees in the world evolve essential oil so largely as our Eucalypts, unless perhaps some of the most terbinthine Pines of colder climes, and that thus is afforded most copiously an oily volatile emanation befitting to absorb and condense oxygen into ozone, the most powerfully vitalising, oxydising, and therefore also chemically and therapeutically disinfecting element in Nature's whole range over the globe.

Ferd. von Mueller, Melbourne.

(To be continued.)

AN AMATEUR GARDENER'S EXPERIENCES.—III.

THE next step in my career as an amateur was the laying out of my little garden. I divided it into two parts; one-third of the whole I set apart to flowers, and the remainder to vegetables. I naturally desired to make my flower plot as ornamental and as convenient for keeping in order as possible. The space was not large, but was sufficient to admit of a number of small beds, which were disposed thus:—In the centre was a circular bed with a walk around it; the remaining space was divided into beds and walks radiating from the central bed somewhat like spokes in a wheel, with the circular bed in the centre representing the hub, only that, the space being a parallelogram in shape, some of the beds were longer than others. I bordered the beds with Box, and gravelled the walks, and thought my little flower garden a not unsatisfactory piece of work when it was finished, ready for planting and seed sowing. I set out with the intention to use hardy herbaceous plants of suitable kinds as far as possible, and to fill the remaining space with showy annuals. My knowledge of plants was very limited, and I did not want to spend much money. Moreover, my means of getting plants in the neighbourhood were restricted. I knew nothing about nurseries, and advertisements offering supplies of plants at moderate, or indeed, any prices, were to me then unknown. I, however, did the best I could, and got together a number of old-fashioned plants, none of much money value, but most of them very pretty and interesting, deciding to rely the first year mainly on such plants as I could raise from seed. I invoked the aid of the gardener friend to whom I have previously referred, and he wrote out for me a list of annuals, which I sent to a good seedsman recommended by him. I remember with pleasure the delight I experienced as I opened the treasured packet the moment it came into my hands. I had made some tallies, and painted them with white lead ready for use, for then one had to make such things for oneself: it was before the day when such and other conveniences were available for a trifling outlay at every seed-shop.

Then came the seed sowing. Of course I erred, as young gardeners always do, in sowing the seeds too thickly, and erred still more in not thinning out the seedlings soon enough or sufficiently, and as a consequence many of my annuals grew leggy and straggling. It was later on I learned that no plant ever grows to anything like perfection unless it has sufficient room for development. And yet, if I had used my eyes properly, the lesson was plainly set for my instruction, wherever a plant grown from a stray seed had plenty of room to itself. I remember in particular one very handsome specimen of *Collinsia bicolor* which grew from such a stray seed, and formed a mass of flowers, far surpassing those produced in the entire clump devoted to the colony of the same plant. But, all drawbacks and shortcomings notwithstanding, I had a gay show of flowers, many of them new to me then, and all delightful, for they supplied me with abundant materials for making up little posies for the house, and to give away to friends. One of these posies was the source of a little amusement to me. I made it up as prettily as I knew how, and harmonised the colours fairly well. I carried it to the room of a friend in town, who was a very pronounced bachelor, but was known to be the favourite of many ladies. The then famous Professor Anderson, known also as the Wizard of the North, had occasion to call on my friend, and deigned to notice my bunch of flowers. It chanced to please his taste, and he praised it in somewhat extravagant terms. He then bantered my friend as to the donor, and knowing his reputation as a confirmed bachelor, accused him of being the recipient of floral gifts from some fair lady who had designs on his single blessedness. At last my friend, sarcastically complimenting the Wizard on his power

of seeing twice as much as ordinary people, told him the donor and arranger of the flowers belonged to his own stern sex. This tried the Professor's credulity too severely, and he offered to bet my friend that none but a lady's fingers could have arranged the flowers with so much taste. My friend naturally declined the wager, which only convinced Anderson that he had judged correctly.

As the plants I grew from seeds, chiefly annuals, were really a good selection, I give a list of them. They consisted of Sweet Alyssum, *Saponaria calabrica*, *Nemophila insignis* and *maculata*, white and purple Candytuft, Mignonette, Cornflower, *Clarkia elegans* and *pulchella*, *Collinsia bicolor*, *Convolvulus major* and *minor*, Sweet Peas, *Eucharidium grandiflorum*, *Gilia tricolor*, *Linum flayum* and *grandiflorum*, Lupins, African and French Marigolds, Marvel of Peru, *Nasturtium*, *Oenotheras*, double Poppies, Scabious, *Antirrhinum*, Venus' Looking-glass, Virginian Stock, *Viscaria oculata* and ten-week Stocks. There were others, which I do not remember. Some of the smaller beds were each devoted to one sort of flower; in the larger I grew patches of several kinds. At one time the effect was exceedingly pretty, but soon, as one kind after another got to its best and began to decline, the conclusion was forced on me that most annuals are too short-lived to be depended upon for the continuous decoration of a flower garden, especially a small one which is all under the eye at once, and I have never since employed them except as auxiliaries to more permanent plants. Added to the kinds I have named, I would recommend a few other annuals, biennials, and perennials, with which I have since become familiar, and which I can strongly recommend as worthy of a place in most flower gardens. First I would name Asters generally, and the dwarfier growing ones in particular. Alpine Auriculas, again, have been, and are, a source of much pleasure to me, and where grown in somewhat elevated and well drained borders of good turfy loam yield masses of flowers early in the season, of varied colours and somewhat differing styles of growth. I once saw a fine bed of them in a Derbyshire cottage garden which surpassed in interest any other bed of hardy flowers I ever saw; and the proud owner assured me they were all raised from a shilling's-worth of seed bought of a well known firm of seedsman at Sheffield.

A bed of seedling Pansies is another hobby of mine, indulged in most years. I get seeds from a number of growers, and I save as much of my own as I can—always from the best flowers in my garden; and in this way I provide infinite pleasure for myself during many months. It is interesting even to watch their varying foliage and habit of growth, but the interest culminates as the flowers begin to open. In this way I have seen some very curious flowers, and out of every bed I get a few kinds which are worth propagating. I have grown a good many plants from carefully hybridised seeds, but the results have not on the whole been as satisfactory as might have been expected. Intermediate and biennial Stocks, where they can be sufficiently protected in severe wintry weather, are always worth growing, but they are not so often seen as they deserve to be. *Phlox Drummondii*, single and double *Portulacas* and *Zinnias*, should be grown by every one who has a frame to start them in and get them strong enough for planting out about the middle of May in showery weather. The lovely *Leptosiphon roseus* should find a place in every garden. For a supply of useful border plants I know nothing much more interesting than a small bed of seedling Pinks, Carnations, and Picotees; while for masses of bright glowing colours of infinite diversity I can strongly recommend the several varieties of the Japan Pink, *Dianthus Hedewigii*. I once saw a bed of these grown at the Royal Horticultural Society's Gardens at Chiswick which was intensely showy; the flowers were very double and strikingly marked, they seemed as if tier above tier of the most gorgeously coloured butterflies' wings had been symmetrically arranged into flowers. A bed of seedling *Polyanthuses* and *Primroses* is sure to yield a variety of interest. Then of course no garden in spring is properly furnished which does not possess an abundance of dwarf yellow and blood-red Wallflowers, Forget-me-nots, *Linanthus*, *Silene*, *Alyssum saxatile*, and *Aubrietia*. Later on the various sorts of *Aquilegia* ought to yield an abundance of flowers. Even an ordinary packet of mixed seed will do this, but if seeds of *A. cærulea*, *chrysantha*, and *glandulosa*,

have also been sown a great addition will have been made to the resources of the flower garden.

So many amateurs are unsuccessful in raising plants from seed that a few words on seed sowing may not be without their use. Flower seeds are, many of them, so extremely small that when these are sown out-of-doors on rough ill-prepared beds or borders, not a few of them sink deeper than is proper for them, and so get lost. To prevent this every spot where small seeds are to be sown should be properly prepared by so dealing with the soil that it is smooth and uniform in texture at the surface. If the ground is naturally of a rather rough nature it will be advisable to make it as fine as possible with spade or fork, and then finish off the surface with, some well sifted compost, consisting of old turfy stuff, sand, peat, &c. This may seem to necessitate expense and trouble, but no one who aims at success in gardening must be unwilling to take trouble, and expense may be kept down by skillful contrivance and good management. Carlyle has described genius as "a great capacity for taking pains," and no one who has not this capacity pretty largely developed can be regarded as having a genius for gardening. But the enthusiast will find that success will amply reward him for the utmost painstaking, whereas slovenly badly done work will almost certainly end in failure.

A compost heap ready for use when wanted ought to be in the smallest garden. Its preparation will be a labour of love, and the materials will be obtained somehow if the need for them be once realised. They will comprise well rotted turf, sand, peat, leaf-mould, decayed vegetable refuse, a little lime, &c., well mixed together and often turned over and exposed to the sweetening and decomposing influences of the atmosphere. With such a compost to surface beds and borders with, an important condition for successful seed sowing will be secured. When the seeds are sown they should be covered with the same kind of soil. Given the size of the seed, the covering should be of something like a corresponding thickness; thus large seeds, such as Sweet Peas, may have a covering rather more than their own thickness, while small seeds will be sufficiently covered by a very thin film, varying with the size of the seeds.

The conditions of successful germination are warmth, darkness, and a sufficiency of moisture, which Dr. Lindley has defined to be "just so much as the particles of earth can retain around and among them by the mere force of attraction." In many of our spring seasons we are visited by such a continuance of drying east winds as to rob the ordinary surface soil of all its moisture. This is one of the reasons why tiny seeds so often fail to germinate. The temperature may be high enough, the seeds may be properly covered by soil, but the needful moisture being absent the germination is incomplete: the seeds often start into growth but get no further than the first stage because they are surrounded by too much dryness. It is a common practice to cover the more delicate seeds with inverted tpe pots or hand-glasses, which prevents the too rapid evaporation of water; and every one who has sown seeds in a closed cold frame which secures a similar hygrometric condition must have observed that the seeds have almost always germinated sooner and more regularly than those sown at same time out-of-doors. When the season is showery, with warm sunshine intervening, seeds grow with much greater rapidity than in such seasons as we have referred to. The most obvious means for securing the requisite conditions for success out-of-doors in average seasons is the use of such a compost as I have described, which is fine in texture and yet does not part with its moisture as rapidly as ordinary garden soil does. *Philanthos.*

SUGAR-CANE IN SPAIN.—The cultivation of the Sugar-cane in Spain along the coast from Estepona to Almería has, we are told in a recent report on the trade and commerce of Malaga, of late years been greatly developed, and is said to yield very large returns both to the cultivator and the owners of the sugar factories, who purchase the cane and extract and sell the sugar. The great importance that this comparatively new industry has now acquired in the south of Spain, and the large amount of capital invested in it, explain the opposition which the Government Bill for the abolition of the duties on Cuban sugars has met with in the Spanish Cortes.



Home Correspondence.

Roses at Cheshunt.—I notice that in the very interesting remarks made by Mr. Douglas with reference to the Roses at Cheshunt, he states that buds taken from the leafy growths will not produce any flowers, but from my experience of such I hold that they will, and that it is not necessary to be particular about the shoots from which buds are taken except to choose such as are not too gross and sappy, as the bark on those is seldom mature enough at the time budding takes place to be removed with safety. That such do and will yield blooms may be seen when the plants are growing on their own roots or as dwarfs pegged, when shoots of that description are laid in, striking instances of which I had before me this season, and I have witnessed the same thing again and again. If such growths were useless from being non-floriferous, the work of budding would have to cease very early in the year, as it is only that class that can be obtained after this, and many nurserymen go on inserting buds till quite late in the autumn. It seems remarkable that the hardy Brier from the hedgerows should have suffered so much from the severity of the winter, and that so many should have died; but if the practice of mulching were carried out so as to protect the vital part, I am convinced that the losses throughout the country would have been small. With the ground protected with half-rotten dung or any light littery material even Teas will endure a great amount of frost, and perpetuals so treated may be pronounced perfectly safe, as hard weather then has little effect on them. *J. S.*

Monster Cucumbers.—In the year 1853 the then gardener to J. Bolton, Esq., of Kates Hill, Dudley, exhibited at the Botanic Gardens, Birmingham, a brace of Cucumbers, which, when placed end to end, measured 66 inches. If Mr. Henderson, one of the contractors for the 1851 Exhibition, is in the land of the living, he can vouch for this. This Cucumber was known by the name of Pipe's Norfolk Champion—not Norfolk Hero—and was let out at a charge of 2s. 6d. per seed by Mr. G. Pipe, a Dahlia grower, of Hampstead. *H. D.*

—In last Saturday's *Gardeners' Chronicle* you give an account of a monster Cucumber, and say the nearest to it is one grown at Rivenhall in Essex in 1852, which measured 31 inches long; but in 1869, when living at Terrace Villa, Barbourne, Worcester, I grew Hamilton's Invincible 32 inches long, 9½ inches in circumference, and it weighed 6½ lb. Moreover, I regularly cut from the same plant good fruit. *S. Taylor, The Gardens, Acacia, Apperley, near Leeds.*

—Some varieties under certain treatment now and again produce extraordinary long fruit. On one occasion, in growing a variety then called Sir Colin Campbell—which, I doubt not, was but the same variety as Norfolk Hero—I cut a fruit 38 inches in length; but this fruit and one other, about 18 inches long, were the only two that the plant produced in the whole season. The largest one was left for seed, and ultimately was exhibited for several weeks in the window of Mr. John Bell's seed-shop at Norwich. About the same time was shown at one of the Eastern Counties shows a snake Cucumber, so-called, 5 feet long, but by whom I have now forgotten. *W. Bishop, Taverham Hall.*

Rush-bearing in Westmoreland.—Warcop, a village in Westmoreland, is one of the places where this ancient custom is still observed. In a recent narrative in these columns the name was misspelt Worksop. *H. E.*

Clay's Fertiliser.—"What is sauce for the goose is sauce for the gander," seems to have been a proverb in the mind of Mr. Smith, the florist, of Ashford, last spring. Having used Clay's Fertiliser largely in the growth of his market plants, as every one else does now, he resolved to test it upon some Oats, having a piece of very poor land upon which he proposed to sow that crop, and being unwilling to incur

the expense of manuring with stable dung, as that is a very costly article in that far corner of Middlesex. With the Black Tartarian Oat, sown in the spring, was given broadcast a dressing of the fertiliser, at the rate of 3 cwt. to the acre, a portion of the crop being left unmanured. It is a remarkable testimony to the efficacy of the fertiliser to say that the line which divided the manured crop from the unmanured portion was throughout the whole of the summer as clear as noonday—the one dark, robust, and full of vigour, the other pale, thin and poor. The crop now harvested was a grand one, the ears large, full, and very heavy, and as a practical farmer said, "a remarkably fine sample, indeed," whilst the straw is stout and long and vigorous. The comparison with the crop from the unfertilised land was also remarkable, and the most conclusive evidence given that this fertiliser offers to the farmer all those good qualities and advantages that it has so long given to the florist. The land has had no animal manure for several years, and the result is therefore the more conclusive. When visiting Mr. Smith's nursery he remarked, "Few people know of the existence of this place." Such a statement is quite correct. Except to boating men and anglers the south-west corner of Middlesex, which includes Sunbury, Ashford, Shepperton, and Laleham, is but little visited, and only the chance passer-by, along the road from Twickenham to Ashford, would spy out the large mass of glasshouses that lie back from the roadside, and partly hidden by fruit orchards. None the less, here hundreds of thousands of plants are annually grown for market, aiding to satisfy that love for the beautiful in plants and flowers that now so largely permeates our town populations. *D.*

Early Louise Peach.—In answer to "J. C. F.'s" enquiry on p. 180 anent the Early Louise Peach, I may say that my experience of the variety in question is very much the same as his—flavourless or nearly so, and a sorry cropper under glass. I have never grown it out-of-doors. Early Beatrice, on the other hand, is very good, but only superior to Hale's Early in one respect, viz., that it is about ten days earlier. If "J. C. F." would care to replace Early Louise with an early variety he could not do better than plant Hale's Early or "A Bec"—the former for preference most decidedly. "J. C. F." further asks, "Is Prince of Wales a good-flavoured late sort?" and is it "superior to Walburton Admirable for growing under glass?" Prince of Wales is large, well coloured, but a coarse-looking Peach. In flavour it is remarkably juicy, but it has no other good point. Further, it has the fault of dropping three-quarters of its crop during the stoning. Otherwise it is a good Peach, and well worthy to be grown out-of-doors. If "J. C. F." wishes to plant a late Peach I should advise him to plant Raymackers. Mr. Rivers well describes this Peach as a sort of late Noblesse. It is a wonderfully free bearer, and stands forcing very well. In flavour and appearance it leaves nothing to be desired. Walburton Admirable does not force very well, and, in addition, in most establishments is a shy bearer. *W. Carmichael.*

Planting Poor Land.—Your enquirer, who wishes to plant 6 acres of poor clay soil, should plant Black Italian Poplar at 4 feet apart. He will get a quick return, and his land will be effectually drained after the crop is taken off. *W. Maule & Sons, The Nurseries, Bristol, Aug. 7.*

Carpet and Subtropical Bedding.—Of all systems of modern flower garden decoration the carpet and subtropical style has certainly the advantage in wet weather. It has been pouring rain more or less every day for over a week, and such things as Calceolarias, Verbenas, Pelargoniums, &c., are so severely shaken that it will be some time before they are themselves again. Even herbaceous plants, notwithstanding their hardness, are knocked about and look very disorderly. Recent experience still further convinces me that in all gardens of any considerable extent the best way is to aim at variety as much as possible by cultivating plants which will succeed and be enjoyable in all kinds of weather. Castor-oils, Cannas of sorts, Zea japonica, Wigandias, Solanums, tuberous-rooted Begonias, and numerous other things are not a grain the worse if it rains continuously for a month, and then the carpet beds broken up with a little foliage as dot plants are always enjoyable whether the sun shines or not. The following is a list of plants which are most effective now after the recent stormy weather:—Dwarf Tropaeolums, blue Lobelias, with centres of Chamaepeuce diacantha, Ivy-leaved Geraniums, Alternantheras, Mesembryanthemums, Coleus Verschaffeltii, Centaurea candidissima, Flower of Spring Pelargonium; and of dwarfier plants—Kleinia repens, Leucophyton Brownii, Cerastium tomentosum, Coprosma Baueriana variegata, Stellaria graminea aurea, Veronica incana, are all charming to look upon, and are the brightest examples of flower gardening that we have, or are likely to have, this season. *H. C.*

The Tulip Tree.—I am anxious to place before your readers a few remarks recently supplied me in a most kind and courteous manner, by Mr. Freeman, Carroll, Baltimore, in the United States, regarding his own experience in the cultivation of the Tulip-tree. Mr. Freeman states that some time ago, owing to the death of several young Tulip-trees, he planted others of the same kind in the month of April, and when the leaves were about two-thirds grown, about twenty-four trees were planted, and all survived. These plants, about 6 feet high, were taken from a bed of seedlings in the woods, whilst the dead ones had been procured from a nursery, and were considered to be very fine plants in all respects when planted the previous autumn. Mr. Freeman had just succeeded a gentleman in the position he, Mr. Freeman, occupied—very much more experienced and older than himself—who had finished the autumnal planting, and he (Mr. F.) was assisted by an old man who had been in the place for years as labourer. The latter told Mr. F. it would be utterly useless to try and remove the trees. His predecessor had often attempted to do so, but invariably failed. He admitted, however (a most important admission), that their removal had always taken place in the autumn, or the more expressive phrase “fall,” as generally used in America. Mr. F. cut back the head, and took off all long leaves and planted them with merely ordinary care. The very best results followed—a fine growth was obtained the first summer. He has seen hundreds die when planted in the “fall,” but not one when planted properly in the spring. He considers that, owing to the spongy nature of the roots, they will not bear mutilation unless when active, which also obtains with Magnolias. The plants removed by Mr. F. had not a particle of soil about their roots. He counsels me to use care not to let the roots become dry when out of the ground. I am so satisfied that Mr. Freeman's advice is sound and good, that I will take care in future never to plant a single Tulip-tree before April. I should deserve to die myself if I committed such a mistake as to plant these trees again in the autumn. I would beg, through your journal, to thank most cordially and respectfully Mr. Freeman for his valuable advice. *J. Colebrook.*

When to Transplant Magnolia grandiflora, Tulip-tree, &c.—Mr. Knight is quite right in stating the month of June to be the most favourable time for transplanting the Magnolia. So convinced am I of the danger of moving this tree during the winter or in early spring, that rather than do so I would wait until growth had fairly commenced. Those who visited the Paris Exhibition of 1867 may remember to have seen some large Magnolias in the *jardin d'essai*, some of them healthy and full of fine foliage, others equally large but presenting a meagre appearance. The former were planted there in March, the latter early in the summer when the weather was hot. These latter suffered little from removal, the early planted ones, on the contrary, dropped a great portion of their leaves. At the same time I know that many planters in France are equally in favour of transplanting just as growth ceases, while root-action is still lively and the soil still warm. The roots then grasp the earth and get good hold before winter sets in. The reason why so many late autumn and winter planted trees die, is simply because severe continued frosts and harsh drying winds, such as are often experienced in early spring, dry out the sap at a much more rapid rate than the roots—which, owing to the late removal, are in a more or less torpid state—can supply it; with the consequent effect, that in the case of evergreens the foliage shrivels and drops off. This fact, simple though it may be, is often lost sight of by those engaged in the transplanting of trees and shrubs, although many are fully aware of its importance. Amongst others I think Mr. W. Paine, who, if I remember rightly, not long since expressed very decided opinions upon this matter in a contemporary. As bearing upon this subject I may mention that in many parts of Germany it is the custom to transplant all evergreens in the month of August, no matter what the weather may be. Each plant is puddled in, and the percentage of deaths is very small indeed. The winter being so severe there renders it imperative that all transplanting should be accomplished in time to allow of the roots getting firm hold of the soil before hard frost sets in. With respect to the Tulip tree, if your correspondent who has failed to establish it will go to a nursery at the fall of the leaf, have his trees carefully taken up and the roots enveloped in litter, bring them home with him, damp the roots on arrival, and plant at once, I will engage that not one of them fails to grow. *J. Cornhill, Byfleet, Surrey.*

Bougainvillea glabra.—This Bougainvillea is generally considered inferior to *B. speciosa*, but let any one see it hanging from the top of a lofty conservatory, well exposed to light and air, and they will then see it in full beauty; grown in a stove or under partial shade

it is pale and soon drops, but grown as above mentioned it is rich in colour and will hang for weeks, and if well cared for at the roots will push wreaths of flowers from 2 to 3 feet in length. I have often seen *B. speciosa* grown in heat inferior in colour to *B. glabra* grown in this way. I may also mention that it is very useful grown as standards for house decoration in 10-inch pots or less, but it should be disbudded so as not to have more than 6 or 8 wreaths to each. *J. C.*

A New Nectarine and an Old One.—This year I have fruited for the first time Galopin Nectarine. My friend Mr. Coleman, in a recent contribution to the *Gardeners' Chronicle*, rather discourages the grower of the newer kinds, but let him grow Galopin and I am sure his opinion will be moderated. As far as I can find out Galopin was introduced into this country from Belgium in 1872—*ergo*, it has been in commerce eight years; nevertheless, it is as little known as if it had been in commerce only eight months. With me this year it has been the largest, handsomest, best flavoured, and among the earliest of all the Nectarines I have grown; and my collection includes more than one variety. Besides, the tree is a free grower and very fertile. Mr. Scott, of Merriott, from whom I purchased my tree, gave it an especially high character, and I can bear out every word he says in its favour in his description of it in the *Orchardist*. As an exhibition fruit it has no peer, either in appearance, size, or taste. I believe Mr. Barron has fruited it at Chiswick, and has a great opinion of its excellence. It is curious how little this fine fruit is known; had it been a Rose instead of a Nectarine, one would have received circulars from all parts of the country about it. I hope in what I have said about this finest of all Nectarines I shall give no one an idea that I have exaggerated its merits. Now I come to the old Nectarine, *Hâtif de Zelhem* by name; this Nectarine is a variety of *Violette Hâtive*, and is by far the best of all that class of Nectarines I have grown; it is as good as Stirling Castle Peach to force and grow out-of-doors, never missing a crop. It is larger, and has a brighter colour than Murrey, Elruge, Balgowan, and *Violette Hâtive*, and the flavour is quite equal to if not better than these varieties. It is well known in France, but is in none of the catalogues of the English nurserymen. Why not? *W. Carmichael, Bury St. Edmunds.*

Disbudding Chrysanthemums.—Perhaps there is no flower in British gardens more universally cultivated than the Chrysanthemum, and perhaps also there is no other flower grown in pots so badly cultivated outside a very circumscribed radius, where the “Chrysanthemum fever” has fairly got a footing with rival enthusiasts in its cultivation. There are a great many people who suppose, that if they obtain a select number of approved kinds, and they are carefully propagated and potted in rich soil and regularly watered through the summer, they ought, as a natural result, to have flowers as fine as those that are to be seen at exhibitions every month of November. Those who have been in the habit of visiting Chrysanthemum exhibitions will have noticed the voluminous notes that are taken sometimes with very little comfort, and one cannot help being amused at the apparent gratification of some of those enthusiasts, when, after a struggle for elbow-room, the note-book is closed with the treasure which is to yield such grand results another year. Alas! that these illusions should tend to chill the ardour of any well-intentioned cultivator, and yet I know it does so in many cases. Nor can it be wondered at, when, after plants have been grown for close upon twelve months at no little trouble and expense, it yields a flower no better than a common herbaceous Aster. The fact is, a proper system of disbudding is the chief secret in Chrysanthemum growing. Once let a cultivator master this, and the other points which bring success are easily acquired. The season is now fast approaching when cultivators will be on the look-out for the “bud” which develops into the big globe-shaped flower next November. A great many err in taking the “July bud,” which produces an early flower no better than a “ragged robin,” and a good many more allow their plants to grow as long as they will, and flower them on the terminal bud. Even in the latter case a great improvement might be effected by careful disbudding performed at the proper time, instead of allowing the plants to carry a swarm of flowers, none of which are perfect either in shape or size. I have said that the July bud is useless, and I have also pointed out that the flowers produced on the terminal bud are not nearly so fine as those that are to be obtained from the “crown terminal”; that is, the bud which appears about the last days of the present month, or early in September. It frequently happens that the most experienced cultivators are puzzled when a bud or buds appear a trifle earlier than is considered safe to stop the plant's growth altogether by removing the little embryo shoots from the side of the bud referred to, and thus divert the whole vigour of the plant into the development and expansion of the

flower-bud. In such a case it is best to strike a compromise by retaining the bud, and allow one shoot to grow away from its base for a time, in order to carry away a portion of the vigour until it is seen by the “formation of the bud” that it is likely to be well shaped, and develop into a perfect flower, when the shoot may be entirely removed. Another successful way of treating such a case would be to take the early bud upon one shoot, and the later one upon another. The process of disbudding is both tedious and irksome, and is best accomplished by interested as well as experienced hands. A very few hours destroys the chance of obtaining a good flower, and a clumsy operator will accomplish a similar end by “pricking the embryo-bud, so that the flower when fully grown will be defective upon one side.” In disbudding I make a little sharp-pointed stick of rather soft wood, and squeeze it between the teeth, making the point soft, but at the same time firm enough to remove the small buds which surround the centre one, and which if not removed in time will prevent the main bud from swelling into a handsome-shaped flower. *W. Hinds.*

Remarkable Trees.—In your correspondent's note on Ribston Hall is mentioned a large Plane, having a circumference of 16 feet; this is undoubtedly a grand tree, and I imagine there are but few in the country larger. But this estate—Fawley Court, Bucks—is remarkable for fine Planes, several of them being over 80 feet high, and one, standing a short distance from the kitchen garden, has a circumference of 18 feet 8 inches at 3 feet from ground line. Also in the churchyard of Fawley is standing a fine old Yew, measuring at 3 feet from ground 17 feet 7 inches; this contains within its hollow trunk two other good-sized Yew trees—these, at some 12 or 14 feet from the ground have clutched the old giant in their arms, and will probably hold him fast for generations to come. I have noticed that where old Yews are to be found in churchyards, they are in almost every instance solitary. *J. C.*

Peas.—Very much has been said in praise of Telegraph and Telephone; the latter sort I never grew, the former I find inferior in every way to Criterion, sent out two or three years ago by Messrs. Veitch, and which I find the finest mid-season tall Pea I ever grew, but it seems the critics, from some cause or other, have passed it over. Of dwarf kinds Marvel is first-rate, and as my experience does not agree with Mr. Culverwell's (see p. 148), as to one row of tall Peas producing as good a crop as three rows of dwarf ones, I shall still keep a place for my old favourites, Veitch's Perfection and G. F. Wilson, and the new sort, Marvel, which is about a week earlier than the other two sorts—it is dwarfer, and the pods fill well to the ends, with eight or ten Peas of first-rate quality. The wet summer has produced an extraordinary growth in some of the taller sorts of Peas, and so far the crops have been abundant and good in quality. Sweet Peas are overtopping sticks 9 feet high; last year they grew 11 to 12 feet. *J. E.*

Paragon Cucumber.—I should like to enquire through the medium of your columns as to the fruiting of the above. I am very much disappointed with it. I have planted out two plants in separate houses, and cannot get it to fruit freely. It grows very coarse, and now and then produces a very spiny fruit, which will not grow more than about 9 inches long. I have also sent it out for frame work, and it has proved quite a failure. I have the Prince of Wales and Telegraph in the same houses, growing side by side with the Paragon, and nothing can fruit more freely. I believe the former to be a very prolific and valuable sort; I have grown several dozens from one plant, very straight, some of them nearly 2 feet long, but it is not quite equal to the true Telegraph. *H. Gibbons, Folkestone.*

Potato St. Patrick.—During the months of September and October the principal subject of conversation in agricultural districts of this county is Hops, so much so till it is said a farmer was once asked what o'clock it was, and he answered “Hops;” and in like manner the great subject in every one's mind just now is Potatoes, and well it may be, for no plant yields nearly so much food per acre as the Potato, and there have never been in this county such abundant crops of this root since the blight year in '46. The crops in the cottagers' gardens are really prodigious, and in many cases are ripe and being harvested. I have dug up a most splendid lot of Veitch's Ashleaf, as sound as a bell, and the crop of American Rose is really incredible: these are also in many cases dug up. It is a great favourite with the cottagers here; baked in the jacket it is as white and as dry as a ball of flour. This Potato I bought and grew one year and distributed amongst the cottagers, and it is so good a plan to do so year by year that I can recommend the plan to landed proprietors or their gardeners. This year I planted the last new Potato from America, St. Patrick, and the crop is simply incredible, and not one diseased: this is also for distribution. A curious

thing, the old sets have not rotted. I have a mind to keep them for planting to see the result, and thus to beat the man who cut his sets from the outside, and ate the middle of his big Potatos. Grampians are also very fine; we have planted Champions largely in the fields—more about them by-and-by. I regret to say blight is making its appearance amongst some kinds. *J. Rust, Eridge Castle.*

Autumn Chrysanthemums.—As a winter flowering plant the Chrysanthemum stands out conspicuous among all other subjects that come into flower at the same time. It is not, however, so widely known as it should be that there are many dwarf varieties of the Chrysanthemum which are nearly as useful towards the end of summer and autumn as the taller growing kinds are later in the season. These plants are most useful for the decoration of shrubbery beds and borders, and I doubt not that with a little care and forethought some very handsome beds could be made by grouping two or three distinct colours in one bed in the same way that ordinary bedding is arranged in the flower garden. There are also many large conservatories which are difficult to fill, and where a good show is expected; and a collection of these plants grown in pots and properly utilised would be a great advantage where glass accommodation is insufficient for growing choicer plants. They require no glass protection after they are propagated and fairly established in their pots, and their dwarf habit renders them admirable subjects for lighting up vacancies where foliage plants where better and more valuable things would be injured. The following half-dozen have been in flower with us in the herbaceous garden for some time, and will continue to flower for some time to come: Chromatella, Frederick Peter, Illustration, Andromeda, Cité, and Jardin des Plantes. *H. C.*

"The Noble Tuber."—At p. 149 Mr. Fenn attributes to the late Rev. W. F. Radclyffe the authorship of this phrase. It seems to me it can be traced to another source, and it might be worth while to settle the question of authorship now and for ever. Question, therefore, Who first described the Potato as "the noble tuber?" *Mealy-mouth.*

The Buckland Yew.—The Buckland Yew is sure to die! No doubt about it, as many of the prophets have said so! But when? As far as I know at present, only two of them have ventured to fix a time for the death of the old tree. At the end of this month one of these will be numbered with the false prophets, seeing that his date will then have expired, while this grand old tree has every appearance of outliving the present generation of seers. I had not seen my old friend since I removed him in February last, until Wednesday, the 4th inst. After reading a paragraph in the *Gardeners' Chronicle*, of the 24th ult., I then made a journey on purpose. The article is as follows:—"The Buckland Yew.—We are enabled to say that the Buckland Yew is as well as could be expected. Its appearance is indeed calculated to arouse anxiety, as its younger twigs are dying rapidly, and the leaves are falling quickly. Nevertheless the growing part of the trunk, which is singularly picturesque, seems full of vitality, and the branches may possibly 'break' freely another season." Now this very remarkable diagnosis at once convinced me that if the writer examined this tree by daylight, he must be very innocent about the tree pathology of trees. As every one conversant with the habit or healthful state of a Yew tree must know that the above-mentioned conditions could not exist in a living tree at the same time, therefore the statement is quite absurd. "The younger twigs are dying rapidly, and the leaves [on the older shoots] are falling quickly." This could not be true, from the simple fact that if the younger twigs had been dying rapidly the leaves would not have fallen off, but would have withered and clung to the twigs. Practical men know that every Yew tree in a healthful condition throws off a set of old leaves in the summer at the same time the new ones are coming forward. With much pleasure I now beg to inform all the friends of the Buckland Yew that it is now in as high health as it was 500 years ago, and if let alone is likely enough to be a growing tree 500 years hence. The tree all over is growing as well as I can wish it. This tree was transplanted in February last, and it should be borne in mind that it passed through the most severe ordeal possible during March, April, and a part of May. We had during that period cold, cutting and dry north-east winds; notwithstanding all this, coupled with its removal, the young twigs, which are said to be dying fast, are instead growing fast! Many of them have now pushed more than an inch. I heartily congratulate all my friends, the prophets, who, no doubt, will rejoice at our success; and trusting that they are all true Britons, I beg them to consider the worry inflicted on the worthy Vicar by the expected death of the old tree, and I trust they will now give

a practical proof of their sympathy in the shape of a liberal subscription towards enlarging the church, which is now being done. *William Barron, Aug. 8.* [It is a question, still, whether the action of the Vicar is such as to justify sympathy, however much we may deem him worthy of respect. *Eds.*]

About Potatos.—I am sorry that so good a Potato-grower as "A. D." should discourage dishaulming, and as to madness I think those show the most signs of it who allow their Potatos to perish year after year without making any effort to save them. [Hear!] As to a few spots of fungus: in a long journey yesterday I did not see one Potato plot nor one field free from disease, and so virulent is the malady, and so great the alarm created, that the provincial markets are so glutted with Potatos that they can hardly be given away. Under such trying conditions I cannot help regretting that "A. D." should throw cold water on what seems the best if not the only means of mitigating the disease—that, is by instantly cutting the connection between the smitten tops and the sound tubers. In reference to disease-resisting sorts, I agree with "A. D." so far that the Americans of the Rose type—of which Beauty of Hebron is the best, so far as I have tested them in quality and colouring—are more liable to disease than some of the finer English strains. Still, I have less faith than ever in disease-proof Potatos. The Magnum Bonum has quite broken down about here, and the Champion is following suit. The stems are young, and unfortunately as yet there are but few usable tubers of those and other late varieties. No one can contend that there is any lack of vigour in such Potatos as the Rose. The theory of any Potatos becoming "effete" is wholly untenable. Most of them are far too vigorous this year. Such Americans as Early Ohio and Triumph, the latter of which had very little foliage with me, and ripened off early, are more likely to prove disease-proof than such monstrously shawed varieties as the Scotch Champion, which is about as useless in cottage gardens, from being all top, as the Scotch minister in the pulpit who was said to be all sound. The early sorts can also generally be lifted and stored before the disease comes. I find Mr. Hill recommends cutting off the haulms about 3 inches from the ground in preference to having the whole crop lifted, as he says I recommended. He will see, however, from what I have written on the subject, that I prefer pulling up the haulms to lifting the crop. This bodily removal of the haulms is also far better and safer than cutting them off within 3 inches of the ground. Mr. Hill is mistaken in supposing that the rootlets of the Potato plant feed the tubers directly. The rootlets feed the plant—that is, the tops; the tops feed the bottoms. They cannot, however, do this in the absence of leaves; and I can hardly conceive a more likely means of strengthening the power of the Potato root than the leaving 3 inches of the base of the stem filled to overflowing with semi-putrid and wholly stagnant and unelaborated watery sap, in direct contact with the tubers. Better leave the Potatos to their fate than leave the 3 inches of stems, which cannot by any possibility enlarge the Potatos, but must lower their quality, if it does not render them an easy prey to the disease. On Saturday night and part of Sunday it rained here in torrents, with violent winds, and the Potatos looked their worst on Sunday night. Yesterday and to-day the weather has been bright and beautiful, and if anything will arrest the disease in late Potatos a few weeks of such weather will. In no case have I recommended the drawing of the shaws until the disease spotted the tops, so that the plan involves little or no loss, and if adopted in time saves the tubers. *D. T. Fish.*

Potato Disease.—Like "A. D." I am strongly of opinion that certain sorts of Potatos are much more disease-proof than others, and that by growing such and breeding others from them, we may in time get the better of the plague, or so far steal a march on it as to render it less hurtful than it has been for many years past. What is wanting in the late kinds, if we must grow them, is the hard stems and stout thick-skinned leaves of the varieties named by "A. D.," the tissues of which are apparently of that character as not to be favourable to the fungoid spores. This is strikingly illustrated when such are seen growing amongst others of the thin tender foliage section, cases of which I have witnessed as recently as to-day while going through a wide district to examine the crops, where I found some sorts in fields and gardens apparently without a spot, and rows or plots alongside stricken in every leaf. How long those now exempt may escape the malady remains to be seen, but much depends on the weather, for should it be sunny and dry there will not be much to fear, the spread of the disease being then in a great measure arrested. As to pulling up the haulm, that, I think, is of doubtful utility, for once the poison enters into the circulation the mischief is done, and tainted tubers will go bad whether they are attached to the tops or not, and the haulm, so long as it has

life in it, must be of some service in ripening and setting the skin of the Potatos. I know that many who have tried the plan of pulling up condemn it, and that very few practise it now, but if the crop is forward enough for lifting it may be of use, as the tops can be removed quickly and got out of the way. As the dread spot always appears about the middle of July, it occurs to me that our greatest chance of avoiding such heavy loss by its ravages is to cultivate kinds that are ready to take up at or before that time, and obtain supplies for late use from other parts, where they can be grown free from disease. If this were done, and the breeding of a more hardy race taken in hand, as mentioned above, I think it would be a step in the right direction and do more to stamp out the scourge than pulling up and destroying the tops. Some of the American sorts are a gain in point of earliness, but unfortunately most of them from that country have very thin leaves and are more tender than others we have. *J. S.*

—The disease has spread, is spreading with greater rapidity, and the result threatens to be more disastrous than usual. The extreme vigour, mass, and succulency of the crop, and the state of the atmosphere, combine to develop the disease to the uttermost. The semi-saturated air, alternated with scorching gleams of sunshine—and these varied by a constant succession of violent thunderstorms—affect the Potato crop as a stream of oxygen does fire, or a spark gunpowder. The Potatos, with hardly a figure of speech, may be said to melt into rottenness before these all-potent atmospheric influences. Up to a certain point the vital force of the Potato seems able to resist the destructive energy of the disease, but almost before the plants begin to assume the sere and yellow leaf they lose a sufficiency of vital force to render them an easy prey to the disease. This is a point that deserves the earnest consideration of practical and scientific men. Up to a certain stage of semi-maturity most Potatos are disease-proof; after they reach that stage no Potato can resist disease, provided the atmospheric conditions are favourable to its development. The origin of the faith of many in that mischievous myth, disease-proof Potatos, has arisen thus: Long before many of the later varieties have reached the disease stage, the weather has become so thoroughly changed, as to check or destroy the power of the disease. Hence, years ago I strongly advocated the cultivation of very early and specially late varieties; the first to be stored before the disease came, the second to be run in after the disease had disappeared. Had we more exact knowledge of the state of maturity at which the disease gains its destructive force we might probably be able to step in before the disease, and lift our crops before the tubers are even risked by spotting. Meanwhile, I have no better remedy to offer than that already insisted on—the drawing [and destruction] of the tops the moment the fatal spot or smell is seen or felt. It is melancholy to see how rapidly the disease spreads—a gentleman the other day added, capriciously. This, however, is a mistake. The disease in its mildest ravages seems controlled by certain laws. It searches out and destroys its prepared victims as surely as a hound a hare. It retires before, or rather cannot advance against a full amount of vital force. Let advancing maturity weaken that in the least, and the disease steps in at once. The seeming exceptions to this law but confirm it in the most striking manner. Diseased patches may often be seen among late sorts. On examination or lifting I have always found that these are early rogues that have crept in among the late strains. This year I have had many opportunities of examining large breadths of Potatos. Where the samples are pretty true the disease has cut down and destroyed the early ones only, leaving the later as green walls on either side of the rotted out blanks. The disease does not seem infectious by mere touch or contact. You may trace whole rows of late without a diseased leaf overhanging diseased ones, and even with the dead shaws intermixed with and lying on the tops of the healthy crops. Each variety awaits in apparent safety its own special day of doom. No weather nor disease as a rule can smite them till they reach a certain stage of ripeness, and till then the disease, however potent, seems powerless to destroy them without help from the weather. Should that prove bright and dry the Potatos pull through. There are thus three links in the destructive chain that rots our Potatos: the germs, or fungus spores, that develop it (these are possibly always present); suitable weather to develop these germs. These two are now in full force. Still all the Potatos are not diseased; no, a third condition is needful—the vital weakness incident to approaching maturity: as variety after variety reaches this state it falls a victim to rottenness. Surely with tens of thousands of intelligent watchmen on the alert this national calamity—the losing our Potato crop—may be mitigated, if not averted, by snatching the threatened crop out of the grasp and power of the disease. No variety is disease-proof. The Magnum Bonum has already gone. As

I write the Champion is blotted with disease; it has smitten both at an unusually early state, and the produce must needs be light. Out with the tops at once should this disease weather continue. Should a season of glowing sunshine set in part, however, of these and other late sorts might be kept with their tops intact. As I have seen before now, the sun overmasters the disease, and pulls the roots through almost harmless after the disease had made its mark on the leaves and stems. At present, however, the sun makes no sign of coming forth with sufficient power to save our Potato crop; instead of this, he seems to have abdicated in favour of the electric light, and darkness, rain, and hail; therefore, the only thing left for us to do is to cut the connection between the over-gorged, poisoned top of our Potatoes, and the sound tubers as quickly as possible. Already not only the tops but the bottoms of many of the earlier varieties are going—have in fact already gone, and the finest Potato crop of modern times, which but yesterday filled the earth with tens of thousands of tons of wholesome food, is being converted before our eyes into enormous masses of sheer rottenness, that is poisoning the earth and polluting the air. Every cultivator, as we have clearly shown, may do something, very much, to mitigate or avert this deplorable loss; and as self-interest, patriotism, philanthropy, and common sense, all point in the same direction, I can hardly doubt that all that is possible will be done to save the Potato crop. *D. T. Fish.*

Hardy Plants in Flower in the Gardens, Southwood, Bickley, Kent, Aug. 9:—

<i>Achillea aegyptiaca</i>	<i>Lilium Brownii</i>
" <i>aurca</i>	" <i>canadense</i>
<i>Aconitum Napellus</i> var. <i>bi-</i>	" <i>Humboldtianum</i>
color	" <i>longiflorum</i> var.
" <i>japonicum</i>	<i>Linaria reticulata</i> var.
<i>Actinella scaposa</i>	" <i>saxatilis</i>
<i>Ajuga alpina</i>	" <i>pilosa</i>
<i>Anagallis Morelli</i>	" <i>alpina</i>
<i>Anthemis Biebersteini</i>	<i>Linum viscosum</i>
<i>Androsace lanuginosa</i>	" <i>campanulatum</i>
" <i>carnea</i>	" <i>narbonense</i>
" <i>Vitaliana</i>	<i>Lithospermum petraeum</i>
<i>Anemone japonica</i>	<i>Lobelia cardinalis</i>
<i>Anthrimum Asarina</i>	" <i>ignea</i>
<i>Arenaria triflora</i>	" <i>syphilitica</i>
<i>Armeria juncea</i>	" <i>lutea</i>
<i>Asperula cynanchica</i>	" <i>fulgens</i>
<i>Aster spectabilis</i>	<i>Lychnis chalcedonica</i>
" <i>Chapmanni</i>	<i>Lysimachia clethroides</i>
" <i>Shortii</i>	<i>Mazus Pumilio</i>
" <i>discolor</i>	<i>Meconopsis cambrica</i>
" <i>tripolium</i>	<i>Micromeria piperella</i>
<i>Bellium minus</i>	<i>Michauxia campanuloides</i>
<i>Borago laxiflora</i>	<i>Monarda fistulosa</i>
<i>Calliprora lutea</i>	<i>Nepeta parnassica</i>
<i>Campanula isophylla</i>	<i>Nierembergia rivularis</i>
" <i>frigida</i>	<i>Enothea eximia</i>
<i>Catananche corulea</i>	" <i>riparia</i>
<i>Cedronella cana</i>	" <i>Fraseri</i>
<i>Centaurea stricta</i>	" <i>taraxacifolia</i>
<i>Convolvulus mauritanicus</i>	" <i>macrocarpa</i>
<i>Claytonia sibirica</i>	<i>Omphalodes Luciliae</i>
<i>Corydalis auriculata</i>	<i>Orobos lathyroides</i>
<i>Coronilla libanotica</i>	<i>Origanum pulchellum</i>
" <i>varia</i>	<i>Papaver alpinum</i> var.
<i>Crucianella stylosa</i>	<i>Parnassia palustris</i>
<i>Cyananthus lobatus</i>	<i>Pentstemon pulchellus</i>
<i>Cynoglossum apenninum</i>	" <i>venustus</i>
<i>Dianthus cruentus</i>	" <i>procerus</i>
" <i>suavis</i>	<i>Platycodon grandiflorum</i>
" <i>tymphrestus</i>	<i>Polygonum capitatum</i>
" <i>deltoides</i> var. <i>glauca</i>	" <i>vacinifolium</i>
" <i>sylvestris</i>	" <i>Brunonis</i>
<i>Dracocephalum peregrinum</i>	<i>Prunella pyrenaica</i>
" <i>Ruschyanum</i> var. <i>japo-</i>	<i>Putentilla lupinoides</i>
nicum	<i>Rubus arcticus</i>
<i>Edraianthus dalmaticus</i>	<i>Rubus hirta</i>
<i>Epilobium Dodonaei</i>	<i>Saxifraga cernua</i>
" <i>Fleischeri</i>	" <i>Hirculus</i>
<i>Erigeron bellidifolius</i>	" <i>Agellaris</i>
<i>Eriogonum racemosum</i>	<i>Scabiosa suaveolens</i>
<i>Erodium petraeum</i>	" <i>caucasica</i>
" <i>romanum</i>	<i>Sidalcea malvaeflora</i>
" <i>hymenodes</i>	" <i>oreganum</i>
" <i>macradenium</i>	<i>Silene Schafta</i>
" <i>Reichardi</i>	" <i>quadrifida</i>
<i>Eription reniforme</i>	<i>Sisyrinchium Sellowii</i>
<i>Eryngium Olivieri</i>	" <i>iridifolium</i>
" <i>glomeratum</i>	<i>Stachys corsica</i>
<i>Francoa appendiculata</i>	" <i>coccinea</i>
<i>Gentiana gelida</i>	<i>Statice Dodardii</i>
<i>Geranium argenteum</i>	" <i>duruscula</i>
" <i>nodosum</i>	" <i>caespica</i>
" <i>cinerum</i>	" <i>latifolia</i>
<i>Glaudiolus brentleyensis</i>	" <i>minuta</i>
" <i>ramosus</i>	" <i>virgata</i>
<i>Harpallium rigidum</i>	<i>Teucrium rosmarinifolium</i>
<i>Houstonia cerulea</i>	<i>Thymus striatus</i>
<i>Hypericum reptans</i>	" <i>patavinus</i>
" <i>olympicum</i>	<i>Trachelium coruleum</i>
<i>Lagenophora Billardieri</i>	<i>Tropeolum speciosum</i>
<i>Lathyrus Turneri</i>	" <i>tuberosum</i>
<i>Liatris spicata</i>	<i>Veronica longifolia</i> var. <i>sub-</i>
<i>Lilium pyrenaicum</i>	sessilis
" <i>columbianum</i>	" <i>incana</i>
" <i>tigrinum</i> var. <i>splen-</i>	" <i>spicata</i> var. <i>minor</i>
dens	<i>Zauschneria californica</i>

T. D. H.

Reports of Societies.

Royal Horticultural: Aug. 10.—David Wooster, Esq., in the chair.

The Rev. G. Henslow commenced his lecture by referring to a fine group of Lilies introduced by Mr. C. Maries, collector for Messrs. Veitch in Japan. It included a *L. auratum* var. *platyphyllum* with a very large blossom, but with the foliage of *L. speciosum*, from which *L. auratum* is usually very distinct in having narrow leaves. Several fine plants of *L. auratum* var. *virginale* (considered the same as var. *Wittei* by Mr. Elwes), and a new variety of *speciosum*, named *gloriosoides* by Mr. Baker, having strongly incurved petals, were also noticed. The lecturer referred to Mr. Tillery's experience (*Gardeners' Chronicle*, 1875) as to the difficulty of raising intermediate hybrids, the seedlings of *L. speciosum* crossed by *L. auratum*, or *vice versa*, in either case being almost the same as the female parent. The great development of the epidermal processes in some species afforded an illustration of a method of hindering crawling insects from extracting honey, and which would not be of service to the plant in the operation of "pollinating."

Eucryphia pinnatifolia, of which some fine cut blossoms were exhibited by Messrs. Veitch, is one of four species, two being natives of Chili, and two of Tasmania. This diversity of habitat, like that of the *Fuchsias* of South America and New Zealand, appears to indicate a former union between South America and these islands, long since severed, but certain species which indicate their former continuity still exist.

A fine series of *Coleus* sent by Mr. Cannell, and a variegated *Croton* from Mr. Bull, furnished material for remarks on variegation; and the lecturer suggested that possibly variegation may be referred to two distinct conditions. In the case of white or yellowish foliage, it was found, by Professor Church, to be an arrested state, resembling that presented by almost colourless seedlings, and was a similar case to that of colourless parasites; so that every uncoloured cell might be almost regarded as parasitically attached to its neighbouring green cell. Brightly coloured foliage, however, was a different state, for the fluid colouring matter was (unlike the solid chlorophyll) in the epidermis as it is in the petals; so that the *Coleus* had, as it were, a transposition of fluid colour from its proper site into the leaves. Moreover, green chlorophyll is often present, but concealed below the purple or other colour.

A group of *Celosia cristata*, or *Coxcomb*, called for the remark that it was often impossible to distinguish between a "monster" and a "variety." This plant was in a fasciated condition, one usually regarded as due to the fusion of several stems into one, as may be often seen in *Asparagus*, and in boughs of the Ash tree. A certain group of plants of South America, the *Podostemaceae*, has species in which the stems are normally fasciated.

Extremely fine shoots of *Lapageria rosea*, both red and white, were especially noticed for their magnificent culture. They were sent by Sir Titus Salt.

FLORAL COMMITTEE.—James McIntosh, Esq., in the chair. The special features of this meeting were some new Lilies from Japan, exhibited by Messrs. James Veitch & Sons, two of which, *Lilium auratum* var. *platyphyllum* and *Lilium speciosum* var. *gloriosoides*, received First-class Certificates, and are described by Mr. Baker in another column. A fine form of the variety of *L. auratum* named *virginale*, a pure white with a gold band down the centre of each petal, which has been exhibited before, but not in such fine condition, was also awarded a Certificate of the First-class. The same firm also received similar awards of distinction for *Begonia* Mrs. Sheppard, a large, pure white flowered, tuberous-rooted variety; and for *Eucryphia pinnatifolia*, a hardy deciduous shrub, with rose foliage and large white flowers composed of four petals and an immense number of stamens. The Messrs. Veitch also exhibited two plants in flower of the new and very rare *Angræcum Scottianum*, figured at p. 136. Mr. G. F. Wilson showed cut fronds of a handsome hardy New Zealand Fern, named *Hypolepis millefolia*, which received a Second-class Certificate. Mr. J. King, gr. to G. Simpson, Esq., Wray Park, Reigate, again exhibited some novel varieties of *Coleus*, one of which, named *Pompadour*, a remarkably distinct, rough-leaved variety, in which the body colour is rosy pink, handsomely marbled with green and white, was awarded a First-class Certificate. From Mr. Turner came a stand of *Carnations*, and a fine collection of the newer varieties of yellow ground *Picotees*, two of which received First-class Certificates, viz., *Ne Plus Ultra*, a fine crimson-edged flower, and *Alice*, sulphur ground streaked with crimson. From Sir Titus Salt's garden at Milner Field, Bingley, Yorkshire, came some magnificently flowered shoots of *Lapageria alba* and *rosea*; and Messrs. F. & A. Smith showed a small collection of *Balsams*, which gained a Commendation for the

strain. The General Horticultural Company showed a stand of fine *Zinnias*; and Messrs. Daniels Brothers, Norwich, cut blooms of *Godelia Lady Albemarle* and a novelty in a pure silky-white flowered variety named *Flag of Truce*, which grows from 12 to 18 inches high, and appears to possess the most compact and most profuse flowering habit of them all. A number of fine plants, not yet very common, were shown by Mr. Bull; and Mr. Cannell, in addition to a group of *Coleus*, contributed a grand lot of *Cockscombs*, and a fair strain of *Balsams*. Mr. R. Gray, gr. to Earl Stanhope at Chevening Park, received a vote of thanks for a capital lot of cut blooms of *Begonias*.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. Mr. Harrison Weir, Weirleigh, Brencley, Kent, exhibited exceedingly good examples of *Madresfield Court*, *Venn's Black Muscat*, and *Muscat Champion Grapes*; the berries of the first and last named being especially fine in size. The committee recommended the award of a Silver Medal. Messrs. James Carter & Co. showed a large collection of *Tomatos* in pots, to which it was suggested that a Bronze Medal should be awarded. From Mr. Turner, Slough, came a fine sample of the new white kidney *Potato Early Bird*; and from Mr. R. Fowler, of Bedale, came some pods of *Culverwell's Autumn Giant Marrow Pea*. Mr. C. Gray, gr. to C. Seely, Esq., Brooke, Isle of Wight, again showed his seedling *Apple*, which it will be remembered is of the *Devonshire Quarrenden* type. Another seedling *Apple*, in the way of *Lord Suffield*, was shown by Mr. John Syme, of Enneth, Wisbeach; and Mr. McIndoe, Hutton Hall, Gainsborough, sent a handsome, round, white-fleshed *Melon*, named *Marcellus*. Mr. Walker, of Thame, showed a remarkably free-bearing *Pea*, selected from *Veitch's Perfection*, and named *Walker's Perpetual Bearer*. It is about 3 feet high, and bears flowers at the top, while nearer the ground the pods are ready to gather. A medium-sized, round, green-fleshed *Melon*, named *St. Fagan*, was shown by Mr. Crossling, gr. to Lord Windsor, at St. Fagan's Castle, Cardiff; and Messrs. James Veitch & Sons showed growing plants of the common *Seakale*, of the variety called *Chiswick White*, and of the new sort called *Lily White*, to prove their distinctness, which was amply demonstrated.

Scottish Horticultural Association.—The monthly meeting of this Association was held on Tuesday, August 3, in the Hall, 5, St. Andrew Square, Edinburgh. The President, Mr. Dunn, Dalkeith Park Gardens, in the chair. There was a good attendance of members. Mr. Robert Lindsay, Royal Botanic Gardens, Edinburgh, read a paper on "Interesting Aquatic Plants." He said that their merits were not nearly so well known as they deserved to be; they ought to occupy a very important place in every garden establishment, and should not be allowed to grow only (as they too frequently were) in outlandish places and in Botanic Gardens. *Victoria regia* required a large place to grow in; this plant was often seen in our public gardens. There were a good many other kinds which could be grown in very small vessels—even a small tumbler could contain them; and in regard to the water needed for their nourishment it could be either clean or dirty. *Pistia Stratiotes* (the South American Duckweed) accommodates itself to the size of the vessel in which it is placed. *Pontederia crassipes* is also easily cultivated. *Azolla pinnata* is a very fast grower, in fact it is difficult to prevent it from growing and taking up space other than that set apart for it. *Salvinia natans* is a native of Italy, *Marsilea macrospora*, the *Nardoo* of Australia; *Trianaea bogotensis*, and *Herpestis stricta* are also interesting aquatic plants. *Ouvirandra fenestralis*, the *Madagascar Lattice plant*, was rather difficult to grow; the treatment which he had found it to do well with was a temperature of from 65° to 75°. Rain-water was preferable for it, and this required frequent changing; say a renewal of rain-water once a month. The water was all the better for being often stirred and kept clean. Attention to cleanliness was one of the most important points in its successful cultivation. It is propagated by division of the roots, and also by seeds. *Aponogeton distachyon*, the *Cape Pondweed*, is a beautiful plant, and easily grown. *Hottonia palustris*, a British plant, with beautiful flowers; *Hydrocharis morsus-nanae* and *Vallisneria spiralis* were also described. Mr. Lindsay exhibited samples of all the aquatics referred to growing in glass bottles, which were handed round among the members.

Mr. Alexander Mackenzie, Warriston Nursery, read extracts from an article which appeared in a number of the *Quarterly Review* on "English Gardens." It criticised rather severely the present system of flower gardening, designating the rage for scarlet *Pelargoniums* and yellow *Calceolarias* in bedding as the scarlet and yellow levers; and ribbon bordering, which had been in vogue for about forty years, was also treated of in depreciatory terms. Mr. Mackenzie's object in dealing with the article was because many of their employers would read it, and perhaps wish the suggestions it contained to be adopted; and as many of these suggestions were not likely to be favourably received by practical gardeners, it would become them, as wise men, to be able to give a ready reply. The article was severely criticised in the discussion which followed. [It would be interesting to see what was said by the critics.]

The exhibits on the tables were a large collection of

THE "ANTIQUARY."—This periodical has now entered upon the second year of its publication, and continues to merit the approbation it won at the first for its well selected articles. Those whose idea of an antiquary is connected with "Dryasdust" will be most agreeably deceived on consulting the pages of this useful and well-edited periodical.

Lancashire Gooseberries, of large size and in fine condition, from Mr. M. Dunn, Dalkeith Park Gardens. The kinds were Souter Johnnie, Mount Pleasant, Iron-monger, Thunder, Queen of Trumps, King of Trumps, Whitesmith, Drill, Snowdrift, Goldfinder, Speedwell, Snowdrop, Leveller, Thumper, Forester's Red, Smiling Beauty, Hero of the Nile, Overall, Pilot, Railway, and Hepburn's Prolific. There was also from the same exhibitor a collection of very fine red, white, and black Currants. The kinds were Knight's Sweet Red, Jackson's Mammoth, Warner's Grape, and Red Dutch; of white sorts, cut-leaved and White Dutch; and the black variety, Black Prince. A Melon named James Grieve, weighing 10 lb., also a collection of flowers, from Messrs. Dickson & Co. The collection of flowers contained fine specimens of *Gladiolus ramosus* and *Ne Plus Ultra*, *Matricaria inodora plena*, double seedling *Potentillas*, *Pinks*, *Carnations*, and *Picotees*, a double flower of *Philesia buxifolia*, a flower of *Masdevallia ignea*, two blooms of *Dendrobium Pierardi*, also a flower of *Glycyrrhiza glabra* or *Liquorice* plant, all from Dr. Paterson, Bridge of Allan; white *Verbena* flowers from Mr. D. Smith, Bargany Gardens; a collection of hardy flowers in fine condition, containing *Agrostemma coronaria purpurea*; *Aster pyrenaica*, *Galega officinalis alba*, *Spiraea Ulmaria plena*, *Coreopsis lanceolata*, &c., from Mr. Robertson Munro, Abercorn Nursery; flowers of the Prince of Wales Clove *Carnation*, from Mr. Wm. Young, Broughton.

The following articles were exhibited at the meeting on July 6:—Six large fruit of President Strawberry, the largest weighing 2 oz., by Mr. J. J. Bowie, Hinchingsbrook, Huntingdon; seven plants of white *Violas*, from Mr. John Gray, Elginton Castle Gardens; sprays of *Desfontainia spinosa*, from Mr. Geo. Machray, Kelly House, Wemyss Bay; and a collection of *Campanula* and *Digitalis* flowers, from Dr. Paterson, Bridge of Allan.

Stone Horticultural: Aug. 5.—The twelfth annual exhibition of flowers, fruit, and vegetables was held under the auspices of the above Society in the beautiful grounds of St. Vincent Jervis, Esq., Darlston Park, near Stone, Staffordshire, on August 5. The committee may be congratulated upon the success attending their exertions. Not only have they been able to secure annually a grand display of cottage garden and higher garden products for the delight of the masses, but they have been able to give during the last seven years, out of the Society's earnings, over £230 to the local hospitals—an example worthy of more general adoption by successful societies. Two large tents were well filled with productions of a quality that would have been no disgrace to our metropolitan shows. The competition was good both among local exhibitors and those from a distance. Among the last-mentioned might be seen the well-known names of Messrs. Cranston, Hereford; Dickson, Chester; Chapman, Hawkesyard Park; Rabone, Alton Towers, &c.; whilst the local growers were well represented by Messrs. Stevens, Walton; Roberts, Leek; Myatt, Barlaston Hall, and others. On entering the large tent, or the one set apart for open competition, was the famous collection of plants from Hawkesyard Park, kindly lent on this occasion by Josiah Spode, Esq., great credit being due to Mr. Chapman, Mr. Spode's gardener, for the beauty of his plants and their arrangement. Among the most noticeable in this group were *Ericas* *Mar-nockiana* 4 feet through, and splendidly flowered; *E. Candolleana*, *Holfordiana*, and *Lindleyana*, little inferior in size and well flowered; a fine plant of *Phenocoma prolifera* *Barnesii*, *Dipladenia Brearleyana*, *Statice profusa*, *Ixora javanica*, &c. These, with a few good *Palms*, made this group all that could be desired. Opposite to it was a splendid group of *Orchids*, from the choice collection of W. Thompson, Esq., Walton (Mr. Stevens, gr.); these had a beautiful effect, being well filled in with young *Palms*, *Gloxinias*, and other small things; in the centre was suspended a basket of *Dendrobium chrysanthum*, with fifteen spikes, bearing 200 of its beautiful flowers; there was also a fine plant of *Odon-toglossum Alexandræ*, with four large spikes; the remainder of the group consisted of smaller but equally well-grown examples of *O. Alexandræ*, *Pescatorei*, and *Roezlii*; *Oncidium crispum*, *Cypripedium Veitchii* and *selligerum*, all nicely arranged and set off with *Palms*, *Ferns*, &c., forming in all a group of *Orchids* not often to be met with at local shows. Between these groups were arranged the stove and greenhouse plants for competition, which included some first-class plants, amongst them *Allamanda Hendersoni*, *Kalosanthes coccinea*, &c. Turning to the side tables the *Roses* formed a great feature, six boxes of twenty-four blooms each from Messrs. Cranston being superb, the judges awarding them a special prize of 3 guineas. In this collection was a splendid new *Rose*, Mrs. Jowitt, raised in the district, and which bids fair to oust some well-established favourites. Some first-class blooms were also shown by Messrs. Perkins & Sons, of Coventry; Messrs. Rock & Son, of Lichfield; and Messrs. F. & A. Dickson, of Chester. *Gloxinias* were well done, being mostly seedlings from the Messrs. Veitch & Sons, the flowers doing great credit to the quality of the seed sent out by that firm.

In the different classes for fruit there was very close competition, the *Grapes* especially giving the judges some considerable trouble to arrive at a decision. The 1st prize for black was awarded to Mr. E. Gilman, of Ingestre, who had a slight advantage in size of berry over his opponent—Mr. Heamen, Eaton Hall, Congleton. The prize for white was well won by Mr. C. Roberts, of Leek, with fine examples of *Tynningham Muscat*. For *Peaches*, Mr. Rabone, Alton Towers, was well 1st with a splendid dish of *Barrington*, being all that could be desired both in size and colour; the competition in this class was large. The 1st prize for *Nectarines* was taken by Mr. Rix, of Leek, for a well-

coloured dish. *Strawberries* were exceedingly well shown for the lateness of the season.

Tent No. 2 comprised the vegetables, the cottagers' productions being quite a show of themselves, and the quality quite on a par with that of the examples shown by professionals. Every class in which they could compete was well contested with vegetables of unusual excellence. Outside the tents the splendid band of the Royal Horse Guards (Blue), under the direction of Mr. Charles Godfrey, played a selection of music, which enchanted the ears of the visitors, whilst their eyes were gratified by the good things inside. Altogether, the people of the Staffordshire Potteries have to thank the Honorary Secretary (Mr. J. Lewis) and committee of the Stone Horticultural Society for providing them with such a day's enjoyment.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, AUG. 11, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						HYGROMETRI- CAL DEDUC- TIONS FROM GLASHER'S TABLES 6th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 18 years.	Dew Point.				Degree of Humidity. Sat = 100.	Average Direction.
Aug.	In.	In.	.	.	.	.	.	.	.	.	In.
5	29.59	-0.16	76.0	56.0	20.0	64.8	+ 2.7	55.7	72	S.	0.00
6	29.40	-0.35	69.3	57.0	12.3	62.9	+ 0.8	53.3	75	S.	0.02
7	29.25	-0.50	65.0	51.0	15.0	58.1	- 3.0	52.4	81	WSW.	0.17
8	29.50	-0.25	66.0	51.5	14.5	58.0	- 4.0	48.5	71	W.	0.11
9	29.86	+0.11	74.1	50.0	24.1	60.6	- 1.5	49.3	66	W.	0.03
10	30.06	+0.31	77.6	52.0	25.6	63.0	+ 0.9	50.5	64	WSW.	0.00
11	30.02	+0.26	78.1	57.0	21.1	65.4	+ 3.2	56.1	73	N.W.	0.00
Mean	29.67	-0.08	72.4	53.5	18.9	57.8	- 0.3	52.3	72	S. & W.	0.30

Aug. 5.—Fine bright morning. Fine day, but not sunny.

6.—Dull day, slight rain till 4 P.M.

7.—Fine morning, but sunless; slight rain during day. Barometer reading decreasing quickly all day, and was 29.01 at midnight. A heavy gale of wind.

8.—Wind decreased in strength early in the morning; occasional heavy showers, of short duration; a fine night, cold day.

9.—Morning fine but misty. A fine day and night.

10.—A fine bright warm morning, sunny till 6 P.M.

11.—A fine day, but sky was frequently cloudy.

LONDON: Barometer.—During the week ending Saturday, August 7, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.77 inches at the beginning of the week to 29.59 inches by noon on August 1, increased to 29.89 inches by the 3d at midnight, and decreased to 29.27 inches by the end of the week.

The mean reading for the week at sea level was 29.68 inches, being 0.04 inch less than that of the preceding week, and 0.25 inch below the average.

Temperature.—The highest temperatures of the air varied from 76° on the 5th to 60° on the 2d; the mean value for the week was 67° 6. The lowest temperatures of the air varied from 46° 5 on the 3d, to 57° on the 6th; the mean value for the week was 52° 6. The mean daily range of temperature in the week was 14° 9, the greatest range in the day being 21° 5, on the 3d, and the least 10° 2, on the 2d.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—1st, 55° 7, -6° 6; 2d, 55° 4, -6° 9; 3d, 56° 8, -5° 4; 4th, 62° 2, 0°; 5th, 64° 8, +2° 7; 6th, 62° 9, +0° 8; 7th, 58° 1, -3° 9. The mean temperature of the air for the week was 59° 4, being 2° 8 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 141° 5 on the 5th, and 134° 5 on the 4th. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 45° on the 5th, and 46° on the 3d; the mean of the seven lowest readings was 49°.

Wind.—The general direction of the wind was S.W., and its strength moderate till the 7th, when it was strong.

The weather during the week was mostly fine, but frequently cloudy, and but little bright sunshine.

Rain fell on four days during the week; the amount measured was 1.74 inch.

ENGLAND: Temperature.—During the week ending Saturday, August 7, the highest temperatures of the air observed by day were above 75° at Blackheath, Cambridge, and Sunderland, and below 73° at Plymouth, Nottingham, and Bradford; the mean

value from all stations was 74° 1. The lowest temperatures of the air observed by night were below 46° at Sheffield and Hull, and above 54° at Truro and Plymouth; the mean value from all places was 49° 2. The extreme range of temperature was 30° or more at Cambridge, Sheffield, and Hull, and less than 21° at Truro, Plymouth, Birmingham, and Liverpool; the mean range from all stations was 24° 9.

The mean of the seven high day temperatures was above 70° at Brighton, Cambridge, and Hull, and below 67° at Sheffield and Liverpool; the mean from all places was 68° 8. The mean of the seven low night temperatures was below 52° 5 at Wolverhampton, Nottingham, and Hull, and above 57° at Truro and Plymouth; the mean value from all stations was 54° 2. The mean daily range of temperature in the week was above 18° at Cambridge and Hull, and below 12° at Plymouth and Liverpool; the mean daily range from all places was 14°.

The mean temperature of the air for the week from all stations was 59° 8, being 2° 6 higher than the value for the corresponding week in 1879. The mean temperature was above 61° at Truro and Plymouth, and below 58° at Nottingham and Sheffield.

Rain.—Rain fell on four or five days at most stations; it was generally less than 1 inch at stations south of latitude 53°, and more than 1 inch at northern stations. On August 6 more than 1 inch fell at Sunderland, and on the 7th 1.25 inch fell at Sheffield, 1.10 inch at Liverpool, and 0.97 inch at Bradford; the heaviest weekly falls were 1.63 inch at Bradford, and 1.51 inch at Liverpool; the least falls in the week were 0.11 inch at Truro, and 0.30 inch at Plymouth.

The weather during the week was generally fine for the first three or four days, and cheerless for the remainder of the week; the barometer reading decreased rapidly on Saturday, August 7.

SCOTLAND: Temperature.—During the week ending Saturday, August 7, the highest temperatures of the air varied from 73° at Dundee to 66° 6 at Aberdeen; the mean value for the week from all places was 69° 3. The lowest temperatures of the air varied from 42° at Glasgow and Perth to 48° 4 at Edinburgh; the mean from all stations was 45° 1. The mean range of temperature in the week from all places was 24° 1.

The mean temperature of the air for the week from all stations was 58° 3, being 2° 6 higher than the value for the corresponding week in 1879. The mean temperature was above 60° at Edinburgh, and below 57° at Aberdeen.

Rain.—Rain fell to the amount of 2.47 inches at Greenock, and to 0.26 inch at Perth; the average fall was 0.87 inch.

DUBLIN.—The highest temperature of the air was 68° 8, the lowest 45° 1, the extreme range 23° 7, the mean 59°, and the amount of rain 1.05 inch; and in the week ending July 31 the values were respectively 68° 7, 47° 2, 21° 5, 58° 4, and 1.34 inch.

JAMES GLAISHER, F.R.S.

Variorum.

THE FLOWER GARDEN AT HECKFIELD.—The bedding arrangements at Heckfield this year are of a somewhat similar description to that which they have for several years been; plants of grave subdued tints are freely used to tone down those of brighter hue, which latter are sparingly introduced, so that there is a complete absence of anything that can offend the eye of those who object to bright colours. So far as possible in the planting of a garden in which the beds partake to some extent of the formality inseparable from a design of the modern style, all formality is absent. The effect thus produced is still further increased by the introduction of so many plants of distinct habit, and that grow to different heights above the carpet of low-growing things that cling close to the surface. Mr. Wildsmith continues to introduce more hardy plants into the arrangement. Those who are never satisfied, even in gardening matters, unless they can meet with something totally different to anything that has before been either seen or conceived, will no doubt, after once or twice looking at a flower garden, arranged as this is, want something fresh; but those who are pleased with a garden devoid of the extremes of being either over or under done, can scarcely fail to feel that the arrangements now carried out at Heckfield are such as to leave little to be desired.

MUSA ENSETE FRUITING.—This *Musa* is now fruiting at Mentmore, in the Palm-house, a lofty structure some 30 feet high; the plant is supposed to be eight or nine years old, and is at present growing

planted out in the centre bed of the house, where it has attained a height of some 25 feet; the inflorescence is similar in character to that of *Musa Cavendishii*, the individual flowers, as also the scales from under which they proceed, being of a like description and appearance, and keep on extending after a portion of the fruit is set, as is usual with *M. Cavendishii*, where the extremity of the flower-spike is not removed. Mr. Smith fertilised the first flowers that opened, and a considerable number are set and swelling off. So far as appearance goes, the individual fruits look as if they would be much rounder and shorter than those of the Cavendish kind. Moreover, they are not edible, but dry and pod-like.

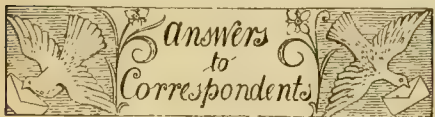
Enquiries.

He that questioneth much shall learn much.—BACON.

HORSE RADISH SAUCE.—Will a correspondent kindly give me a good recipe for making Horse Radish sauce? *E. T. M.*

LESBIA SPARROW.—*Apropos* of the sparrow question, will some one refer me to chapter and verse for the story of "Lesbia and her Sparrow?" In the picture in the National Gallery she is represented with a pair of scales in her hand, a blue(!) sparrow being in one scale-pan and some jewels in the other. *E. T. M.*

PLANTS FOR RECLAIMED LAND.—*F. F.* writes: "I have several acres of 'slub land'—that is, land reclaimed from the tide—in Belfast Lough. My employer wishes to have it cropped, and suggests Seakale. Would it thrive, if planted as the ground dries, or should manure be used? I have an unlimited supply of chemical manures. Can any one suggest any other crop that would be likely to succeed? The ground is thrown up in beds 5 feet wide, with a ditch which carries the water to where an engine pumps it out. There is a good deal of clay in it; this cracks in the sun, and mellows down in the frost. Any suggestion will be thankfully received."



CAMELLIAS: York House. Nothing can be done now for the flowerless Camellias. After the turn of the year you might put them in gentle heat, to excite the new growth, which, if the plants are in health, will probably set flower-buds in the usual way. The Gentiana is rather capricious about flowering.

CROTON: F. Lee. The yellow is bright and abundant, and if the plant is a good grower it is probably very effective and rich-looking. We have not seen anything like it.

GLADIOLUS: R. W. Your Gladiolus is affected by the disease which is unfortunately too well known by the cultivators of these plants. Neither the cause or cure are as yet very satisfactorily made out.

GOSETIA FLAG OF TRUCE: Daniels Bros. This pure white variety appears to be all that you say—a really ornamental plant, and a decided acquisition for decorative work.

INDEX: Anonymous. Do not look a gift-horse in the mouth, but send us as many suggestions as you please.

INSECTS: J. E. Sirex gigas.—*W. M.* Your young Scotch Firs are attacked by some kind of aphid, but we could not find a single specimen on the plant for identification. *I. O. W.*

LAWNS: Anxious One. We can only suggest that you may have got the grubs of the Daddy-long-legs feasting on the roots of the grass in the places where it has "gone off." If so, prick up the ground, pick off all you can detect, and sow again, but use very little Clover, as it will overpower the grass. Is the soil properly drained or of uniform depth?

NAMES OF PLANTS: T. Smith. *Melaleuca hypericifolia.*—*E. M. Saunders.* *Chlorophyllum orchidastrium.* *W. E. G.* 1, *Ilex insignis*, a native of Sikkim, described in *Flora of British India*; 2, *Carpenteria californica* is a Californian shrub allied to *Philadelphus*, but the flowers are not at present known; 3, *Bigelovia arborescens* is a Californian Composite shrub resembling a *Solidago*. These two are described in the first volume of the *Botany of California*, but are imperfectly known. We have seen neither in cultivation, but should doubt their complete hardiness. 4, *Fallugia paradoxa* is a roseaceous shrub, very like a *Geum* as to the flower and fruit. It is a native of Mexico.—*J. M.* 1, *Trichium Manglesii*; 2, *Cestrum aurantiacum.*—*R. M.* 1, *Lilium chalcidonicum.*—*E. Bullmore.* *Bocconia cordata.*—*S. Taylor.* *Melia Azedarach*, commonly called the Pride of India. A warm greenhouse, or even stove.—*T. S. P.* *Cratogeomys coccinea.*—*Foreman.* 1, *Butomus umbellatus*; 2, *Alisma Plantago*; 3, *Lythrum Salicaria*; 4, *Eupatorium cannabinum*; 5, *Eupatorium cannabinum*, white flowered variety—is it wild? 6, *Epilobium hirsutum.*—*F. Lec.* *Gypsophila paniculata.*—*Stanhopea.* *Stanhopea aurea.* The formation of the lip is very unusual.—*C. W. D.* 1, *Inula squarrosa*; 2,

Alyssum argenteum (*A. murale*); 3, *Gentiana septemfida*; 4, *Bupthalmum salicifolium.*—*W. M.* 1, *Gentiana asclepiadea*; 2, *Cimicifuga foetida.*—*N. Longford.* *Cheilanthes lundbergi* and *Zephyranthes carinata*—not hardy.—*H. C.* 1, *Boronia pinnata*; 2, *Selaginella uliginosa*; 3, *Riciniocarpus pinifolius*; 4, *Actinoloma minor*; 5, no specimen; 6, *Ionidium suffruticosum.*—*F. G.* *Clethra arborea.*—*Mrs. Price* *Krausea*. The scrap is insufficient to name.—*H. J. R.* A species of *Acropis*, probably *A. indica.*—*Camjee.* *Polypodium Paradisense*, the *P. pectinatum* of some authors.—*T. S. Ware.* The larger frond is an exaggerated form of *Lastrea Filix-mas*, and the two smaller ones *Polystichum acrostichoides.*—*C. E. F.* *Mentha arvensis.*—*H. Bowman.* A double-flowered *Datura*, but the specimens have collapsed too much to enable us to determine which.—*Connon & Reid.* *Ampelopsis Veitchii*, or, more properly, *A. tricuspidata.*—*J. Owen.* 1, *Woodwardia radicans*; 2, *Selaginella Kraussiana*; 3, *Blechnum occidentale*; 4, *Adiantum formosum*; 5, *Adiantum Capillus-Veneris*; 6, a *Nephrolepis*, perhaps *tuberosa*; 7, *Fuchsia microphylla*; 8, *Selaginella uncinata*; 9, *Abutilon megapotanicum*; 10, *Selaginella pubescens*; 11, *S. Martensii.*—*L. Y.* 1, *Phlebodium aureum*; 2, *Cystopteris bulbifera*; 3, *Doodia media*; 4, *Doodia caudata*; 5, *Selaginella uncinata*; 6, *Lastrea tenericulis*; 7, *Asplenium bulbiferum*; 8, (*bit*), *Pteris tremula*; 9, *Cyrtomium caryotideum.*—*W. R.* The Black Italian Poplar.—*C. J. C.* 1, *Funkia ovata*; 2, the common Silver Fir; 3, we do not recognise; 4, *Tacsonia eriantha.*—*Daniels Bros.* One of the *Gypsophila*, probably *G. paniculata*, but without better materials we cannot be positive.—*Wm. Smith.* *Streptocarpus Rexii*.

STRAWBERRY: C. B. & Co. The specimens, when received, were too much damaged for identification.

VERBENAS: T. Herbert. We can only suppose your Verbenas to be affected by something unfavourable in the soil. We have noticed many things dying off mysteriously during the present summer.

CATALOGUES RECEIVED:—*Wm. Cutbush & Son* (Highgate, London; and Barnet, Herts). Catalogue of Hyacinths, Tulips, and other Bulbous Roots; also General Catalogue of Stove and Greenhouse Plants, Hardy Shrubs, Roses, &c.—*Dickson, Brown & Tait* (Corporation Street, Manchester). Autumn Catalogue of Dutch and French Flowering Bulbs.—*John Laing & Co.* (Forest Hill, London, S.E.). Catalogue of Choice Bulbs and Bulbous-rooted Plants.—*Alfred Legerton* (5, Aldgate, London, E.). Wholesale Catalogue of Dutch and other Flower Roots.

COMMUNICATIONS RECEIVED:—*C. B.*—*G. S.*—*R. F.*—*A. G.*—*W. W. C.*—*J. H. B.*—*W. P. J. D.*—*A. G. W.*—*H. E. G.*—*T. W.* (*The Gardener's Monthly*)—*W. W.*—*B. H.*—*E. G.*—*T. W.*—*H. L. F.*—*W. W. C.* (We are utterly unable to answer your question; send your name and we will write to you).—*Th. B. E.*—*J. T.*—*F. S.*—*R.*—*C. N.*—*D. A.*—*R.*—*A. G.*—*E. R.*—*W. E.*

Markets.

COVENT GARDEN, August 12.

Trade is very quiet, and there are no alterations to notice. *James Webber, Wholesale Apple Market.*

FRUIT.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 0 3 0	Lemons, per 100 ..	6 0 10 0
Apricots, per box ..	1 0 1 6	Melons, each ..	2 0 5 0
Cherries, per ½-sieve	6 0 12 0	Oranges, per 100 ..	6 0 12 0
Currants, black,		Peaches, per doz. ..	4 0 8 0
½-sieve ..	9 0 11 0	Pine-apples, per lb. 1	6 4 0
Gooseberries, per		Raspberries, per lb. 0	3 0 5
½-sieve ..	2 3 3 6	Strawberries, per lb. 0	6 1 0
Grapes, per lb. ..	1 0 4 0		

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,		Horse Radish, p. bun.	4 0 ..
per doz. ..	4 0 6 0	Lettuces, Cabbage,	
Aubergines, per doz.	3 0 ..	per doz. ..	0 6 1 6
Beans, French, p. lb.	0 6 ..	Mint, green, bunch. ..	0 4 ..
Beet, per doz. ..	1 6 2 6	Mushrooms, p. basket	1 6 2 0
Cabbages, per doz. ..	1 0 2 0	Onions, per bushel ..	5 0 ..
Carrots, new, bunch 0	4 0 6	— Spring, per bun. 0	6 ..
Cauliflowers, Eng-		Parsley, per bunch. ..	0 4 ..
lish, each ..	2 0 3 6	Peas, English, per qt.	1 6 ..
Celery, per bundle ..	1 6 2 0	Radishes, per bun. ..	0 6 ..
Chilis, per 100 ..	3 0 ..	Small salad, pun. 4	0 ..
Cucumbers, per doz.	6 0 9 0	Spinach, per bushel	2 6 ..
Endive, per 2 doz. ..	1 6 3 0	Tomatoes, per dozen	2 0 3 0
Garlic, per lb. ..	1 0 ..	Turnips, new, bunch	0 4 ..
Herbs, per bunch ..	0 2 0 4	Vegt. Marrows, doz.	2 0 ..

Potatoes are all much lower, and prices down all round from 4s to 4s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Balsams, per dozen ..	4 0 9 0	Fuchsias, per dozen	5 0 12 0
Begonias, per doz. ..	0 12 0	Lilium auratum, per	
Bouvardias, per doz.	0 24 0	dozen ..	30 0 60 0
Calceolarias, per doz.	0 12 0	— speciosum, per	
Cockscombs, p. doz.	3 0 6 0	dozen ..	12 0 30 0
Crassula, per dozen.	0 18 0	Lobelia, per dozen ..	3 0 6 0
— large, per pair. ..	5 0 10 0	Mignonette, per doz.	4 0 9 0
Cyperus, per dozen	4 0 9 0	Myrtles, per doz. ..	6 0 12 0
Dracena terminalis	0 30 0	Nasturtiums, dozen	3 0 6 0
— viridis, per doz. ..	12 0 24 0	Palms in variety,	
Eucynimus, various,		each ..	2 6 21 0
per dozen ..	6 0 18 0	Pelargoniums, dozen	9 0 24 0
Ferns, in var. doz.	4 0 8 0	— Ivy-leaved, doz.	4 0 8 0
Ficus elasticus, each	1 6 7 6	— Tricolor ..	4 0 12 0
Foliage Plants, vari-		— scarlet, per doz.	3 0 9 0
ous, each ..	9 0 10 6	Rhodanthe, per doz.	6 0 9 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Pansies, 12 bunches	2 0 6 0
Bouvardias, per bun.	1 0 4 0	Pelargoniums, 12	
Calceolaria, p. bunch	0 9 1 0	— sprays ..	0 6 1 0
Carnations, 12 bun.	1 0 9 0	— zonal, 12 sprays	0 3 0 9
Cornflower, per doz.	3 0 6 0	Phlox, 12 bunches ..	6 0 12 0
Eschscholtzia, 12 bun.	3 0 6 0	Primula, double, per	
Eucharis, per doz. ..	4 0 6 0	bunch ..	1 0 1 6
Feverfew, 12 bun. ..	4 0 6 0	Roses (indoor), doz.	1 0 9 0
Forget-me-not, 12		— outdoor, 12 bun.	4 0 9 0
bunches ..	3 0 9 0	Stephanotis, 12 spr.	3 0 6 0
Gardenias, 12 blms. ..	4 0 12 0	Tropeolum, 12 bun.	1 0 3 0
Heliotropes, 12 sp. ..	0 6 1 0	Tuberose, per dozen	1 6 4 0
Mignonette, 12 bun.	2 0 6 0		

SEEDS.

LONDON: Aug. 11.—There is now rather more business doing in seeds. Trifolium incarnatum meets an increasing inquiry; the supply, however, still exceeds the demand. The new English Rape seed being exceedingly fine and remarkably cheap, readily finds buyers; for the moment the offerings of this article are liberal, which is explained by the fact that many growers are naturally anxious to turn their seed into money with as little delay as possible. Mustard keeps steady; some new samples may be expected in two or three weeks' time. Very few transactions are as yet reported in new Trefoil, white, or Alsike. Red Clover seed is neglected. In neither Hemp nor Canary seed is there any quotable variation. New English Rye has now come to hand. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was dull at Mark Lane on Monday, and the tendency of prices was in favour of the consumer. No change was quoted, owing to the paucity of business; but as regards Wheat prices were not quite up to the level of Monday's night. Barley moved off slowly, but grinding sorts were fairly steady in value. Malt was quiet and unaltered, and for Oats prices were much the same. Maize was somewhat firmer than last reported; Beans and Peas changed hands on former terms; flour met a limited demand, and prices were not very well supported.—The trade on Wednesday was dull, and as regards Wheat prices were certainly in buyers' favour. Barley was quiet, grinding sorts remaining steady. Malt was neglected. Oats were in pretty good supply, and quotations were hardly so well sustained in the absence of business. Maize was steady; Beans and Peas changed hands slowly on former terms. The flour trade was dull, with a declining tendency.—Average prices of corn for the week ending Aug. 7:—Wheat, 43s. 9d.; Barley, 25s. 7d.; Oats, 28s. 2d. For the corresponding period last year:—Wheat, 49s. 7d.; Barley, 26s. 11d.; Oats, 24s. 2d.

CATTLE.

At the Metropolitan Market on Monday prices for all kinds of beasts were rather lower than last week, and it was difficult to effect a clearance. In sheep choice English were scarce, and could not be quoted lower, the tendency was rather upward, otherwise trade was dull. Choice lambs only were in request, and the calf trade was unaltered. Quotations:—Beasts, 4s. to 4s. 8d., and 5s. 2d. to 5s. 8d.; calves, 5s. to 5s. 8d.; sheep, 5s. to 5s. 6d., and 6s. to 6s. 10d.; lambs, 6s. 6d. to 7s. 8d.; pigs, 4s. to 4s. 10d.—Thursday's cattle trade was quiet in tone. Beasts sold slowly at about Monday's prices. A feature as regards sheep was the presence of 1400 Canadian. Business generally was inactive on former terms. Calves and pigs sold at late rates, and lambs were steady.

HAY.

Tuesday's Whitechapel market report states that with a moderate supply and a fair trade prices were firm. Quotations:—Prime Clover, 100s. to 137s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 110s.; inferior, 30s. to 70s.; and straw, 30s. to 35s. per load.—On Thursday there was a moderate supply of fodder on sale. The trade was good except for common kinds, but prices dearer for best sorts, as follows:—Prime Clover, 100s. to 140s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 112s.; inferior, 30s. to 70s.; and straw, 30s. to 40s. per load.—Cumberland Market quotations:—Superior old meadow hay, 112s. to 120s.; inferior, 60s. to 90s.; new hay, 60s. to 92s.; superior old Clover, 126s. to 135s.; inferior, 90s. to 110s.; new Clover, 65s. to 105s.; and straw, 36s. to 42s. per load.

POTATOS.

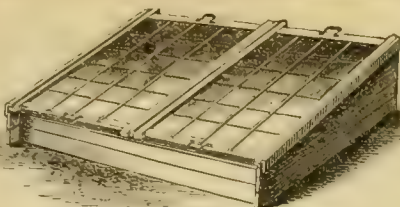
The Borough and Spitalfields Markets reports state that the arrivals have been to a fair extent, but there are numerous complaints of disease. The trade is slow at the following prices:—Kent kidneys, 7s.; ditto, Regents, 6s. to 7s.; Essex, ditto, 4s.; and Jersey kidneys, 6s. per cwt.—The imports into Southampton from the Channel Islands have been upon a moderate scale, but into London the arrivals have been unimportant.

Government Stock.—The closing prices of Consols on Monday were, for delivery, 98½ to 98½, and 98½ to 98½ for the account. On Tuesday the figures for the account were, 98½ to 98½, those for delivery being unaltered. The closing quotations of Wednesday were, for both delivery and the account, 98½ to 98½. The final quotations of Thursday were, for money, 97½ to 98, and 97½ to 98½ for the account.

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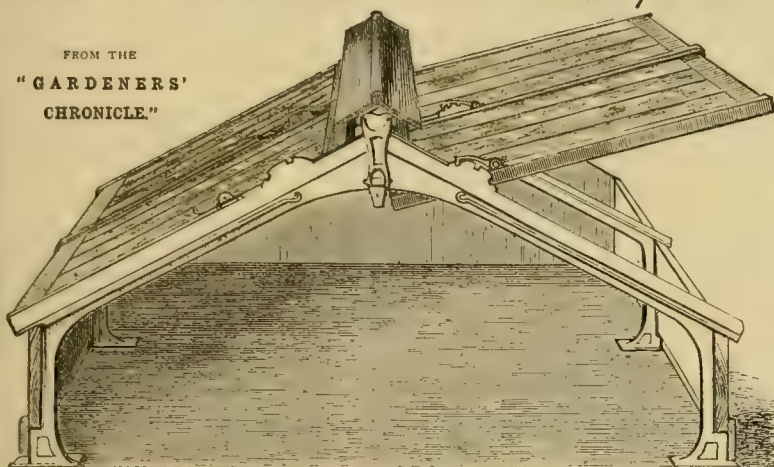
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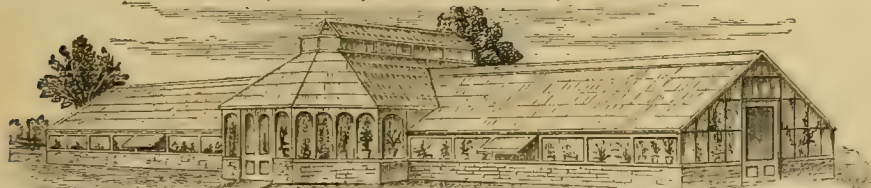
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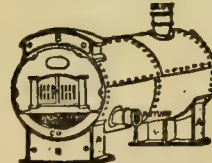
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GARDENER (SINGLE-HANDED).—Age 29, married, one child. No objection to a Cow or Horse.—A. C., Rose Cottage, Old Bracknell, Berks.

GARDENER (SINGLE-HANDED).—Age 30, married; thoroughly practical in all branches. Good reference from last employer.—G. W. MILLS, 2, Aveyley Road, Clapton, E.

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GARDENER (SINGLE-HANDED, or SECOND), where two or three are kept.—Age 23, single; good character from present employer.—A. G., Dowton, Stationer, 4, Maryland Road, Harrow Road, W.

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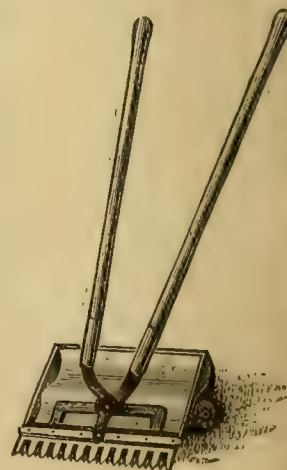
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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE!—COMMITTEES' MEETINGS.—Fruit and Floral, at 11 A.M. GENERAL MEETING, at 3 P.M. LECTURE by Mr. Frank R. Cheshire, at 3.30 P.M. on the Modern Inventions which have for their Object the Assistance of Bees in Storing Honey in Purity for the Benefit of Man, on TUESDAY NEXT, August 24. Admission, 1s.

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THE INTERNATIONAL POTATO SHOW will be held at the Crystal Palace, Sydenham, S.E., on SEPTEMBER 22 and 23. The Exhibition will be opened by the President, the Right Hon. the Lord Mayor of London. Last day of Entry, September 14. Schedules and all particulars to be obtained of J. A. MCKENZIE, Tower Chambers, Moorgate, London, E.C.

ISLE OF THANET FLORAL AND HORTICULTURAL ASSOCIATION AND COTTAGERS' GARDENING SOCIETY, will hold their TWENTY-FIFTH EXHIBITION at Dane Court, St. Peter's, on WEDNESDAY, August 25. C. D. SMITH, Hon. Sec. 5, Brook Terrace, Margate.

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MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. Grant to announce for SALE by AUCTION, on the Premises, Wester Hill Farm, Linton, near Maidstone, Kent, early in October, the above ROSES, comprising the best varieties in cultivation.

Catalogues may be had, when ready, at the Auctioneer's, 98, Gracechurch Street, E.C.

The Elms, Acton.

The principal portion of the excellent Furniture and Outdoor Effects of the Mansion

MESSRS. DANIEL SMITH, SON, AND OAKLEY have received instructions from the Executors of the late C. O. Ledward, Esq., to SELL by AUCTION, on the Premises, as above, on THURSDAY, August 26, and following day, at 12 o'clock precisely each day, the greater portion of the capital FURNITURE of the Residence, including a Drawing-room Suite, comprising an Ottoman, Couches, and Chairs, stuffed and covered in pale blue satin damask, and a lofty suite of Curtains to match; Cabinets, Centre and Occasional Tables, a Semi-grand Piano for Broadwood & Sons; and a Cottage ditto by Cramer & Co.; a Spanish Mahogany Pedestal Sideboard, set of extending Mahogany Dining-tables, indulgent and other Chairs covered in leather; Turkey and Brussels Carpets, the contents of numerous principal Bed-chambers, Wardrobes, and Bookcases, beautiful China Vases, a few Pictures, a capital Billiard Table by Burroughs & Watts, with the Fittings; and Outdoor Effects, including a handsome town-built Landau, equal to new, and a Brougham, a pair of handsome bay Carriage Mares, and a handsome nearly thoroughbred bay Riding Mare, set of Harness, a well-bred Shorthorn Cow, three Swans, a large collection of beautiful Exotic and Greenhouse Plants and Ferns, Garden Tools and Seats, Farm Implements, and other useful Outdoor Effects, which

May be viewed on Wednesday, 25th, and Catalogues obtained on week previous on the Premises, at the "Station Hotel" at Ealing, and of the Auctioneers, 10, Waterloo Place, Pall Mall, S.W.

The Elms is five minutes' walk from Mill Hill Park and Ealing Common Stations on the District Railway, and less than a mile from Ealing and Acton Stations on the Great Western Railway, also within a few minutes' walk of the Acton and South Acton Stations on the N. and S.W. Junction Railway, in communication with Broad Street, City, Kew, and Richmond.

Freehold Land, and extensive, valuable, and lucrative Gardener's, Florist's, Fruiterer's, Nurseryman's, and Seedsman's Business, as a going concern, in the county of Cumberland, for Sale.

MR. C. P. HARDY has been instructed to SELL by AUCTION, shortly, the entire BUSINESS, as a going concern, of the late Mr. Thomas Hamilton, of Botcherby. The Estate comprises 18 a. 3 r. 22 p. of superior Freehold Land, on which are erected extensive Vineries, Conservatories, Cucumber and Propagating Houses, Greenhouses, Dwelling House, with Outbuildings, Stables, Coach House, Barns, Byres, Piggeries, Potting and Packing Sheds, Boiler and Forcing Houses, Cottage, Strawberry Forum, &c., &c. The Glass Houses, which are mostly in splendid condition, are filled with the choicest Vines, Cucumbers, Melons, &c., the whole of which have been intelligently cultivated, and the adaptation of the best mode of heating and ventilating at the least cost is very demonstrable. A large portion of the area is covered with fine Forest and Fruit Trees, in all stages of their early growth, for which large orders can be promptly executed. In addition to the foregoing are beautiful varieties of all kinds of Decorative Shrubs and Plants, large Fruit and Vegetable Gardens, and the celebrated Botcherby Strawberry Beds. Besides these are the growing produce of several fields in the immediate vicinity, held under lease, the goodwill of which will be included in the transfer. Botcherby Gardens are situate 1½ mile from the Citadel Station, Carlisle, and are an intensely popular institution. Messrs. Hamilton, the owners, will show the property, which embraces magnificent building sites.

Descriptive Catalogues will be published, and may be had, with further particulars, at the offices of Messrs. DOBSON AND WATSON, Solicitors, 47, Lowther Street, Carlisle.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, August 25, at half-past 12 o'clock precisely, a consignment of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other BULBS, just received direct from well known farms in Holland. May be viewed the morning of Sale, and Catalogues had.

To Gentlemen's Gardeners, Florists and Others.
TO BE SOLD, the Lease of a lucrative MARKET NURSERY. Nearest approach to Covent Garden.—C. G., *Gardeners' Chronicle* Office, W.C.

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Within 7 miles of Covent Garden.

FLORIST'S BUSINESS, excellent and well-established, doing a good Market and Local Trade in Cut Flowers, Heath Growing, and Pot Plants. Comprises nearly 2 Acres of Land, with Three Houses, Pit and Potting-shed (belonging to freeholder), Seven large Span-roof Houses, Twelve Span-roof Pits, all heated by Hot-water Piping; Stabling, Office, and Shed, the property of Tenant. Lease twenty-four years at the low rent of £50. Price for Tenant's Glass Erections and Lease, £1500. No stock to be taken. Full particulars of Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

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TO BE LET, 2 Leant-to HOTHOUSES, 77 feet long each, Hot-water Pipes and Boilers complete; 1 Span-roofed Hothouse, 28 feet long, Furnace and Flues complete; 1 Lean-to Hothouse, 40 feet long, Furnace and Pipes complete; Potting-house, and 2-stall Stable; Counting-house and Desk. Rent £50 per annum. Stock and Frames, Manure, &c., £40. Large grounds, well planted. Or the whole to be SOLD on three years' AGREEMENT; no Rent; Hothouses, Frames, Trade Utensils, and Stock. Price £300. Immediate possession.

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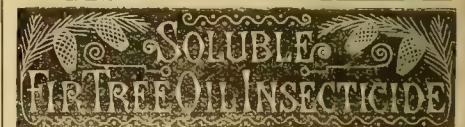
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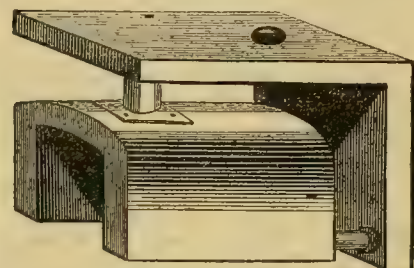
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20 "	18 "	24 "	400	8	0 0
20 "	18 "	30 "	500	9	0 0
24 "	24 "	24 "	700	12	0 0
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MEERS. WATSON AND SONS beg to announce that they can supply all the best of the early-flowering section by the dozen, 100, or 1000, in 48's; good stocky stuff, full of bud, and moderate in price.

Twelve of the best, including Snowflake, Captain Webb, and St. Croix, for 12s. Chrysanthemum frutescens and Etoile d'Or from 12s. to 18s. per dozen.—**WATSON AND SONS**, Marlborough Nursery, Halliford Street, Islington, N.



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"DEAR SIR,—The Cuttings arrived to hand per post in splendid condition, beyond all comparison to the lot forwarded per Parcels Express, although better packing than they had it has never been my lot to see.—Yours truly, W. H. HESFORD."

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HYACINTHS, TULIPS, CROCUS, GLADIOLI, &c., direct from the Growers, at Growers' Prices, delivered entirely free in London, Edinburgh, Leith, Glasgow, Hull, Liverpool, Dublin, Belfast, Bristol, Plymouth, and Newcastle-on-Tyne. Our complete and revised CATALOGUE, in English, for 1880, is now ready, and will, as usual, be handed to all Gardeners and Amateurs free on application to Messrs. MERTENS AND CO., 5, Billiter Square, London, E.C., or to ourselves direct. Early Orders requested.
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Trade LIST forwarded on application. The usual TRADE SALE will be held in SEPTEMBER.
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CALCEOLARIA, herbaceous, 1s. 6d. and 2 6
Post-free.

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THE

Gardeners' Chronicle.

SATURDAY, AUGUST 21, 1880.

FLOWERS, FLORAL DECORATIONS, FLOWER GIRLS, ETC.

IN the busy turmoil of everyday life, the people who carelessly pass along the street and jostle at the corners the vendors of sweetly scented flowers, or who bestow only a passing glance at the gaily-decorated windows of those whose business it is to sell cut flowers of many kinds, of varying form and hue, little dream of the enterprise, the variety of resource, the shifts, the labour, trouble, and vexation of spirit, the hopes, the rewards, the little romances, &c., that are the everyday associations of their peculiar work. The floral decorator has to deal with the varying moods of many-sided human nature; some sad, others merry and strange, and many ending as a general characteristic in some fact or romance associated with love, or marriage, or death. The profusion of flowers everywhere in the great metropolis, the marvellous cheapness of those sold in the streets, the brilliancy and tenderness of many of the finer and more choice blossoms which riches only can command, the universality of the decorated button-hole, all strike strangers unaccustomed to this display most forcibly, though they are taken as mere matters of course by him whose lot it is to be constantly passing along our main streets. It is quite certain that the latter is sure that he likes flowers, and that everybody else likes them, that if his friend marries or dies flowers will show his participation in the joy or grief he displays. He is aware that it is the correct thing to send flowers to the object of his love, and toss them to actresses; and his love and the actress look about their respective gay and perfumed boudoirs, and believe that flowers are as plentiful as they are beautiful. This is about as much as the average resident in the metropolis knows of the matter; but there is much more underlying it than he imagines, as he would find to his great wonder were he called upon to investigate the subject.

A writer in one of the "Society journals" states that some one who spends most of his time in the country, remarked that "till he came to London he never realised how fond English people were of flowers." Foreigners are credited with the same acknowledgment, and assert as a fact that in gloomy London more is seen in the way of flowers and floral decorations than anywhere else, and not alone does this apply to cut flowers in all the many forms and combinations in which they are employed and sold, but also to those used in windows and balconies—to the latter especially, as during the summer months they are especially pretty covering the railings, the long sprays from the climbing plants, and the graceful hanging baskets, drooping between the brilliant-flowered plants, while the window-boxes are aglow with colour—exquisite designs in window-boxes harmonising with the charming arrangements of the plants. Inside the houses there is a wonderful variety

in the style of the floral decorations, and the almost infinite variety of vases and other receptacles for flowers that are to be had to harmonise with every style of furniture give ample scope for the exercise of a talent (might we not say an art?) that is being brought to a higher state of perfection every day.

A successful bouquetist must needs be a true artist. It is by no means a gift given to every successful gardener—the capacity to construct a really good bouquet. It needs the quick perception, a fine knowledge of the harmonies and contrasts of colour that is a peculiar possession in women, the clever, rapid, and dexterous manipulation, and some of the tenderness of Nature found in the gentler sex to make a good bouquetist, and that is why it is the work falls so much to the lot of women. The living lines of grace and beauty, so necessary to perfection in the execution of the task, seem to be subtly connected with that soft delicacy which is the heritage of real womanhood.

There are certain laws or usages, or fashions, which govern the construction of bouquets. A bridal bouquet is invariably wholly composed of white flowers: fragrant Gardenias, white Roses, the wax-like Stephanotis, so sweetly scented; Jasmine, *Lapageria alba*, *Eucharis*, Lily of the Valley, Roman Hyacinth, Clove, and Pink, that have no dash of colour in the snowy petals; Orange blossom, *Bouvardia*, double Chinese Primula, lovely and chaste Orchids, &c., are the leading subjects. A birthday bouquet is composed of white and pink blossoms, or such as have pale tones, as if they should express a soft, pure solemn joy. In the matter of ball-room bouquets much depends on the mode and colour of my lady's dress. It is a general rule for the bouquet to match the dress, and this necessitates confidence between my lady, or her *modiste*, and the artist who constructs the bouquet. Sometimes it is deemed necessary to have bouquets in harmony with the hangings or prevailing decorations of the ballroom, and it occasionally happens that bouquets of a peculiar kind of flower or particular hue of colour are indispensable. Soft-toned button-holes, of a medium size, are preferable to large ones composed of flowers of pronounced hues, and the arrangement of a perfect button-hole is a task requiring taste and skill of no mean order. The button-holes one sometimes meets with at flower-shows are most repulsive in their gawky make and flaunting colours.

Memorial wreaths, for funeral obsequies, or for placing on the grave of a departed one, are always white, except in the case of a soldier's funeral, and then dashes of red are put in. *Eucharis*, *Stephanotis*, *Roses*, and such good solid-looking white flowers make the best memorial wreaths. These wreaths are now being made in a marvellously exact manner, in so far as the imitation of certain flowers are concerned, by Frenchmen and Germans, from both metal and porcelain, and they certainly possess the merit of being durable, as well as cheap.

Festive crosses are now much used for ecclesiastical purposes, for the celebration of certain festivals of the church. Some of these are large in size and massive in construction. White is the preponderating colour, and *Richardias*, known among decorators as *Arum Lilies*, white Lilies when in season, *Roses*, *Chrysanthemums*, *Eucharis*, &c., are employed in their formation.

Loopings and wreaths are now much used in the decorating of ball-rooms, and in the case of a Rose-ball only Roses are used, and sometimes of one colour, such as red. In addition *Rhododendrons*, *Carnations*, and other flowers grown in plenty are employed. Sometimes the wreaths are formed of mixed flowers, and this is generally the case with those used on staircases. Medallions play an important part very frequently in the case of ball-rooms and similar

large gatherings. These are made of various shapes, of stout tin or zinc, painted of a dark olive colour, with raised wirework on the upper surface. This is stuffed full of damp moss, and the stems of the flowers thrust into it. It cannot be expected the medallions should last fresh for a long time, but when carefully filled, and the design and arrangement skilfully chosen and executed, the effect is charming. We have known the medallions and loopings made wholly of scarlet *Rhododendrons* to suit the ordinary decorations of a ball-room, and the effect was very fine.

One of the most successful and unique pieces of work of this nature was carried out by Mr. John Wills a few years ago on the occasion of the visit of the Prince and Princess of Wales to Sheffield. A line of some forty floral bells of huge size were hung in a line over the arrival platform, suspended from the roof. They were formed of two wire frames, one within the other, the space between being filled with wet moss. The flowers employed were scarlet, white, and pink Zonal Pelargoniums; the number of trusses of each was something astounding, and each individual flower was carefully gummed at the base of the petals. There were scarlet bells with white and pink clappers, and white and pink bells with scarlet or pale-coloured clappers. There were also parti-coloured bells; and the execution of them was a work of immense labour. The hanging of these floral bells was a ceremonial of some import, and the distinguished success of this novel experiment was as perfect as could be desired.

The flower business in London is no small item in the commercial world. It is said to fall short of that in New York and San Francisco; but the money invested in it in London is something enormous. It would be difficult to take a census of all engaged, directly or indirectly, in furnishing the many things required in the floral decorator's work. It is reported, that in San Francisco there are "a large number of persons engaged in cultivating, arranging, and selling flowers, and there are three firms who are engaged in nothing else but making wire designs for the florists. These designs consist of horseshoes, marriage-bells, harps, hearts, crosses, pillows, pillars, columns, monuments, locomotives, ships, horns of plenty, stars, doves, butterflies, anchors, lettering—and almost everything else that can be imagined." Our Transatlantic brethren are evidently far ahead of us in extent and fertility of design in regard to their floral decorations.

The consumption of green moss in a season is something marvellous, and as fresh and suitable English green moss is difficult to procure the decorators have to fall back to a great extent on the moss imported from Germany. This is of two or three qualities, and some of it is dyed for certain purposes. Then there is wire; a large number of flowers have to be wired, and especially for bouquets, and for this purpose one of a thin substance, and almost as flexible as fine twine, has to be employed. A good and expeditious workwoman wires with great rapidity and precision. A good deal of mucilage is also used, and there are bouquet papers, some of very elegant design and expensive character, satin ribbon, and handsome bouquet-holders. It is necessary the floral decorator should have his business premises in a leading thoroughfare, where rent and rates are high, and thoroughly trained assistants have to be paid good wages. There is also considerable waste in the matter of flowers, and at certain seasons of the year high prices have to be paid for choice blossoms.

Into the question of the prices charged for bouquets it is perhaps a little invidious to enter. There are bouquets and bouquets. At this season of the year a good handful of flowers can be had for one shilling, and even for sixpence; but bouquets for special purposes,

as in the case of a Royal presentation, may cost as much as twenty guineas. Bouquets can be made to suit all degrees of purchasers.

How many females find a means of gaining a livelihood by selling button-holes, &c., in the streets of London may be inferred from the fact that a few days since 2000 flower-girls were taken down to Southend by special train, that they might enjoy a holiday in the country. Many of these girls are connected with properly organised bodies, known as flower-girl brigades, the leading aims of which are to preserve the girls to some extent from the dangers of the London streets; to encourage them to orderly conduct, and to call into play habits of carefulness and thrift. It will have been noticed that at this season of the year red *Roses* largely preponderate in the button-holes sold in the public streets.

Is there not much in this subject of flowers and flower decorations to interest and compel the attention of the philosopher, moralist, and philanthropist? Flowers possess a capacity to refine, and brutality and coarseness are softened into something less objectionable by their subtle influence. One of those great individualities of modern times—an interpreter whose teachings are always eloquent and noble, though occasionally fitful in their utterance—has managed to utter to this English race the great admonition that no art can ever spring up here unless it springs from the hearts and homes of the people, that never until the homes of the poor are happy can the mansions of the rich be truly beautiful. The philosopher recognises the fact that degrees of station in the social scale act and re-act on each other, and so those who are working to make flowers and their associations a means of appeal from a lower to a higher life, are surely doing Heaven's will in their day and generation. X.

New Garden Plants.

SCILLA (LEDEOURIA) TRICOLOR, *n. sp.*, Baker.*

This is a new Scilla of the lanceifolia group, which flowered at Kew for the first time this present summer. The bulb was received from Mr. Elwes, who thinks it was sent to him from the neighbourhood of Port Elizabeth. It comes nearest *S. zebrina*, Baker, in Saund. *Ref. Bot.*, t. 185, differing by its little blotched leaves, longer pedicels, and green flowers.

Bulb globose, 2–3 inches in diameter, with many brown tunics. Leaves 6–7, contemporary with the flowers, lanceolate, erecto-patent, moderately fleshy, glabrous, 1 foot long, 2 inches broad at the middle, narrowed to 1 inch at the channelled base, dark green, with a few blotches of lighter green on the face, suffused all over the back with claret-brown, with a few irregular streaky blotches of green in it. Scape flexuose, terete, 6–8 inches long, claret-brown up through the axis of the raceme. Raceme dense, oblong-conical, 2–3 inches long in the flowering stage, 1½–1¾ inch diameter; lower pedicels patent, ¾–1 inch long; bracts minute, green, linear. Bud oblong, ¾ inch long, constricted in the middle. Perianth-segments oblong, green both inside and out. Filaments bright mauve-purple, a little shorter than the perianth-segments. Ovary discoid stipitate, with two collateral erect ovules in each of the three cells. *J. G. B.*

ALBUCA ELWESII.

Albuca Elwesii, named and described in the seventh fasciculus of Regel's *Descriptions*, just received, is evidently identical, so far as can be judged from the description, with *A. Wakefieldii*, Baker, in *Bot. Mag.*, t. 6429. The plant is Tropical African, not Cape. It flowered first at Kew in the autumn of 1878, from bulbs received from the Rev. Mr. Wakefield through Colonel Grant, and we had it again this year from Mr. Buchanan from Lake Nyassa. *J. G. B.*

TILLANDSIA INCANA.

Tillandsia incana, named and described by Wawra in the part just received of the *Oesterreichische Botanische Zeitschrift* (1880, p. 123), is evidently,

* *Scilla (Ledebouria) tricolor*, *n. sp.*, Baker.—Bulbo magno globoso, foliis 9–8 synanthiis erecto-patentibus lanceolatis pediculis facie atro-viridibus maculis paucis pallidioribus notatis dorso saturato rubro-purpureis, scapo flexuoso semipedi ubique rubro-purpureo, racemo denso oblongo-conico pedicellis patentibus flore 2–3-plo longioribus, bracteis minutis linearibus, perianthii segmentis oblongis 2–2½ lin. longis utrinque viridibus, filamentis saturato purpureis, ovario stipitato.

judging from the description, identical with *T. Gardneri*, Lindl., *Bot. Reg.* 1842, sub t. 63, a plant which has been widely distributed in English gardens under the name of *Anoplophytum Rollissoni*, of which a full account will be found in *Gard. Chron.* 1878, vol. x., p. 461. *J. G. B.*

ERIOSPERMUM BREVIPES, Baker,* in *Journ. Linn. Soc.*, vol. xv., p. 263.

This is an interesting new species of *Eriospermum*, which I described not long ago in the *Journal of the Linnean Society*, from incomplete dried specimens. Now it has been introduced in a living state by Mr. Thomas Cooper from the neighbourhood of Algiers Bay. The plant from which my notes were taken flowered at Kew this present summer in July.

Rootstock an irregular tuberous mass, as large as a Potato, with a whitish epidermis, producing many scattered leaves and flower-stems. Leaves one to each stem, not produced till after the flowers are faded; petiole erect, 4–6 inches long, densely pubescent; lamina as long as the petiole, ovate, with inflexed edges, bright green on both sides, glabrous on the face when mature, pilose on the back. Peduncle green, terete, glabrous, $\frac{1}{4}$ –2 feet long; raceme cylindrical, 6–9 inches long, under an inch in diameter when expanded; pedicels not more than $\frac{1}{4}$ inch long, patent or erecto-patent; bracts lanceolate, nearly as long as the pedicels. Perianth campanulate, $\frac{1}{2}$ – $\frac{3}{4}$ inch long; segments oblong, incurved at the tip, white with a green keel. Stamens half as long as the perianth; filaments white, lanceolate; anthers minute, yellow, oblong. Style subulate, as long as the ovary; stigma capitate. *J. G. B.*

AERIDES PACHYPHYLLUM, n. sp.†

Amidst *Aerides crassifolium*, Par. and Rehb. f., appeared this one, having nearly the same leaves and a large inflorescence of several flowers, much in the way of those of *Aerides Thibautianum*, and with nearly as large sepals and petals, light crimson-lake. Spur and column white, the small lacinia of the blade of the lip on anterior part of spur painted with more or less warm purple; these laciniae are just as insignificant as the spur is preponderant. I have to thank for this surprise Messrs. Veitch, who appear to have been especially lucky with this plant, since, as far as I know, it never came in sight of that excellent observer, the Rev. Mr. Parish. *H. G. Rehb. f.*

MARKET GARDENERS' GRIEVANCES.

WHATEVER may be the nature of the suggestions which the market gardeners' representatives may lay before the Prime Minister, it is obvious that two of the most weighty grievances under which they labour are beyond the control of Mr. Gladstone, and out of his power to alter or alleviate. These are, season and rent. Like the farmers, the market growers suffer heavily from bad seasons. There are no crops so amenable to changes of temperature as those of fruit trees, and when these fail the loss is indeed heavy. During the past five years we know of numerous instances where fruit gardens have shown continuous losses, and vegetable gardens have, from various causes, but poorly paid. The only consolation derivable has been that the seasons being at fault no one could be blamed. Rent is now without doubt largely in excess of what is just. The extraordinary prosperity exhibited amongst all sections of the community a few years since acted upon rent, and it went up to an unnatural figure. Fruit orchards let on long leases at from £8 to £12 per acre, whilst open land varied from £5 to £17 per acre, and to this has been added heavy rates and taxes proportioned to the rental; and further, labour went up in price some 20 per cent., and has not since fallen. Any alteration in rental charges must rest with the tenants when their existing leases expire, and changes for better or for worse will have to be regulated by the nature and conditions of the trade then. Just now few gardeners care to tie themselves with long leases; they say land is becoming cheaper, and rent will yet come lower than it now is for un-

leased land, and therefore it would be folly to tie up their hands at present as in the past.

No doubt landowners will say that those who now take market garden land on lease at a lower rental may find it a good speculation because in a few years another wave of national prosperity and good seasons may return, and if such were the case the tenant would get all the best of the bargain. Landlords may also further say that in letting good land on long leases they practically exclude themselves for some time from any possible benefit that may result should the land be wanted for building purposes, and that is a contingency that may arise at any time where the land lies near to the metropolis. This very fact, however, is fast operating to the detriment of the tenant, because it is driving him farther and farther from his market into the country, and whilst rental and rating may be a little less the cost of transit of produce and manure is far greater. The produce of many acres of market garden land is now sent by road in vans from 18 to 20 miles, and manure returned over the same distance. That such is the case naturally leads to the subject of market conveniences, and it is one that in and around London presses with peculiar force upon the market gardener. No matter how far speculating builders may force him into the country his markets lie in the same central spot; in fact, he has to reach them to take his produce some 6 or 8 miles past the houses of the consumers that it may again pass back to them through the hands of greengrocer middle-men at a vastly increased cost.

Covent Garden, the Borough, and Farringdon Markets have a prestige that few new markets can hope for a long period to acquire, and it is this very prestige, and with it perhaps prejudice, that operate so disadvantageously for the grower. If we could have established large vegetable, fruit and flower markets at suburban centres like Hammersmith, Kilburn, Holloway, Bethnal Green, or Bow, Bermondsey, Camberwell, and Wandsworth there would be for the grower a great saving of distance in the transit of his goods, he would be brought more fully into contact with the consumer, and an immense increase in the consumption of vegetable products would result. This is a point wherein the Prime Minister or even Parliament might help but little except in the establishment of that great desideratum, a monster municipality for London, and then such a body, untrammelled by local prejudices, prestiges, or interests, might do for the metropolis work that it is now nobody's business to do, and perchance establish these local markets, as here designated.

It is in the two subjects of foreign competition and the incidence of rating that Government may be in a position to give real relief; but if there is any hope expressed that something may be done to check foreign competition, it may be sure that such a hope will be disappointed. London does not exist for the sole benefit of any body of traders, but for its inhabitants and the world at large; and that its millions of people should be fed, and fed well and cheaply, is of far more importance than that a few persons should be able to make a profitable livelihood. We will not, however, assume that it is even proper to complain of foreign competition, but that its existence is rather regarded as the inevitable outcome of our free-trade measures. The home growers may, however, desire to be placed somewhat upon an equality with the foreign grower in relation to local burthens and taxation. It is too obvious that during the past decade of years local taxation has been increasing in the metropolitan district at a rapid rate. Local boards, school boards, boards of guardians, police, county rates, and many other things have been accumulating until the camel's back is in danger of being broken at last. Builders convert a hitherto market-garden district into a suburban township; then comes the indispensable local board, with sewage, highway, paving, lighting, water, and other rates, things, and burthens not dreamt of when the market grower entered into his lease agreements. All these fall upon his shoulders to bear, and although, perhaps, all new taxation, not a penny is paid by the landlord. In outer districts school board rates, sanitary charges, new highway charges, increased county charges, all fall upon the tenant, who finds, perchance, within a few years of signing his lease, that local rating burthens have doubled, and he has to pay all.

In West Middlesex, where thousands of acres of land are under garden cultivation, we see how heavily the new Highways Act presses, for there are some most important arterial highways passing through it,

and towards the maintenance of these the county authorities are expected—if satisfied that the roads are kept in good repair—to make a contribution to the extent of one-half the cost. This arrangement is a charming example of legislative bungling, as whilst the respective parishes are supposed to receive this aid as an outside contribution, the amount is really paid from the county rates, towards which the inhabitants of the particular parish as well as those of all other parishes in the county contribute. The overseers of a parish make a rate for the quarter equivalent to all probable demands upon it for school board, poor, sanitary, police, and county purposes for that period. The board of guardians issue a precept upon the overseers for the amount out of that so collected that they require, and the guardians in like manner receive a demand from the county authorities for their share in the spoil. Then the county authorities repay back to the respective localities a portion of this amount in their possession for highway maintenance, or as a kind of subvention and local aid. The system is cumbrous and costly, and the expenses all fall upon the unfortunate ratepayers.

One large district now finds the justices refusing to pay over to the local board the sum of £2000 due as a highway subvention, on the ground that the roads are not well kept, a point which the local authorities dispute; and if not obtained, this sum will represent a heavy burthen to the ratepayers. But the market grower also asserts that his burthens are heavier than those of other people, because the bulk of the rates are raised from land, which is in this respect very unduly taxed in comparison to incomes from other sources. And it is not merely the land which he occupies which pays, but also his capital and industry, because if he converts farm land into a vegetable garden, one-third is added to the assessment, and if to a fruit orchard then it is double, and so on. Need it be said that the tenant bearing all these local burthens made on assessments increased by an artificial rental, and the owner bearing none, that the weight is fast becoming intolerable, and that a change in the incidence of local taxation is fully needed. In this direction the Government may give valuable aid to an interest that needs legislative sympathy and relief. *A.*

BRANCEPETH CASTLE.

THE name of this place, the seat of Viscount Boyne, in the county of Durham, which is understood literally to mean Brawn's Path, is like many other names derived from a circumstance which legend has handed down from remote times. It is said there once existed a wild brawn (boar) in this part, of immense size and terribly ferocious, and that after being long the terror of the neighbourhood it was destroyed—the exploit of the vanquisher, as is usual in such cases, being immortalised. We who live in the age of gunpowder and have grooved or smooth bore rifles, or even those before us with the old long-barrelled flint piece, or the still earlier matchlock with its pan and touch-hole, are not in a position to judge of the difficulty of contending against the wild animals that once held sway, and that had to be dealt with at close quarters, amongst which pig must have been most formidable. Brancepeth is not the only northern place where the wild pig was held in dread, for, if legend is reliable, at Barton, in North Lancashire, once owned by the Shuttleworths, one of these porcine terrors existed, and was killed, pierced through the brain by a weaver's shuttle. Then every well-to-do dame had her wool-cards and spinning wheel; the wool genuine homespun, not the shoddy mixture now sold under the name by the vendors of women's ware, was after being spun sent to the weaver, which individual, by the way, must have been a personage of no little importance, seeing that upon his handiwork much depended the quality of the cloth. One of these knights of the shuttle was attacked in a lonely path by the boar, on whose head a price had been set, with nothing to defend himself except a shuttle, which he plied so well as to cleave the skull of the animal, after which he took the name of Shuttleworth. On the neighbouring public-house, "The Shuttleworth Arms," the sign that used to hang and, for anything I know, still hangs, depicts the weaver's encounter with the boar. So much for names, which, so far as they relate to some things, have been said, and that by no ordinary authority, to have nothing in them. But it is a consolation to feel that these old manorial places, with their cherished old-world associations, are in no

* *Eriospermum brevipes*, Baker.—Rhizomato magno tuberoso; folio solitario post flores producto ovato petiolo piloso aequilongo facie saturato viridi glabro dorso piloso, pedunculo glabro $\frac{1}{2}$ –2 pedali, racemo cylindrico 6–9 pollicari, pedicellis flore sub-aquilongis, bracteis lanceolatis pedicellis vix brevioribus floribus perianthii segmentis albis viridi vittatis, staminibus perianthii duplo brevioribus, filamentis lanceolatis, antheris minutis luteis, stylo ovario aequilongo.

† *Aerides pachyphyllum*, n. sp.—Foliis carnosissimis, brevibus, apice obtuse ac inaequaliter bilobis; racemo brevi, paucifloro; sepalis tepalisque sub-brevioribus oblongo-ligulatis obtusis; lacinia mediana triangulari minuto; calcaribus cylindricis obtusis; ovum ovario pedicellatum excedente. Ex Burmah imp. cell. Veitch. *H. G. Rehb. f.*

danger of having their names interfered with, or the incidents from which they were derived forgotten, although these may have grown dim with the lapse of time.

Brancepeth Castle is situated some four miles from Durham: the approach is through the pretty village of Brancepeth, the neat cottages of which are remarkable for the way their walls are covered with creepers such as *Jasmines*, *Pyrus japonica*, *Cotoneaster*, *Pyracantha*, and kindred plants, that, independent of their flowers and berries, always impart a pleasing home-cared-for appearance. Like many more of the castles with which this end of the kingdom is so thickly interspersed, when first built it was not a castle in name only, for then a man's house was often very far from being his castle in the sense now understood, but only just so long as he could hold it against all comers. Most secure was he who by the advantages of site and strength of building, could bid defiance to assault. Brancepeth is reputed as the oldest castellated building in this part of the country; how old exactly, there seems to be no record, but its first existence is ascribed to a remote date, long before the Conquest. After passing through vicissitudes akin to those of most places of a similar description in these parts, the last old building, supposed to have been built about the close of the thirteenth century, ultimately passed into the hands of the Russel family, and was in a great measure pulled down and rebuilt by the late Matthew Russel, Esq., who began the work in 1817, and finished it in 1822; the rebuilding is represented to have cost a quarter of a million of money, as many as six hundred men being employed at one time upon it.

It is situated on the top of the steep sloping bank of a small rivulet, which it overlooks, the site doubtless chosen originally with a view to the natural defence offered, by the steep ascent from the defile below, at the bottom of which the water ripples on its course. It is of noble proportions as viewed from the exterior, and equally so when seen interiorly. In rebuilding, the original style, so far as regards massive strength, has no doubt been followed; the many magnificent rooms it contains are proportionate to the whole fabric, even including the courtyard, which occupies over half an acre, surrounded with frowning walls from 25 to 30 feet high, and 7 feet in thickness. The towers on this wall were raised considerably by the late Viscount—a manifest improvement to the building. A considerable portion of the inside of this courtyard is covered with a dense growth of Ivy, which is one of the features of this place; but it is not suffered to encroach on the parts of the original wall existent and clearly traceable. Eastward from the Castle at a short distance stands the church, a fine old building in the Early English style, in excellent preservation, but further ancient which neither the hurried visit I made, nor the exigencies of a description such as this, will permit of my speaking.

A very pretty and interesting flower garden is situated not far from the Castle on the ground sloping down in the direction of the stream of water already spoken of; it is principally arranged and filled with plants suited to the character of the place. One portion is laid out as a Rose garden, the plants on their own roots and kept low; these were mostly quite killed down last winter (the frost here was 14° below zero), they are now breaking again strongly from the bottom—one more evidence, if more were needed, of the advantage of growing Roses in this way.

The Castle is surrounded by extensive grounds, well wooded for this part of the country, where timber does not as a rule grow very large, but many of the old Ivy-clad trees give an air to the place in keeping with the general surroundings. The land is evidently good in quality, as shown by the close dense herbage, pasture for the cattle and deer, of which latter there is a considerable herd. The garden lies at a convenient distance from the Castle, and is situated on a fine open piece of ground. On the south side of the kitchen garden is a wide stretch of grass, kept mown, with some beds and a border flanking it, mainly filled with herbaceous plants and shrubs; and a walk leads through this in the direction of the gardener's house. I may here state that Mr. Dale, the present gardener, has held the situation since 1854, succeeding his father, who had been with the family here since 1796. There is an extended view from this point over the surrounding country for a long distance still fair to look upon, all but that, on close observation, the eye detects in the distance a

considerable number of those dreeds to gardeners and the lovers of unsullied landscape—chimney shafts from the collieries, that within the last quarter of a century have been springing up above-ground, indicative of what is gradually going on below the surface in this part of the country.

The various fruit and plant-houses commence at this point. First is an unusually big, roomy span-roofed house, containing a large number of succession Pines, for which fruit this place has long been noted. The construction and position of the house is such as to admit plenty of light to the plants, otherwise they would not succeed well, standing so close together as they are. Here many varieties are grown not usually met with; the more uncommon kinds, possessing less merit for their edible properties, are not kept in large quantities, simply a few being grown for the interest there is attached to them. The following sorts are present in greater or less numbers:—*Providence*, *Black Antigua*, *Antigua Queen*, *Globe Queen*, *Moscow Queen*, *Charlotte Rothschild*, *Prince Albert*, *Enville*, *Blood or Claret*, *St. Vincent*, *Surinam*, *Smooth Cayenne*, *Prickly Cayenne*, *Striped Sugarloaf*, and *Black Jamaica*. It may be said that some of the above kinds are so much inferior to the others as to make them not worth growing, which is no doubt correct; but considering that Pines ordinarily take up very much less room than other plants that require to be cultivated under glass with artificial heat, and the interest there is attached to this fruit, I think it well that some one should be found with spirit enough to keep up as complete a collection of the different sorts as can be had, particularly so at a time when, from the cheap rate at which foreign Pines can be obtained, and still more through their being looked upon as less fashionable than some other kinds of fruit, their cultivation in many gardens has been given up altogether. If fruit collectively was of no further use than to be looked at, then there would be more show of reason in discontinuing the growth of Pines, of which it may still be said that good home-grown examples of the best sorts stand, as they ever have done, at the head of all cultivated fruits. At one end of the centre bed in this house Bananas are grown and were fruiting; on the bed under the shade of the leaves of these plants a quantity of *Eucharis amazonica* are planted out and are doing very well, looking as strong and vigorous as they usually do when in pots, the shade they get not seeming to be too much for them. One side of the bed is allowed to get dry at a time so as to give them the necessary check and short rest requisite to induce their flowering.

There are two span-roofed houses devoted to fruiting Pines. A large number of *Calanthes*, including *C. Veitchii* and *C. vestita*, with its varieties, are grown in one of these houses, the heat and light they get here just suiting them, as these most useful of winter flowering Orchids like a high temperature, and the more light they receive the better, so that their leaves are not exposed to the full force of the sun in bright weather. Inside the walled garden there is a range of hip-roofed houses of considerable extent, the first of which is filled with greenhouse plants of the usual mixed character. The next is ainery occupied by *Black Hamburgs*, *Lady Downe's*, and *Venn's Muscat*, planted inside, with a good roomy border both inside and out. Adjoining is a small house containing stove plants, and some Orchids, amongst which I noticed good examples of *Cypripedium Lowii*, *Angræcum sesquipedale*, *Saccolabium guttatum* and *Dendrobium Dalhousianum*, with strong bulbs, near upon 7 feet in length. This house has a plant on the roof, which I have not before seen used for the purpose; on the back a strong example of *Pereskia* has been planted out which has attained unusual size: it has several branches that have each been trained to a rafter and there grafted with *Epiphyllum truncatum* in the usual way—they are trained along the rafters and allowed to hang down. When in bloom their bright flowers will have a pleasing and novel effect, and at other times they take off the bare appearance of the roof without shading the plants below too much. [There is or was something of this kind at Knowsley. EDS.]

We now come to ainery carrying a good crop, the sorts *Lady Downe's*, *Alicante*, and *Golden Queen*. The next is likewise ainery, in which are *Burchard's Prince*, *Trover's Frontignan*, *Seacliffe Black*, and *Alnwick Seedling*. This leads to a conservatory with the centre of the roof curvilinear and the remainder spans, right and left: it is filled with a miscellaneous collection

of flowering and fine-leaved plants. Adjoining this is a lean-to Peach-house containing *Pine-apple Nectarine*, and *Early Savoy* and *Princess of Wales Peaches*, bearing very good crops. Mr. Dale has grown fruit on the last-named tree that have weighed 12 oz. each. A similar house adjoining is planted with *Royal George* and *Princess of Wales Peaches*, and *Newington Nectarine*. On the back border of this house *Watercresses* are grown in the winter. By many it is supposed that this favourite Cress can only be cultivated where water is available, but such is by no means the case; and when a place can be found in a cool house it will come in regularly through the winter.

There is a very good kitchen garden of about $4\frac{1}{2}$ acres, with good flued walls, on which *Apricots* and *Peaches* have done well until the last two winters, during which the trees suffered much; the walls are fired in the autumn to assist the ripening of the wood, as well as in the spring to preserve the bloom. *Cherries* do well here, the soil appearing to suit them. A very complete collection is grown, of which the following are the principal kinds:—*Elton*, *Black Tartarian*, *Belle d'Orleans*, *Coe's Late Carnation*, *Belle de Magnifique*, *Black Bigarreau*, *Belle de Choisy*, *Duchesse de Palluau*, *May Duke*, *Nouvelle Royal*, *Royal Duke*, *Late Duke*, *Florence*, *Rival*, *Pontiac*, *Early Purple*, *Jean Downton*, *Morello*, and *Black Eagle*.

On a Pear tree growing on one of the walls in this garden I saw a singular instance of the effects of bark ringing. A big limb of *Duchesse d'Angoulême* that had been grafted on a *Jargonelle* was too strong to bear, some forty years ago Mr. Dale cut a ring of bark 3 inches wide completely out all round this branch; the edges of the living bark above and below the cut have gradually approached each other, but have never joined, and there is yet a space that admits of a person's finger being laid in it still as devoid of bark as the leg of a dining-room table, and externally does not appear to have any more life in it. This barkless part of the branch is now 9 inches in circumference, above the cut the branch is 18 inches in circumference: the whole branch above the cut seems quite healthy, but makes much less wood and rarely misses producing a crop when the rest of the tree fails.

It is no unusual occurrence, even in large establishments, to see the kitchen garden thrust into some out-of-the-way place, as if there was a necessity for hiding it, and where the surroundings are anything but favourable to the growth of the crops. This is not the case at Brancepeth, for a site has been selected for this department that is open, and commands a fine view of the country, which gives an air of cheerfulness, making it one of the best-looking gardens I am acquainted with. The vegetable department and the fruit trees are very well managed, systematic cleanly cultivation being apparent throughout.

Evergreen trees and shrubs do not appear to have received so much injury here as in some parts of the country, though the severe frost has left its mark. T. B.

DELABECHEA RUPESTRIS.

MR. WILLIAMS has distributed this pretty plant under the name of *Oleobachia palustris*, a name which appears to be entirely unauthorised, but which he received with the plant from America, and which has probably originated in some miscopying of labels. The accompanying illustration (fig. 45), from Mr. Williams' catalogue, well shows the ornamental character of the young plant, which, moreover, does not require to be grown in a strong heat, and is therefore all the more useful. Mr. Williams refers to it in these terms:—"This is a very elegant plant, having the general appearance of *Aralia Veitchii*, with green leaves; it has, however, an advantage over that plant, inasmuch as it succeeds well in a greenhouse temperature. The leaves are digitate, with five to seven filiform leaflets produced upon a simple stem, dark green, with a pale green midrib. This is a great acquisition as a table plant, and one that will become universally popular."

It is the Bottle-tree of North-Eastern Australia, and was described by Dr. Lindley under the name of *Delabechia rupestris*. Baron von Mueller referred it to *Brachychiton*—B. *Delabechii*, and in the *Flora Australasica* Mr. Benth makes it *Sterculia rupestris*. The late Mr. A. A. Black, writing in the *Treasury of Botany*, remarks:—"The Bottle-tree is of middling stature, and is chiefly remarkable for the curious form of the trunk, which is bulged out in the middle in the form of a barrel. The stem abounds in

a mucilaginous or resinous substance resembling gum-tragacanth, which is wholesome and nutritious, and is said to be used as an article of food by the aborigines in cases of extreme need. Dr. Lindley, in describing the tree, says, 'The wood has a remarkably loose texture; it is soft and brittle, owing to the presence of an enormous quantity of very large tubes of pitted tissue, some of which measure a line and a half across; they form the whole face of each woody zone. When boiling water is poured on shavings of this wood, a clear jelly, resembling tragacanth, is formed, and becomes a thick viscid mess; iodine stains it brown, but no trace of starch is indicated in it.' Usually the leaves are from 2 to 4 inches long, entire, stalked, and lance-shaped; sometimes, however, they are digitate, and composed of seven to nine sessile leaflets of the same form as the simple leaves. The digitate leaves are probably found only on the young plants." According to a note in the *Flora Australiensis*, it would seem that the luxuriant barren

touched with a few words on this subject (*Revue Maritime et Coloniale*) in 1861; but Sir William Macarthur was perhaps the first to argue, very many years ago, that our freedom from ague here was mainly due to our extensive myrtaceous vegetation, in which the Eucalypts are prominent, although species of *Melaleuca*, *Leptospermum*, *Bæckeia*, and some allied genera, are also gregarious in many parts of Australia. The incontestable sanitary effect of these prevailing Myrtaceæ throughout Australia, except in some of the tropical coast tracts, must be ascribed to a complex of causes:—1. The ready and copious absorption of humidity from the soil by Eucalypts and closely allied trees; 2. Their corresponding power of exhalation, much greater than that of many other kinds of trees; 3. Especially the evolution of peculiar highly antiseptic volatile oil; 4. The disinfecting action of the dropping foliage on decaying organic matter in the soil, Eucalyptus leaves themselves not causing any noxious effluvia through their own de-

perhaps other preservative particles, a few drops of oil added to water serving the same purpose. Other kinds of volatile oils act very variously in this respect. To Bacteria and other micro-organisms Eucalyptus oil proves as fatal as phenic acid; hence also, as Taylor observed, it may be injected into the veins and arteries of cadavers for purposes of preservation. Flesh of any kind is as well preserved by Eucalyptus oil as by creosote, while beef sprinkled with it will dry hard without putrefaction. This writer is inclined to attribute the hygienic action of the oils of Eucalyptus and Pines simply to their high oxydising power exemplified in the decomposition of miasmata. He recommends Eucalyptus oil to be applied as an admixture to dressings in gangrene. (See *Report of the Department of Agriculture*, Washington, 1876, pp. 82—86).

Sénateur Comte Torelli, who has been commissioned to initiate the extensive culture of *E. globulus* on the malarian swamps near Rome, informs us that



FIG. 45.—*DELABECHEA RUPESTRIS* (OLEOBACHIA, HORT.).

branches also bear the digitate leaves, which are not found on the fertile branches. *M.*

EUCALYPTUS GLOBULUS.

(Concluded from p. 214.)

OUR Blue Gum-tree has, on the whole, exercised already on regions of the warm temperate zone a greater influence, scenic, industrial, and hygienic, than any other single species of arboreous vegetation ever reared anywhere, even Pines, or Oaks, or other classes of leading trees, not excepted. Thus it has transformed the features of wide formerly treeless landscapes—has already afforded in many places timber and fuel for rapidly increasing settlements, and rendered also many a miasmatic locality permanently habitable. The sanitary influence of Eucalyptus vegetation was surmised by more than one of the early Australian settlers, who, however, were reluctant to place their conjectures on public record without positive investigations and final proof. Monsieur Ramel

composition. Thus during maceration for artistic skeletonising Eucalyptus leaves, unlike almost all other kinds of foliage, give off no disagreeable odour, as first observed here by Mrs. Dr. Lewellin. The disinfecting and deodorising virtue of the tree being unquestionable, it has even been placed in the wards of Continental hospitals, a measure initiated by Drs. Mosler and Goetze, of Greifswald, and here insisted on by Dr. Alexander Buettner. The fresh bruised leaves can with advantage be employed for the dressing of wounds to prevent or subdue septic inflammation, especially when no other remedies are at hand.

Possibly the Blue Gum-tree is even a better scavenger of back yards than a Weeping Willow, and in so far safer as it does not intrude into the foundations of buildings, and leaves no putrefying foliage. Indeed the sewage question of cities in the warm temperate zone would become very much simplified if each house had at its rear the evergreen Eucalyptus tree. Mr. Th. Taylor found that albuminous compounds could be preserved in water, which by mere maceration of leaves of *E. globulus* had absorbed some of their oil and

at Gaëta a specimen of this tree, among those planted by Royal order in 1854, was about 100 feet high in 1878, showing a basal circumference of 11 feet. But Dr. W. von Hamm, of Vienna, who purposely visited Italy in the interest of Eucalyptus culture, saw still larger trees at Lago Maggiore, one of which in 1878 was fully 120 feet high, and was supposed to be twenty-eight years old. At Hyères a tree raised from seed in 1857, according to Dr. Ravaret-Wattel, had attained in 1875 a height of 67 feet, with a circumference of 7 feet towards the base of the stem. As far north as Nizza a small seedling, planted in 1869, had risen in 1874 to a tree of about 50 feet in height, with a circumference of 3 feet of the basal portion of the stem. At Malaga, according to Dr. Planchon, a specimen attained in six years 65 feet. Still greater celerity of growth is shown by *E. globulus* in temperate regions of tropical mountains, where equality of temperature is combined with moderate continuous humidity. Thus Mr. Brace wrote to me from the Neilgherri Hills of the Madras Presidency, that his Eucalypts had attained an average height of

20 to 25 feet eighteen months after the seeds were sown! Nearly the same wonderfully quick development was noticed in Réunion. Many other instances of the marvellous quickness of growth could be adduced if it were necessary, as we have witnessed such ourselves as near as the banks of the Yarra of our own city. But the extraordinary rate of growth becomes soon retarded if the subsoil is not deep and friable; still, if such is the case, then the tree will succeed surprisingly even in poor soil, particularly if such is not altogether too dry. Naturally the species is almost restricted to humid valleys of mountainous country, or to lower slopes of forest ranges, though in culture it accommodates itself to most sorts of soil with singular readiness. On the storm-beaten rocks of Wilson's Promontory I have seen it profusely in flower and fruit, though dwarfed by exposure to the size of a mere shrub when almost within the reach of oceanic spray. The tree is, however, quite adverse to saline ground, and seems to avoid also soil containing much lime, as noticed likewise by Monsieur Lambert in the forest department of Algeria. As regards the greatest height, which under most favourable circumstances it will attain, it does not fully come up to the stupendous loftiness of *E. amygdalina* and *E. diversicolor*, but is one of the very few ranking in this respect next to them in the genus, while under ordinary circumstances it surpasses them all in the early and easy yield of copious fuel and subsequent timber—*E. rostrata* (with *E. tereticornis*), *E. marginata*, and perhaps *E. sideophloia*, standing foremost in the lastingness of their wood, *E. amygdalina* again in hardness and in the yield of essential oil, *E. calophylla*, with a few other Bloodwood trees, in the flow of Kino sap, *E. microcorys* in the copious pervasion of a viscid-like oily fluid throughout its wood, *E. rostrata* again, with *E. Gunnii*, in their fitness for swampy ground, *E. hæmastoma* for its adaptability for sand lands. Thus, though Nature distributed also in this instance her gifts variously, it placed for the general requirements of mankind *E. globulus* in the most favoured position among this race of highly valuable trees.

As regards quick rate of growth, it may still be added that the variety reigns of *E. amygdalina* surpasses even *E. globulus*, but only when occurring (as Swamp Gum-tree) in springy forest glens with deep rich soil. General Sir William Denison seems to have arrived at the conclusion, from observations at Hobarton, that *E. globulus* will continue its upward growth in deep nutritive soil for about eighty years, after which space of time the tree will only enlarge in the girth of its stem and branches. It is evidently a species of longevity, but the age of 2300 years allotted as possible for *E. globulus* (Langethal, *Kalender der Pflanzen*, pp. 103—104) is evidently vastly overrated, because the less regular intermediate rings between the annual layers of wood, apt to be formed in trees of the zone of evergreen vegetation, are easily mistaken for the results of a year's growth, and the circumference of a stem-base of 130 feet, on which Professor Langethal based his calculation, is so startling, that it cannot be taken as that of a solid stem-barrel, but must have included basal buttresses, however gigantic dimensions the tree is known to attain in deep sheltered and irrigated recesses of forests. Rob. Brown, already at the commencement of this century, saw on D'Entrecasteaux's Channel some stems which exhibited a girth of 40 feet towards their base. Baron von Humboldt stated the height of *E. globulus* as 230 feet as extraordinary among the records of tall trees known at his time. The Rev. Mr. Ewing actually measured a tree showing a height of 280 feet, and the Rev. James Backhouse, whose accuracy can also be implicitly relied upon, gives in the work on his missionary travels the height of the tallest tree seen by him in Tasmania as even 330 feet. Mr. James Dickinson informs me that at South Port he noticed a tree of *E. globulus* far exceeding in girth even the mightiest of *E. amygdalina*; of this particular tree a local shipwright declared that it contained as much timber as would fully suffice to build a 90-ton schooner solely from it. The stem of this venerable patriarch of the forests measured about 150 feet to the first limb.

Whether in the comparisons of the tallest trees of the globe we perhaps have lost sight of a fact, that a fallen tree of Sequoia (or Wellingtonia or Athrotaxis gigantea) is said to have shown an approximate length of 450 feet, can now, after thirty years, perhaps no longer be affirmed, unless similar astounding results are again attained in the vast extent of Sequoia or

Athrotaxis forests only recently rendered accessible in Southern California.

The aboriginal appellation of *E. globulus* among the Gippsland tribes is "Ballook," according to Mr. A. W. Howitt. *Ferd. von Mueller, Melbourne.*

AZALEAS PLANTED OUT.

ON the Continent, as particularly noted in Belgium, with the longer and much more continuous sunny summers than we get, the method of growing Azaleas planted out in prepared beds is followed. The little compact low standard examples we so often see and admire, with their dense heads of bloom, are the result of this treatment. The plants are turned out of the pots and planted in the beds as early in spring as the danger from frost will permit, and here make their growth and set their flower-buds, after which they are taken up and housed out of the reach of frost. This method has been followed at the Ascot Nursery for two or three seasons. A sheltered square fully exposed to the sun is chosen, and long beds of a breadth such as to admit of the plants being attended to for water are excavated to a sufficient depth and the space filled up with good peat, sand, and some leaf-mould, keeping the surface about 2 inches lower than the paths between the beds, so as to prevent the water given from running away. Here the plants are turned out about the end of May. The stock so treated is similar in size to the Continental plants already alluded to, and also some smaller. This season a quantity of this spring's grafting were put out early in July. The whole are suffered to remain until into September, when they are taken up, potted, and immediately placed in a gentle heat of about 55° by night, with a little more in the day. Here the buds already forming are plumped up, and the roots at once lay hold of the new soil. In seven or eight weeks from being housed they are fully established; the warmth is then shut off, and from this until spring they are kept quite cool. Last summer, what with the cold weather and absence of sun, it might have been supposed the treatment would not have answered, but the growth made and bloom-buds set were much in excess of plants kept in pots in the houses and treated in the usual way. The advantages of the method with small plants are that the watering does not take one-tenth part of the time that would be required if in pots. The soil is kept in a uniform condition for moisture, consequent upon which more root and top growth is made, the plants are quite free from thrips or spider, which, together with the leaves being formed under full exposure to the light, causes them to be retained a deal longer than they would if produced under the usual conditions—which is so much gain in strength for the following year. The system as here carried out, with the few weeks fire-heat to finish them up in the autumn, evidently effects a saving in labour, and also secures a better growth than ordinary greenhouse management will. It answers in the south of the kingdom but would not be likely to succeed further north, neither could it do for any but small plants such as described. It is also a very different thing to the turning out of the ordinary sized or large plants in pots immediately after flowering, as is often practised, with all the soft tender growth upon them, and frequently with a numerous progeny of thrips, or red-spider, to boot, that ruins the foliage, after which the wood is small and puny, and the blooms poor in like manner. The gain under the system at Ascot is reckoned to be, that in two summers the plants make as much growth as they do in three when confined to the pots wholly. With the further experience of such a summer as the last, notwithstanding which the plants did well, the value of the practice for this kind of stock is further established. *T. B.*

INTERNATIONAL CORN MARKET AT VIENNA.

—A Reuter's telegram to the *Daily News* states that the International Corn and Seed Market was opened at Vienna on August 16, Herr Maschauer, of Vienna, being elected president, and Herr Sting, of Stuttgart, Vice-President. Statistics published of this year's crops in Austria-Hungary estimate the condition to be as follows, taking the average at 100:—Wheat, 98; Rye, 97; Barley, 109; and Oats, 107. The quantity available for export is estimated as follows:—Wheat, 5,000,000; Rye, 6,000,000; and Oats, 4,000,000 centals. In other European countries the yield of Wheat would be middling or good; of Rye inferior or bad; whilst Barley and Oats are very good. The American crop is as large as in 1879, but inferior in quality.

CHILDREN'S GARDENS.

THE value of the garden for educational purposes is, unfortunately, very much overlooked. Any one who will give the subject fair consideration, and who will look abroad over London, can scarcely fail to be impressed with a conviction of the waste involved in the dreary little patches of ground everywhere to be seen in a condition of utter neglect. There is not one of those patches which, if parents and teachers were only competent to give a very little intelligent oversight and direction, might not become, to an important extent, a school capable of inculcating some of the most important of practical lessons, as well as a source of health and of the cheapest and simplest pleasure. The neglect is undoubtedly vexatious, but it seems to be of little use to waste sentiment over these little town deserts, and to wish that the children of the poor could have the benefit of the schooling they might give, when those who enjoy good gardens, and have the means of making any use of them they may think fit, as well as the intelligence which might, one would think, be sufficient to enable them to value them highly for practical educational purposes, are so rarely found making any sensible and systematic use of them.

The tastes of children vary, perhaps, as much, if not so decidedly, as those of their elders, and there are some who find greater amusement and satisfaction than others in gardening pursuits. In a general way, however, it may be safely said that there must be something a little out of the normal in any child who cannot be interested in them. Children love flowers as naturally as ducks love water, and it always adds immensely to the enjoyment of any form of activity in which they can be engaged, to know that it has a practical and useful purpose. It was on just such a principle that the Prince Consort encouraged the young members of the Royal Family to cultivate garden plots, and had a kitchen conveniently fitted up near the Swiss Cottage for them to cook the fruit and vegetables they grew, thus importing into their proceedings an element of practical usefulness and earnestness. That, however, may be considered one of the "base uses" to which a garden may be applied. It may be made to contribute in an equally practical and powerful way to the higher culture of children. How infinitely more entertaining such a study as botany or vegetable physiology must be made if the dry teaching of the class-room and lesson-book were illustrated by the plants that were being coaxed into bloom in their own flower-beds. What a pretty combination of outdoor and indoor employment, again, for a child to cultivate flowers, and then to draw them in outline as they come into bloom. What could possibly be a more healthful and wholesome occupation for an intelligent child than to collect the prettiest of wild flowers from their native pastures and hedgerows, and cultivate them in the "wild garden" at home? All sorts of knowledge must be gathered up in such a pursuit, involving as it would the necessity for observations of the favourite haunts of the various flowers, the effects of different soils, their mode of propagation, seasons of bloom, &c., and the inquiry must often be made to lead away into collateral topics—the folk-lore associated with them, fairy tales and poet fancies, and historical associations. Then, again, how easy and appropriate to make flowers the means of drawing out sympathy with neighbours, or with the sick and suffering at a distance. A child's natural love for such objects becomes more intense when they are led to grow them for the purpose of brightening some home into which they rarely come, or some life of sadness and suffering. Apart from any special object, the cultivation of flowers always exerts a refining and humanising influence, and it is especially the case where a child's sympathy and affection can be enlisted in the work. No more charming figure can be conceived than the little Dauphin of France—the unfortunate son of Louis XVI. and Marie Antoinette—bringing his daily offering of flowers from his own garden to his mother's bedside. Throughout the summer it was always a very important point with the child to be up in time to get a bunch of fresh flowers of his own cultivation to lay upon the Queen's pillow, and he took a never-failing delight in concealing himself in the bed-curtains to see the gratified smile with which her Majesty opened her eyes upon them. The sweetest and best of the flowers were always for his mother, and he would work with all his tiny strength to keep up a proper supply. His governor frequently would have to interfere with his efforts under a broiling sun, and would beg to be allowed to call the gardener to do the work. "It is too hard for your Royal Highness," he would urge. "No, no," the boy would plead; "please do let me, mamma likes flowers so much better when she knows

that I have tended them." On the morning of the Queen's birthday it was suggested once that the young Prince should present her Majesty with something from his own garden, accompanied by a compliment of his own making. "I have a beautiful evergreen," said the little fellow, "I will present that to her, and I will say, 'My dear mamma, may you resemble this.'" *Globe.*

REMARKS ON THE FRUIT CROPS.

RAINY, sunless seasons, following each other in close and repeated succession, has reduced the production of outdoor fruit in Warwickshire to almost nothing. Perseverance is an admirable quality, but there appears to be a limit even to this—when perseverance of a pursuit may cease to be either praiseworthy or profitable, and drop to the level of a folly. This appears to be the case with some of our English grown fruit, such as Apples and Pears. Apricots, Peaches, and Nectarines can be grown in quantity, under glass, sufficient to supply the ordinary demands of families who can afford glass to grow them, and these can be supplemented by excellent tins, and cheap, from the garden farms of California. But as to Apples, the most sensible thing to do is to buy of the Americans all that may be required for either dessert or kitchen use—and to buy from time to time only as they are required. There is the Newtown Pippin, the Russets, and the Baldwins, all of which reach this country in excellent condition, and are far superior to anything we can grow, unless under the most favourable circumstances of climate and situation. Growing Apples, now, in this country, appears to be about as great an absurdity as the craze, in some quarters, of growing Oranges. Of the latter we can get a shipload for an old song, and Apples from America almost as cheap. Whether a glacial period is drifting upon us I cannot tell, but evidently as a fruit and grain-growing country we are drifting from bad to worse. Is the Gulf Stream withholding its genial climatic influences, or are those currents drifting to other regions? Such changes of Nature are slow, but they have been and they may be again. Our geographical position on the earth's surface is that corresponding with the latitude of Labrador. Let the Gulf Stream withhold or change its hitherto salubrious influence and we are at once frozen up with perpetual frosts and snow, as they are in that country, and those amongst us who prefer to remain on this island will gradually grow or change into pretty little Esquimaux. *Wm. Miller, Combe Abbey Gardens.*

—The fruit crop of the present year may be described as a singularly partial one—in some places an abundance, in others a complete failure. Sheltered situations are the most favoured. The late spring frosts, although very frequent, were not severe, and did not appear to do any direct damage at the time, but the long-continued dry, cold east winds were most destructive. Pear blossom in the Society's garden was fairly abundant, but the crop of nearly every sort is very poor, except Hessel. Apples: many of the trees suffered most severely from the past wet summer (1879) and the severe frosts of the last winter. In the market gardens round here many hundreds of trees are nearly killed, such varieties as Golden Noble, Cox's Pomona, Dumelow's Seedling, &c., suffering most. Keswick Codlin, Manx Codlin, Stirling Castle, Small's Admirable, and Lord Suffield, which last year were heavily cropped, are again this year most abundant. These are undoubtedly the best paying market Apples. Plums: the crop of these in the Society's garden is almost *nil*, whilst in that of Mr. Dancer, where the trees are comparatively sheltered and growing under the shade of tall Apples, &c., the crops on the following varieties are immense, viz., Denyer's Victoria, Prince of Wales, and Pershore—the latter is especially noteworthy, as being heavily cropped last year; Mitchelson's is also fairly well cropped. Gooseberries and Currants in the Society's gardens, where they are grown exposed, were a complete failure, whilst with Mr. Dancer, where they form an undergrowth, the crop has been enormous. *A. F. Barron, Chislewick.*

—Collectively the fruit crops on this side of London are poor, but they vary much with the condition of the trees. Apricots set freely, but many have fallen off. In some places where the practice is followed of thinning the shoots of Peaches more than usual in summer, retaining no more than required for fruiting, and even these thinner on the walls than many growers

keep their trees, the wood got ripened last summer, and there is a full crop that has required thinning out; but where the shoots were at all crowded last year the buds were small and weak, and the fruit is thin. My impression is that we often err in keeping the trees too full of wood in the summer, and after such seasons as the last its worst effects are seen. As to Pears, and the best kinds of dessert Apples, wherever found bearing a full crop this season it is invariably where the trees, either by being taken up or the roots freely pruned, show a greater disposition to set bloom than to make wood. This I have noticed to be the case in every part of the country that I have had an opportunity of seeing. Some of the hardier kinds of Apples are bearing a full crop in this neighbourhood. Plums are mostly carrying enough fruit. *T. Barnes, Southgate, N.*

—Fruit trees of all kinds bloomed abundantly with the exception of Peaches and Nectarines, on which there was scarcely any blossom, consequently there is no fruit worth naming; the trees, however, are making healthy growth, and giving promise of better things in time to come. Cherries and Plums are carrying good crops of fruit of less than average size, and the trees are growing less than usual, which I think may be attributed chiefly to the droughty character of the spring months. The few Apples and Pears that promised a partial crop some time ago are now falling off prematurely. Small fruits are abundant and good, but Strawberries were much damaged by heavy rains. *F. Harrison, Knowsley, Lancashire.*

—Since the formation of the garden here in which fruit is grown (upwards of fifty years ago) there has not been such a scanty crop of all sorts (small fruits excepted), grown outside, against walls and as standards; I might almost with truth say of many sorts we have none, all are most unhealthy, and of some sorts many trees are dead. The cold and wet summer, and unusually long and severe winter, have told sadly on fruit and ornamental trees here. *Robert Bowie, Chillingham Castle, Northumberland.*

—With regard to our fruit crops there was a fine show of everything, but the weather from March to May was very severe, vegetation receiving a great check. Apples and Pears are almost a failure in this locality, also Peaches and Apricots. Plums are very fine. Morello Cherries are quite a sight. Damsons, of which we only count upon having a crop once in seven years, are this year very fair. Figs on the open wall are very fine this year. We always manage to ripen a crop in North Northumberland, not a very favourable climate for outdoor fruits. *David Inglis, Howick.*

—Apricots were very deficient in bloom, and the majority have set no fruit. Plums very abundant, and the quality good. Cherries are the finest crop for some years—the Morello very fine; Peaches and Nectarines are scarce: the trees have made good wood and look healthy. Apples and Pears put forth an abundant bloom, but do not appear to have had sufficient strength to carry the fruit beyond the mid-summer drop, and are consequently much below a fair average. Wasps are becoming over average and very troublesome. *John Cox, Redleaf, Penshurst.*

—The wet, cold summer and autumn of 1879 had a very bad effect on the crops of Apricots and Peaches of this year because the wood was not ripe. Pears suffered after they appeared to be set with the cold spring, and fell off. Apples are an average crop, but we escape the late spring frosts because we are 400 feet above sea level. Strawberries have been the best crop I ever knew, and the best late kind is Loxford Hall Seedling. Gooseberries, Currants, and Raspberries are very good indeed, and the unprecedented rainfall in June (2½ inches) and July (3½ inches) has had no bad effect on them. Figs are about an average crop; root-pruning and stopping the shoots twice during summer brings that about. *J. Rust, Eridge Castle, Kent.*

—There are no Apples or Pears in any of the very fine orchards round Loughborough and along the whole line of road to Leicester, a distance of ten miles. *James McLean, Beau Manor.*

—The present year will be notable in this district for an almost entire absence of Figs, Peaches, and Pears. Apricots are thin, but unusually fine, and the trees I never saw looking better. All kinds of Plums—with the exception of Damsons—are laden, and, with favourable weather to ripen, the crops will be the best known for years. Cherries bloomed and set well, but the Morello is the only

kind which has or is likely to finish a satisfactory crop, as most of the other sorts cast the fruit while small. Strong constitutioned Apples are bearing heavy crops, but tender kinds little or none. All kinds of small fruits have done well. Heavy mulchings and the extra rain Strawberries had last year enabled the plants to produce quantities of splendid fruit. *A. Lancaster, Holkham, Norfolk.*

—The fruit crops on the whole in this district are far below the average, the imperfect maturation of the wood being particularly noticeable, especially among Peaches, Nectarines, and Apricots, which are almost a failure. Apples are very light, Cellini Pippin, Alfriston, Hawthornden, and Lord Suffield being the most fruitful. Pears are a very poor crop, the following kinds bearing the best:—Beurré Diel, Louis Bonne of Jersey, Williams' Bon Chrétien. Plums set well, but have since dropped, leaving them about half a crop. The same also may be said of Cherries, except Morellos, which are more plentiful. *G. Bethell, Sudbourn Hall, Suffolk.*

—All fruit trees suffered here most severely last winter, and many are now in a very unhealthy state. We have no Pears on the standards, and but a very mean crop on the walls. Apples are almost a failure, the only trees which have any on worth mentioning are Keswick Codlin and Easter Pippin. Plums and Damsons are quite a failure on standards, and much under average on the walls. Strawberries have been most abundant, but owing to the frequent heavy storms the Strawberry season has been the shortest I have ever known. *I. Dell, Stoke Rochford Lincolnshire.*

—Some, at least, of the dismal apprehensions conceived after the dark summer of 1879 as to the prospect of a crop of fruit in 1880 have been here, I am sorry to say, too fully verified. To commence with Apricots, Peaches, and Nectarines. Some of the trees are either destitute of fruit or carry the most meagre apology for a crop. Apricots, fine young healthy trees, had no blossom. Some of the Peach and Nectarine trees, in spite of frost, were clad with green leaves up to Christmas last, and in some instances, on the grosser shoots, green leaves survived till pruning time in February. The fruiting wood was sparsely set with diminutive blossom-buds, but such of these as did expand were too small and ill-shaped to inspire the slightest hope of a crop of fruit. At present, although somewhat weak, the trees are clean and healthy. Cherries, especially the Morello, on walls have been and are a good crop. Plums blossomed abundantly, but the crop is by no means heavy, and both fruit and foliage are dirty from insects. Pears are very scarce indeed, a scarcity which will be much felt. The majority of our Apple trees blossomed most abundantly, but only a moderate crop of fruit is left to ripen. Bush fruit, including Currants and Gooseberries, has been plentiful and good. Strawberries a fair crop, but suffered from wet weather, Fig trees nearly killed; no fruit. Filberts are a short crop, and Walnuts, which at one time promised a good crop, have shed their fruit. Indoor crops of Peaches and Nectarines have been fine and good. *J. Wallis, Orwell Park, Suffolk.*

—Plum trees are weighed down with fruit, and the trees must be propped. Cherries a plentiful crop and fruit good flavoured, trees clean. Peaches very good crop, and trees very healthy. Apples splendid crop on all early kinds, late sorts not so even, some carrying a good crop, others thin. Pears splendid crop on all early kinds and stewing sorts. *W. Denning, Combe Lane, Norbiton, Surrey.*

—In consequence of the unfavourable season of 1879, the growth of all outdoor fruit trees during the spring months was most unsatisfactory, and although we had an abundant bloom, and the fruit appeared to set well, the greater part has fallen off, a local Plum, called the Pershore Plum, being almost the only exception: this variety is bearing a heavy crop. Standard Pears are quite a failure, and on the walls the growth appears sickly. Apricots suffered very much, many of the trees being killed. Peaches are making a good clean growth, owing no doubt, in a great measure, to the absence of fruit. From what I can learn we are favoured in the Apple crop; the fruit I fear will be smaller than usual, but well coloured. *Walter Child, Croome Court, Severn Stoke, Worcester.*

—Several Apricot trees were killed last winter, also Peaches and Nectarines, and all appear to have been much injured by wet and frost. In an orchard of 80 acres on the farm here most of the trees are bare,

what fruit there is being very poor. The bloom was crippled by green-fly. Plums on standards are very partial, on walls better. *Arthur Barker, The Gardens, Hindlip Hall, Worcester.*

— In the orchards here I have not seen so little fruit during the last twenty years, and what there is is small and will require a fine autumn to bring it to perfection. Apricots under Parham's glass copings are a good average crop: one tree, the Early Orange, had 400 fruit on it. *A. Bye, Hampton Court, Hereford.*

— The fruit crops generally in this district (excepting small fruits) are very poor. Apples on espaliers have a fair show of fruit, but on pyramids and bush trees very few. The cider orchards (for which Herefordshire is famed) are almost destitute of fruit. Pears are very scanty here: there are a few on the cordons, and on those principally that bore little fruit last year. The Apple trees that have fruit on here are principally Lord Suffield, Ecklinville Seedling, Cellini, Gravenstein, and Stirling Castle. *A. Young, The Gardens, Holme Lacy, Hereford.*

— The present season so far may be considered an extraordinary one. In the early part the want of rain was felt everywhere, and a dry season was predicted. However, when the rain came it came in earnest, and we have had no cause to complain of drought since. The showers and severe storms have been too frequent for farmers; but gardeners cannot complain so much, as I do not remember ever seeing vegetables better. The fruit crop is not up to the average owing to the almost total absence of sunshine since last year, and there was so much wet last autumn that few things ripened their wood. *E. Miller, Old Sneed Park, Bristol.*

— I think that the report of the fruit crop for 1880 will not on the whole be considered a favourable one, nevertheless it is as good as it could reasonably be expected to be, considering the adverse nature of the weather during the present and past years. Peaches of the following varieties are carrying good average crops:—Violette Hâtive, Téton de Venus, and Bellegarde, all being protected by cloths in the spring; also Apricots, of which there is a good average crop, some of the trees—Shirley's and Moor Park—being very heavily cropped. Plums, taking one tree with the other, might be termed an average crop. The following varieties are bearing good crops:—Green Gage, Lawrence's Favourite, Kirke's, red and white Magnum Bonum, Fonthill, Coe's Golden Drop, Mitchelson's, Nectarine Plum, Reine Claude Violette, Reine Claude de Bavy, Denyer's Victoria (always a sure bearer), Pond's Seedling, Prince Englebert, Jefferson, Washington, and Orleans. Pears under average. The following kinds are nicely cropped:—Beurré Langelier, Beurré Rance, Duchesse d'Angoulême, Dunmore, Louise Bonne, Knight's Monarch, Marie Louise, Glou Morceau, Beurré de Capiaumont. I never remember such heavy crops of small fruits, including Strawberries and Raspberries. Apples are very scarce. Wall fruit trees promised well in the spring, but at the stoning time—always a critical period for stone fruit—50 per cent. of the fruit dropped off, owing to the want of stored up sap, in consequence of the unripe state of the wood. Morello Cherries are very plentiful and good. *H. W. Ward, Longford Castle, Salisbury.*

— The fruit crops this season are mostly over average; the exceptions are Pears, which are again almost a total failure; Peaches and Nectarines are under; Apples much under. I have observed some orchards in sheltered situations with a fair sprinkling of good-sized fruit. We have a few trees bearing heavy crops of such sorts as Keswick and Manx Codlin, Hawthornden, Northern Greening, Lord Suffield, King of the Pippins, &c.; and the trees as a rule are healthy, and making good buds for another season. *A. Ayson, Oxton House, Kenton, Devon.*

— When we remember the unfavourable—I may almost say unparalleled—conditions under which fruit trees made their growth last year, it is not to be wondered at that crops generally are far below the average this season. The want of sunshine and the excessive wet which continued over the whole growing season last year, immediately succeeding a winter of protracted severity which decimated fruit blossoms to an extent as to leave the trees practically without a crop, no doubt contributed in a great degree to increase the difficulty of keeping them in anything like a fertile state. The wood being therefore not only soft, but also badly matured, was not in a fit state to pass unscathed through two consecutive winters in which the temperature was unusually low, and,

except in high-lying districts, fruit trees have lost considerably by canker and gumming. Upon the whole, however, we must not complain. A fair sprinkling of Cherries and Plums, and an abundance of small fruit, such as is seldom exceeded in any season, is a good deal to be thankful for, among much that is disappointing. Pears and Apples are very light in this district, but all fruit trees promise well for another season. *W. Hinds, Canford, Dorset.*

CHANNEL ISLANDS.

Very little fruit is grown on these islands except Apples, the crop of which this year is much below the average; most of the trees blossomed well but failed to set, I think more for want of vigour in the trees by reason of the previous wet and sunless summer than from the cold spring; but on the other hand I think the previous wet season was favourable to small fruit, and especially Strawberries, for the crop has been abundant and good with us. *Geo. D. Vallance, Tresco Abbey Gardens, Isles of Scilly.*

— This has been the worst year for out-of-door fruit that I have experienced during my twenty years' residence in Jersey, and I can only account for it by putting it down to the cold, wet summer of 1879. The wood of all kinds of fruit trees was more or less soft and unripe. *James Pond, The Vineries, Jersey.*

— The outside fruit crop, as a rule, this year is very unsatisfactory, and but little else could have been expected from last summer's excessive rains. The staple fruits of the island (in a commercial sense) are Grapes and Figs, and the quantities exported annually to the London markets are great. *Chas. Smith & Son, Caledonia Nursery, Guernsey.*

SCOTLAND.

The fruit crop, on the whole, is fully as good as could be anticipated after such a disastrous season as 1879, but an average crop of fruit is a rare exception in this district this year. In most places Apricots, Pears, Peaches and Nectarines are a blank, or at best a very poor crop. Apples are more plentiful, but only the hardiest and most prolific sorts, such as Keswick Codlin, Hawthornden, Warner's King, Lord Suffield, Stirling Castle, Duchess of Oldenburg, Manx Codlin, Margil, Cellini, King of the Pippins, and the like are bearing a fair crop. Plums and Cherries are a good average crop, and the fruit very fine. Strawberries were much cut in some places with the severe frost of last winter, reducing the crop and weakening the plants, so that the fruit was not so fine as usual. Currants, Gooseberries, and Raspberries in sheltered positions are abundant, and the sample very fine. Nuts are scarcer than they have been for years. Spring frost did very little injury, but the severe frost of December, following such a season as the last, killed or severely injured the young wood and fruit buds of many fruit trees, especially Peaches, Nectarines, Pears and Walnuts. Insects have been very troublesome, particularly on wall trees, and still persist in their attacks; otherwise the season's growth looks promising and healthy. *Malcolm Dunn, Dalkeith Palace Gardens, Midlothian.*

— There is generally in this neighbourhood a great scarcity of good fruit, the late cold wet summers being succeeded by such severe winters, that many of the varieties of Apple and Pear trees are all but killed, so that it will require a good season or two before they regain their usual health. Peach and Nectarine trees will have to be almost wholly replaced, and Apricots are also much injured. The severe early winter succeeding the cold summer and autumn has been equally disastrous in the shrubberies, even English Yews and Hollies of large size are killed, and in some cases the Oak trees are injured. This place is situated in the vale of the Tweed, and of course liable to damp, being near the river. The thermometer in December descended as low as 12° below zero. *Wm. Fowler, Mertoun Gardens, St. Boswells.*

— In this district Apples are very scarce; we had plenty of blossom, and the fruit set pretty freely, but they have nearly all fallen off. Pears as a rule are a complete failure. Plums and Cherries, a poor crop. There are no Peaches grown outside here, but under glass they are carrying heavy crops, especially early sorts; later ones are scarce. Small fruits are very good. Strawberries have been an extraordinary crop, Garibaldi, Comte de Paris, President, James Veitch, and Duke of Edinburgh, have done best.

Fly and caterpillar have been very troublesome this season on nearly all sorts of fruit trees and bushes, and the woods and gardens are swarming with wasps which are very destructive to the ripe fruits. *James Dickson, Arkleton, Dumfries.*

— Small fruits in general are very plentiful in this neighbourhood, and of good quality; and Strawberries are most particularly fine both in quantity and quality. The chief kinds grown here are Vicomtesse Héricart de Thury and Elton Pine, of which tons were daily sent to the market. *Donald Matheson, Meiklour, Perth.*

— Fruit trees suffered immensely in this locality during the past wet summer and previous long cold winter. The amount of dead wood on both wall and standard trees at last pruning-time was more than we have ever encountered, consequently the blossoms were in general poor and sterile. Apples and Pears are all but a failure, and much affected with insects. Plums on walls, such as Kirke's, Jefferson, Coe's Golden Drop, Washington, Victoria, Green Gage, and Lawson's Golden Gage, carry an immense crop, and the trees are very clean; while standard Plums are a failure. *G. Donaldson, Keith Hall, Aberdeen.*

— Apples on standards are almost a complete blank; on wall trees they are a good average, Lord Suffield and Keswick Codlin on walls yielding in most cases a heavy crop. Gooseberries are a fair average; the same may be said of black Currants, though I believe in some districts they are scarce. Early Strawberries were scarcely worth gathering; late Strawberries, principally Elton Pine, a grand crop, and unusually fine in quality. *D. Melville, Dunrobin, Sutherland.*

— The fruit crop in this district is the worst I have known for twenty years. Last season being so wet and cold the wood did not ripen, and there were sharp frosts in the spring which punished the trees. *John Sutherland, Langwell, Berriedale.*

WALES.

Apples and Pears are the lightest crop I have known in this island, and the quality of the little fruit we have promises to be very indifferent. Small fruits on the whole have been abundant and good. Strawberries suffered much from continuous wet or showery weather. I find no sort to stand a wet summer so well as President. Of Plums, Green Gage, Victoria, Mitchelson, Purple Gage, and Washington, succeed best. The climate here is bad for stone fruits, except Cherries, which do well on walls. *J. E., Anglesey.*

— Notwithstanding the cold, bleak summer of last year, all fruit trees were clad with blossom, with the exception of Peaches and Nectarines, whose case was hopeless from immature wood. Pears almost dropped by wholesale when setting, and what succeeded in sticking on will be comparatively small, but clean-skinned. Nuts of all sorts were deficient of catkins, fruit blossoms being plentiful. All sorts of Strawberries were most plentiful, although late and comparatively small, they being prolonged up to the present moment. Gooseberries and black and red Currants were large, and very heavily laden. *P. Middleton, Wynnstay, Denbigh.*

— With a few exceptions, there never was a better promise of a crop of Apples and Pears than there was this season, the trees being covered with an abundant healthy bloom. I think the failure must be attributed to the cutting easterly winds and sharp frosts which prevailed during the flowering period. Here, and in a few other well-sheltered places in the county, there is a good crop of Apples, and a fair one of Pears. Plums have also been somewhat injured by the fly. *G. Griffin, Slebech, Pembroke.*

IRELAND.

It was anticipated everywhere that this would be a disastrous fruit season, after such a year as last, and the result has fully borne out that surmise. All the gardens I have seen lately are in nearly the same predicament—an almost total failure of Apples and Pears. With me Plums are an exception; I have a full average crop on the walls, and some standards are pretty fair. All our trees are, I am glad to say, perfectly healthy. I was somewhat surprised to see such a bloom on fruit trees as there was this spring, after such an untoward autumn, and a good deal of fruit set, but it nearly all fell off again. Currants (red, white, and black) good. Gooseberries not half a crop, which I attribute to the most determined attack of caterpillar last July and August. I ever witnessed, completely denuding the bushes of every vestige of green leaf. Hand-picking was of no possible use, they were so small and numerous; anything that would destroy them would ruin the fruit. This year I have been again visited, but not to such an extent. *James Garnier, Kylesmore Castle, Galway.*

LAEKEN.

DURING the recent meeting of the Brussels Horticultural and Botanical Congress the members were invited to visit the palace, winter garden, and park of the King's residence in one of the suburbs of Brussels. The palace has no very noteworthy architectural features, but the view from the central hall on the one side, including as its central feature the recently erected memorial to the late King, and on the other side a prospect over the park across the lake to the distant

is heavy and oppressive. The circle of massive stone columns looks strong enough to support the great Pyramid. The Palms, noble specimens as they are, look dwarfed and lost in the great vault; among the finest are the large Sabal, Caryota sobolifera, *Astrocaryum mexicanum*, *Attalea speciosa*, *Arenga saccharifera*, *Latania borbonica*. Most of these are planted out in the borders. The undergrowth of Ferns, *Selaginellas*, and fine-leaved *Begonias*, is admirable. The wings extending on either side of the dome are planted with *Camellias*. Eight boilers, of which six only are in general use, are required to heat this

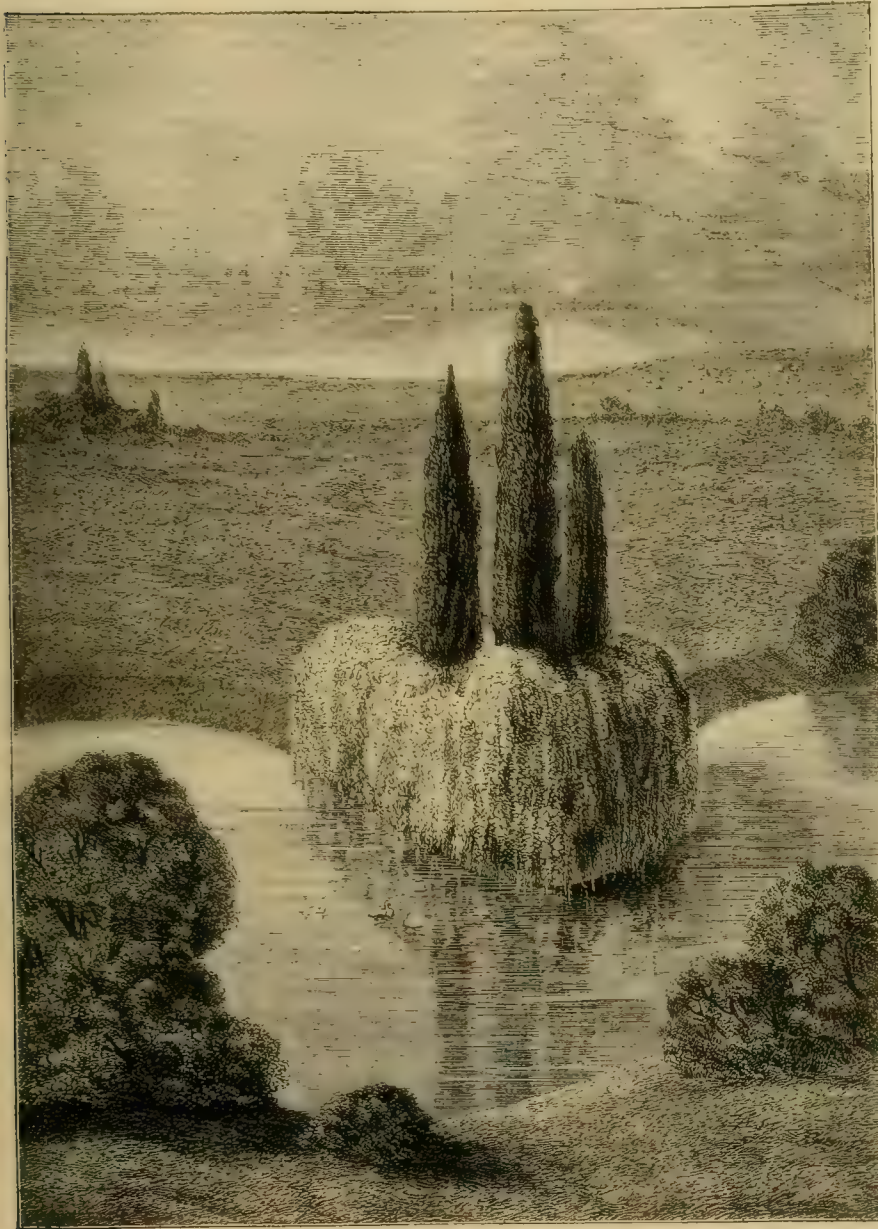


FIG. 46.—VIEW IN THE PARK AT LAEKEN.

villages, is more pictorial than the traveller between Calais and Brussels could readily bring himself to believe. The memorial shrine just spoken of is of white stone, in the best period of Gothic art. It may be described as a highly ornate canopy, serving to protect the statue of the late King, and surmounted by an elegant spire. It is smaller and less pretentious than the Albert Memorial in Hyde Park, but it is fully as effective and beautiful, and some would say more so.

The winter garden has been figured and illustrated in our number for Nov. 11, 1876. It resembles a huge dish-cover or some trophy of the confectioner's art, and despite its great height and imposing dimensions,

structure, whose effectiveness is by no means commensurate with its solidity. The park might be in one of our midland counties, so fine are the trees, so pictorial the arrangement of glades, grass, lakes, rock-works, cascades, and the like, but the keeping is not first-rate, and the grass would make an English gardener shudder.

Our sketch (fig. 46) illustrates a very pretty and effective bit of landscape scenery, where the artist has availed himself of a promontory jutting out into the lake to introduce a group of Weeping Willows and Lombardy Poplars. Seen from the opposite shore of the lake, with masses of noble, round-headed trees on either side forming the foreground and framework, this effect strikes the visitor as one of the most successful creations of the landscape gardener.

PLANT PORTRAITS.

ECHEMEA MELINONI, *Revue Hort.*, June 16.—Stem erect, covered with the appressed bases of the oblong spine-toothed leaves, which subsequently spread at right angles. Panicle terminal, many-flowered; flowers cylindric, reddish. Native of Cayenne.

ANTIRRHINUMS, *Floral Mag.*, t. 408.—Three fine varieties, raised by Messrs. Downie & Laird, of Edinburgh.

APPLE, EDMOND RANWEZ, *Bulletin d'Arboriculture*.—A seedling from Calville Blanche, of which it has the colour, while its form is more like that of the Blenheim Orange.

AZALEAS, HARDY DOUBLE VARIETIES, *Florist*, t. 516.—Double-flowered varieties of the hardy hybrid type, grown at the Knap Hill Nursery, and very useful for forcing, as well as for outdoor purposes.

CRASSULA RAMULIFLORA, Lk., *Gartenflora*, t. 1013.—A species with fleshy ovate acute leaves, and axillary tufts of white flowers. It makes a pretty plant for hanging baskets.

FRITILLARIA MOGGRIDGEI, *Floral Mag.*, t. 405.—See *Gard. Chron.*, vol. xiii., p. 531.

GENTIANA SEPTEMFIDA, Pall., *Bot. Mag.*, t. 6497.—A tall-growing species, with sessile ovate-acute leaves, and terminal heads of large blue funnel-shaped flowers.

HOYA GLOBULOSA, Hook. f., *Floral Mag.*, t. 406.—The handsome species shown some time since at the Royal Horticultural Society by the Cranston Company, and remarkable for the dense globose heads of flowers. It is a native of Sikkim.

IRIS ENSATA, Thb., *Gartenflora*, t. 1011; Baker in *Gard. Chron.* 1876, ii. 34.—The plant figured is the var. *chinensis* of Fischer, *Bot. Mag.* 233, sub I. *Palusii* and the *I. oxypetala* of Bunge. China.

LYTHRUM GRÆFFERI, Tenore, *Bot. Mag.*, t. 6499.—An inconspicuous weedy plant, with small pink flowers. Native of South Europe and the Mediterranean region generally.

MIMULUS PRIMULOIDES, Benth., *Gartenflora*, 1009.—A dwarf species with oblong-lanceolate irregularly toothed, ciliate leaves, and long slender flower-stalks bearing a solitary yellow flower. North-west America.

MORMODES OCAÑÆ, Lindl. and Rehb. f., *Bot. Mag.*, t. 6496.—See *Gard. Chron.* 1879, pp. 582, 817, figs. 133, 134.

ODONTOGLOSSUM TRIPUDIAN, *Floral Mag.*, t. 407.—Flowers 2 inches in diameter, sepals and petals nearly equal, lanceolate, purplish-brown, with green tips and a green transverse band at the base; lip oblong acuminate, constricted in the middle, white with spots and bars of purple, and with radiating ridges at the base.

ONCIDIUM RUSSELLIANUM (Lind.) VAR. *PALLIDUM*, *Gartenflora*, t. 1012.—Brazil.

PESCATOREA FIMBRIATA, Regel, *Gartenflora*, t. 1008.—A species with erect flattened stems, 2-ranked lanceolate leaves, 1-flowered peduncles with large flowers, sepals and petals oblong acute, cream-coloured at the base, tipped with violet; lip with a slender stalk, blade 3-lobed, lateral lobes small, white, incurved, central lobe large, incurved, and fimbriate at the margins, spotted with yellowish and rose-coloured spots, marked with a semicircular raised lobulate crest, and with numerous purplish warts.

POLYGONUM AMPLEXICAULE, Don, *Bot. Mag.*, t. 6500.—One of the Bistort section, with cordate ovate-lanceolate leaves, and long dense spikes of red flowers. Native of the Himalayas.

ROSE, HER MAJESTY, *Florist*, t. 515.—A cross between Tea Rose Canary, as the pollen bearer, and Mabel Morrison, H.P., the seed parent. It has the foliage of the hybrid perpetuals, but with a glossy surface. The flowers are large, full, and symmetrical, the colour pink, clear and bright—"quite in the first rank of light-coloured flowers, and indispensable in every rosetum."

RUELLIA PORTELLÆ, Hook. f., *Bot. Mag.*, t. 6498.—A species with stalked oblong-acute leaves, green with white veins, the margins ciliated; flowers long-tubed; limb five-lobed, pink. A native of Rio de Janeiro.

SILENE ELISABETHÆ, Jan., *Gartenflora*, t. 1009.—A species with lanceolate leaves and large pink flowers; the petals obcordate serrate at the edges, wedge-shaped at the base. Tyrol.

VIOLAS (new bedding varieties).—*Floral Mag.*, p. 399.

Notices of Books.

Portugal, Old and New. By Oswald Crawford. (C. Kegan, Paul & Co.)

The author of this book has had unusual opportunities for observing the manners and customs, the farming, the Vine culture, the country life, and other matters relating to Portugal, and he has turned them to good account. Less perhaps is known by the ordinary reader of the little kingdom than of any other European territory of equal importance; so much so that it was a matter of surprise not long since to some of our readers to hear of a horticultural exhibition and a horticultural journal at Oporto, as also to read of the details of the botanic garden at Coimbra, as given in our columns by Professor Henriques some time since.

"In the inns of the more uncivilised parts of this peninsula," writes the author; "it is common to offer to the traveller, not a dinner of separate courses, but one where they are mingled or compounded into a single dish. A large deep pipkin is set before him, in which meat and game, and fowl of all available kinds, vegetables of every variety, pot herbs, and garnishing and spices have been seethed all together. Into this pipkin, or *olla*, the guest dips a spoon at a venture, and perhaps half-famished with long fasting, and eager for meat or game, he is disappointed at drawing forth nothing more satisfying than a piece of yellow Gourd or a scarlet Capsicum. On the other hand, the fastidious traveller, trifling with his *olla*, and diving for the lightest sustenance, may get a more substantial morsel of beef or bacon than he cares for."

Of such nature, the author modestly hints, his book may be; but if the boon be a mixture it is a good one, and he must be hard to please who does not find in it something to his taste. Moreover, the author in the passage we have quoted gives us a clue, which we shall follow in bringing his work under the reader's notice. We shall dip in our spoon where it pleases us, and dish up certain extracts likely to be palatable to our special *clientelle*, assuring them at the same time that if we select some portions and leave others, it is not because some are good and others bad, but that considerations of space and of our special requirements forbid us from entering upon such topics as the history and literature of the country, appetising though they be. Adverting to the agriculture of the country, the author states:—

"From Portugal certainly we have never imported a single agricultural idea with the splendid cattle and the many pipes of port wine which that country annually sends us; and yet it is in this backward country that the thing is done, which if England could do, England's wealth would be trebled and quadrupled. Nothing so astonished me, when I first saw a Portuguese Maize field, as to be told that it had produced such a crop summer after summer for a century, and would continue to do as much for as long again."

The secret, according to Mr. Crawford, lies in the system of land-tenure, various in different provinces, but in those to which the author specially refers in the above extract peculiar in fact and in name. The "emphyteutic" tenure is one by virtue of which the length and breadth of the province is parcelled out among small yeomen landlords—a tenure, as elsewhere explained, not unlike our English copyhold. After the departure of the Moors, the priests and the monarchs were in constant antagonism, and the latter getting gradually the upper hand sought to diminish the power of the priesthood by curtailing their possessions and dividing them among small lay proprietors, who at the same time clamoured for and obtained fixity of tenure and fixity of rent. The upper and middle classes in Portugal left the yeomen to till the land, while they occupied themselves with the distant travel and foreign conquest which were so characteristic of Portugal at one period of her history. In the middle of the sixteenth century Maize was introduced, and has proved an inestimable boon to the emphyteutic farmer. While fixity of tenure and fixity of rent have remained the conditions under which the land is held—at first burdensome, they have become less so as population has increased, and the country at large has progressed in civilisation. Mr. Crawford goes at some length into the details of Portuguese agriculture, and his remarks are very interesting and suggestive:—

"Nothing astonishes me so much," says the author, "as the indignation of some honest and conventional

people at home at the fact of English working men allowing themselves luxuries, which their condition should, in these honest people's opinion, forbid their aspiring to. The colliers, when wages were high, ate *pâté de foie gras* and drank champagne. How deplorable! Certainly, it would have been desirable in the interests of the higher culture if they had spent their earnings in Rembrandt-etchings, well-bound books, and blue china; but, on the other hand, it would have been infinitely less desirable if they had struck work altogether the moment they had enough to eat. Any taste is better than no taste, and surely it is better for a man to be knowing in dried codfish and green wine than to know nothing at all. When the negroes of Jamaica have gained a shilling by a few hours' work they buy Bananas and meal enough to last a week, go to sleep in the sun, and laugh at the idea of another stroke of work till the larder is bare again. The champagne of our colliers was surely all in the interest of morality, sobriety and hard work; it was an object in life. Our farmers in England complain that with the better wages of their labourers work is slacker. What wonder that it should be? Give them wider tastes and they will do a hard day's work to gratify them. The Portuguese peasant likes dainty eating, and aspires to wear a gold stud in his white linen shirt and a good broadcloth cloak, and to give his sweetheart a pair of massive gold earrings. Let no one accuse him of effeminacy; he will work hard and cheerfully for sixteen hours on a summer's day in the Maize field. To be sure, he has higher ambition than for good food and fine clothes, for he looks to obtaining a slice of the land, and with health, strong arms, long life, a shrewd head, and fair luck, the odds are that a day labourer in northern Portugal will live to be a landholder. It is that chiefly, I think, which sweetens the sixteen hours' toil under the sun of Portugal."

We have dipped long enough, if not deep enough, into Mr. Crawford's stew to justify our readers in trying their luck also. We must only add, as a matter of special interest to Vine growers, that the Grapes from which the best port is made are grown as bushes, closely pruned in spring, and the summer shoots supported by stakes. Elsewhere, in Portugal, the Vine is trained, as in Italy, over trellises, or against pollarded trees. More Grapes are so produced, but the wine made from them is said to be poor.

The author's final recommendation to the reader of the chapter devoted to port wine is, that he should purchase, at a fair price, through a respectable wine merchant, a pipe, or a hogshead, or a quarter of a cask, of port wine, and the element of chance is eliminated. "It is an absolute certainty that the wine will not only keep sound, but will improve in value every year of its life. Not only is his capital safe, but the wine will pay him interest."

With this as a parting glass we take leave of our author, hoping to meet him again, and increase our acquaintance through his means with the very interesting country of which he discourses so pleasantly.

Natural History.

A CANNIBAL HEDGEHOG.—I have a female hedgehog which gave birth to four young ones a short time ago. One of them was stillborn (which I sent to Professor Rutherford, Edinburgh University); another lived a few hours; the other two thrived very well for a few days, during which time they afforded me much interest in watching the growth of their spines, which was very rapid. It will interest your readers to know that the hedgehog is born without spines, but the spines can be seen under the cuticle. One morning, on going to examine the young hedgehogs, I found that the unnatural and cruel mother had eaten them both up; this was without doubt, as I found that the spines had passed through the stomach and bowels of the mother undigested. I should like to know if any of your numerous readers can inform me if it is known that the hedgehog destroys her young in this way? *Alex. Paterson, M.D., Fernfield House, Bridge of Allan.*

Foreign Correspondence.

BADEN-BADEN.—Allow me to state that *Fallugia paradoxa* (see p. 220) is a perfectly hardy shrub; it has been only slightly hurt the last severe winter, and is flowering here very freely since May 1, and new flowers come on and will continue to do so for some time. My plant is only about 1 foot through, and I suppose when grown to full size will make a very desirable shrub. I can also testify to the hardness of *Fendlera rupicola*, another rosaceous shrub, said to be beautiful. As to *Carpenitiera*, I have a young plant out, and we shall see how it will do in the coming winter. *Bigelowia arborescens* is somewhat more tender, but American botanists state this to be a most beautiful shrub. *Bigelowia venita*, from Mexico, will soon be in flower here, and looks very promising. *Max Leichtlin.*

Garden Operations.

FLOWER GARDEN, ETC.

The magnificent change in the weather has had an almost magical effect on bedding plants, which are now about at their best—*Alternantheras* excepted, and these with us are about as stubborn as regards growth and colouring as they were last year, so that it becomes a question as to whether it is worth while to use them at all, seeing the very short period they are in any way effective. So far as regards myself, they will certainly have to seek fresh quarters another year, and in their stead I shall use a greater variety of hardy Sedums, of varying tints of colour, and for darker shades *Ajuga reptans purpurea*, and *Oxalis corniculatus rubra*: these darker foliage plants give variety, but are by no means indispensable, for some of our most pleasing arrangements are entirely composed of plants with neutral tints of colour. To give an instance: we have a border here arranged in chain form—large and small circles running into each other, the framework of the circles formed throughout with the dark green *Herniaria glabra*, the small circles being filled in with the cream-coloured *Sedum acre elegans*, having in them "dot" plants of *Kleinia repens*; the large circles are filled in with the grey-purple tinged *Sedum corsicum*, and "dot" plants of Silver Thistle (*Chamaepeuce diacantha*), whilst the angles on each side of the figure are filled in with the bluish-grey *Sedum glaucum*. It will thus be seen that in this arrangement there is an entire absence of what are usually termed decided colours, and yet the effect is equally as telling (to me it seems more so) as it would be if *Alternantheras* formed part of the arrangement. Besides there is the long season, through the plant being hardy, such an arrangement continues in perfection, and is not liable to be injured by storms, while the labour of keeping up is comparatively small if compared with the constant clipping and pinching required to keep the usual class of "carpet beds" in good form. Now that the beds are at their best it will be well to make notes of all those arrangements that are approved, not for repetition *in toto*, but as a guide for another year.

Amongst flowering plants with us the following deserve special mention as being unusually fine just now:—*Ageratum Cupid*, *Calceolaria Golden Gem*, *Petunia Spitfire*, *Tropæolum Bedford Rival*, *Lobelia Brighton*, *Musk Harrisoni*, *Pelargoniums Vesuvius*, *Bonfire*, *Indian Yellow*, *Nora*, *Waltham Nosegay*, *Amaranth*, and *Master Christine*. Among the brighter foliage plants are several *Pelargoniums*, by far the best being *Sophia Dumaresque*, *Rev. W. F. Radclyffe*, *Lady Plymouth*, and *May Queen*, and for the beauty of its flower as well as its foliage the old variegated *Manglesii*: this, alternated with *Verbena Purple King*, though one of the oldest is still one of the most beautiful of arrangements that can be made. I am not certain but that *Viola Blue Bell* does not rival the *Verbena* for planting in such a connection, but certainly either are superb. All being in such perfect flower the aim should be to keep them so for as long a time as possible by frequent removal of seed-stems and bad flowers, and in the case of rampant-growing *Pelargoniums* a part of the large foliage also, which, by the admission of air and light, will assist freer flowering. In foliage beds keep the lines true to design by an occasional pick over; the standard plants in such beds may need tying to keep them upright and from injury by wind. The edgings of the beds should be cut every time mowing is done, which operation will now be necessary about every ten days. Tie up sub-tropicals as growth progresses; *Castor-oil plants*, *Giant Hemp*, *Tobacco*, *Wigandias*, and some kinds of *Solanums* will not do without staking, and soon get out of form if not done at the right time.

The propagation of plants for next year's bedding, or rather of stock plants for spring propagation, should be pushed on without further delay. It is usual to propagate the full quantity of *Pelargoniums* at this season, but this we never do through not liking to spoil the beds; we therefore prefer to lift the old plants, and take cuttings from them at convenience during winter and spring. Offsets of *Echeverias* and *Sempervivums* may now be had in quantity, and will winter safely, the former built in with soil against the walls of pits and houses, and the latter on any dry, sunny bank, in which position also all the *Sedums*, *Saxifrages*, and plants of similar nature should be propagated either by division or cuttings. *W. Wildsmith, Hockfield.*

HARDY FRUIT GARDEN.

Where work has fallen behind during the recent wet weather, the attention that fruit trees require at this season is also sure to fall short in a proportionate degree. It is perhaps as well to point out, even at this distant period, that the prospects of a crop of outdoor fruit next year is of the most promising description. To a vast majority of those who consume the produce of our gardens it may be looked upon as

mere speculation, or, at the least, taking a premature view of things, to hazard an opinion upon the chances of a crop so long beforehand; but as the stability of a house depends mainly upon the foundation that has been laid for it, so in like manner the chances of a crop of hardy fruit depend chiefly upon the foundation that is laid in the trees at this season for next year's crop. In previous Calendars I have directed attention to the anomalous conditions under which we cultivate many fruit trees with regard to the manipulation of root and branch. The head is restricted, compressed into all kinds of fantastical shapes, while the roots are annually increasing in number, out of all proportion to the number of branches. When this dwarfing system was first introduced there was a very sound and practical stipulation recommended along with it, namely, a biennial system of lifting and root-pruning if necessary; but the wheels of horticultural machinery frequently revolve in one part of the garden more than another, and the neglected department in time becomes unremunerative and a source of annoyance to employer and employed. In addition to this the spring has turned into winter, so that only trees in the most vigorous health having their wood and fruit-buds thoroughly ripened are capable of producing flowers with organs strong and vigorous that have any chance of resisting the force of inclement weather. I refer particularly to Pears and Apples, and I must once more repeat, We knife too much and too early. I am writing from practical results before me, and as far as I can judge from appearance the dwarf trees that have suffered so much during the past two winters will be greatly improved by the free and unrestricted growth we are allowing them this season. If a strong shoot appears we break, bend, or remove it altogether, all the rest are permitted to remain as an outlet for the sap and vigour of the tree to flow into, and the fruit-buds seem none the worse for the change.

All kinds of fruit trees that are growing upon light soils, and that are making moderate wood and plenty of fruit-buds, should be thoroughly soaked with manure-water several times repeated during this month and next. One reason why the roots of wall trees travel so far into the vegetable borders is because they are not supplied with sufficient water round the bole and close to the wall, where the greatest number of feeders are located. Raspberries, Strawberries, and all kinds of small fruit trees will be benefited by similar treatment, where there are symptoms of declining vigour. Maintain cleanliness amongst the leaves by using the garden engine with force now that the leaves are growing firm and will bear washing down with greater pressure than when their tissues were soft and undeveloped. The protection of fruit from the ravages of wasps is one of the most difficult tasks we have before us at present. So determined and persistent are their attacks that they are clearing ripe Strawberries and Plums wholesale; the latter one can protect with hexagon netting, and traps may also be set in the shape of bottles containing black beer and sugar. Plantations of Strawberries that have not been divested of decayed leaves and runners should be attended to at once, and after the surface of the ground between the rows is cleared it should be thoroughly mulched and watered in order that the fruiting crowns may swell out and be well nourished for bearing next season. *W. Hinds, Canford.*

FRUIT HOUSES.

VINES.—If the lifting or partial lifting and relaying of the roots of Vines in the early houses has not been carried out, no time should be lost in bringing this important operation to a close, as success greatly depends on the formation of new roots before the leaves fall. Where advantage was taken of the suitable weather we had at the end of July, and the Vines have been carefully syringed and shaded, the crisp appearance of the lateral growth will show that the roots are taking to the new compost, and one or other of the borders having been left undisturbed the ventilators may be thrown open, with a view to hardening and ripening of the wood. It may be well to assist root-action by an occasional syringing on fine evenings, and to allow the laterals to ramble until the middle of September, when growth should be checked by shortening back preparatory to the autumn pruning. Shorten back all semi-extension and lateral growths in houses that have been cleared of fruit, carefully preserving the old leaves as the work is carried on, and wash the latter with the garden-engine on fine evenings to cleanse from dust and insects. Give water to inside borders in sufficient quantity to keep every part of the soil moist and healthy quite down to the drainage, and protect the surface roots outside with the annual top-dressing of fresh loam and crushed bones. Maiden Vines intended for forcing may soon be divested of all laterals as a means of inducing rest. Syringe occasionally to keep the old foliage healthy and clean; close with dry sun-heat every afternoon, and throw the ventilators open through the night. Muscats now ripening will require more light and air; but in the event of spider, which is unusually troublesome this season,

having injured any of the first leaves, a nice covering of laterals should be left for protecting the shoulders of the bunches from the direct rays of the sun. Houses in which it is necessary to keep ripe Hamburghs for any length of time will require shading during the day, with all the air that can be given and atmospheric moisture when the weather is hot, dry, and exhausting to the Vines. *W. Coleman, Eastnor.*

FIGS.

Succession houses in which the second crop is now ripening will require more careful treatment as days decrease in length, and nights become damp and cold. The fruit as it approaches ripeness will be improved in colour and quality by full exposure to light, and a free circulation of dry warm air by night and day; but anything approaching a check to the flow of sap must be guarded against by keeping the roots regularly supplied with tepid water—bright mornings being the most suitable time for applying it, as the liberal admission of air will then carry off superfluous moisture, which would otherwise condense and injure the fruit. As growths which have reached the extremities of the trellis become clear of fruit and successional require more room, the former may be cut away to let in light and air, but nothing will be gained by tying them down too close, as an upward growth favours the ripening of the points. Early forced trees from which the second crop has been cleared will require cool dry treatment, to insure the proper ripening of the young shoots; and when this has been secured the roof-lights, if movable, may be taken off for a few weeks, and painted if necessary. The exposure to night dew and rain, although insufficient to cleanse from troublesome insects, will be found a powerful aid to the engine, or, better still, the hose where a good pressure can be obtained, as the water through the latter can be conveyed into every part of the trees. When a selection of the best kinds is grown, Osborn's Prolific and Negro Largo should have a place as companions to Brown Turkey and White Marseilles. *W. Coleman, Eastnor.*

MELONS.

Late plants which have just set their fruit should, so soon as they commence to swell, have them thinned out to three or four on each plant, leaving, of course, the best and most even-shaped fruit. Damp the plants and house in which they are growing mornings and afternoons during bright days, and when the temperature is likely to fall below 70° at night let the fires be lighted. Ventilate freely on all favourable occasions, and shut up soon after 3 o'clock during sunshine with a temperature of 85°, and run up to 90°, with plenty of atmospheric moisture. Let the plants, when necessary, have a good soaking of diluted liquid-manure at the roots when swelling off their fruits, which will greatly assist the development of the latter. Plants growing in dung frames should have water in any shape applied very sparingly to them, now that the days are getting shorter, with a consequent prolongation of atmospheric moisture, which must necessarily arise in frames so heated. Moreover, plants grown under such circumstances are not likely to suffer for want of water at the roots, inasmuch as they can push *ad libitum* into the dung and leaves, where they not only find a congenial and moist temperature but a good supply of stimulating food. As the chance of ripening late crops of fruit satisfactorily in these frames depends in a great measure upon the condition of the weather, every opportunity available should be embraced with the object of achieving a satisfactory result; therefore, entrap the sun by shutting up early every afternoon, and, if the day be bright and sunny, damp the plants lightly at the same time. See that the linings are attended to by adding some fresh fermenting material to that already there, and put some mats over the frames at night if necessary. *H. W. Ward, Longford Castle.*

CUCUMBERS.

Let the house into which winter Cucumbers are to be planted be thoroughly cleansed. The woodwork should be washed with soft-soap and warm water, and the brickwork and plaster with hot-lime, thus making the whole sweet for the reception of the plants. Examine the drainage, and see that it is perfect before putting in the mould, which should be composed of the ingredients and in the proportion recommended in last Calendar. A dry day should be chosen for the mixing and getting into the house of the same, previous to which the drainage should be covered with turves, grassy side downwards. This should be made into a ridge in the centre of the pit, or space allotted for the bed, and formed into hillocks in accordance with the number of plants intended to be planted thereon on the top and within the required distance of the glass, making due allowance for the subsiding of the soil. If the seeds have been sown, and subsequently treated as recommended in the number for August 7, they will be ready next week for shifting into their fruiting-pots and boxes or planting on the

hillocks. The plants having been watered some time previously to being turned out of the pots should have their roots disturbed as little as possible when planting, pressing the soil firmly around each plant at the time of doing so, after which they should be supported by small sticks, which can be fastened to the first wire of the trellis. Should the sun be bright and powerful at the time the plants are being shifted, it will be advisable to shade them for a few hours daily for a few days until they have established themselves, when it can be discontinued altogether. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

The spell of summer weather we are now getting renders it essential for the welfare of plants, whether stove or greenhouse, that the atmosphere of the houses in which they are placed should be kept continuously moist, which can only be done by frequently damping the floors and other surfaces, that the parched air in its passage over may become surcharged and thus be made in an agreeable and fit condition for the foliage, which soon suffers, at a time like this. Where the flowering subjects can be divided from the non-flowering, which should always be done if possible, the latter will be considerably benefited by heavy syringings administered every evening. Any in a pot-bound condition, may be helped considerably by the application of weak manure water, obtained from the drainage of cow-yards, and if, before using it, a bag of soot is submerged it will greatly improve the quality and make it suitable for use to most things requiring the assistance of a gentle stimulant to enable them to finish their work for the season. It is the opinion of some that they only need such just before or when expanding their bloom, but that depends greatly on circumstances, chief among which is the quantity of soil the roots have to feed on and the state of activity they may be in, and as the demand of the top is considerable now, the task they have to perform is something enormous. This is sure to be the case with Chrysanthemums and the other soft-wooded section of plants, which if expected to be fine by-and-bye must on no account be allowed to become dry, as, should that occur, it will be found that they soon assume a starved look, from which ill condition they seldom recover. The time of year has now arrived when the earliest Gloxinias, Achimenes, and Caladiums, are fast losing their beauty, but to put these quickly and forcibly to rest by entirely withholding water is a great mistake, as they are deprived of the services of the leaves at once, whereas the ripening process should be gradual and then the tubers will be able to pass the winter in safety. A pit or frame where they can be syringed and shaded will be found a good place for the Gloxinias and Achimenes, as also for any now coming on for late flowering, as there they can be kept close and receive congenial treatment.

GREENHOUSES.—Pelargoniums of the Show and Fancy class that were cut back some time ago will now be sufficiently forward for repotting, but before doing this, it will be necessary to shake them out of the soil they are now in and shorten the roots, which reduction will enable them to be put in pots of a somewhat smaller size than those they were taken out of, when towards the autumn they may be shifted on again and be grown into fine specimens for the following year. The Fancy sorts, being more tender and delicate than the others, will require lighter soil, with a little more sand; but the stronger growers succeed best in nothing but fibry loam, which should be made very firm by pressure, and when the potting is complete the plants stood in a pit, where they must be kept shaded for a week or so till they get a fresh start, after which they will need all the light and air they can have till the time arrives to house them on shelves for the winter. Those of the Zonal section intended to bloom at the season just named ought now to be out in full sun, as their usefulness depends in a great measure on the character of the growth now made and the manner in which it is matured, and this process of hardening and converting the sappy shoots into woody fibre can only be brought about by the direct action of the solar rays, which on vegetation have a very solidifying influence. It is on this account that the whole of the winter flowering stuff, such as Chrysanthemums, Salvias, Eupatoriums, Bouvardias, and Libonias should have full exposure, which the two last-named may receive, if grown by themselves, by removing the lights for a few hours during the day. Primulas and Cinerarias, on the other hand, are very shade-loving, and do best at this season in frames so situated that the sun does not get at them, and if placed on a cool moist bottom such as that afforded by a good layer of coal-ashes, their progress will be most rapid. In order that they may receive no check, however, it will be necessary to pot them on before they become at all root-bound, and to use light rich soil consisting in great part of leaf-mould and loam—a mixture both Cinerarias and Primulas specially delight in. *J. Sheppard, Woolverstone Park.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Aug. 23	Sale of Imported and Established Orchids, at the Mart, E.C., by Protheroe & Morris.
TUESDAY, Aug. 24	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M. Basingstoke Horticultural Society's Show. Maidenhead Horticultural Society's Show. Isle of Thanet Horticultural Society's Show.
WEDNESDAY, Aug. 25	British Association meets at Swansea. Autumn Show at the Crystal Palace (three days) commences. Clearance Sale of Greenhouse Plants, at Mann's Nursery, Brentwood, by Protheroe & Morris.
THURSDAY, Aug. 26	Flower Show at Great Yarmouth.

It is not in England alone that Mr. FISH's complaints of the sparrows (see *Gardeners' Chronicle*, July 10, p. 54) find an echo. Everywhere in Europe, and even in Algiers, these greedy and too prolific birds are becoming more and more a scourge of the farmers and gardeners. Essentially seed eaters, and not despising sugary fruits, the sparrows swoop down in great numbers on the ripening harvests and on the seed-bearing plants of our gardens, where they would not leave a seed unharmed if it were not for continual vigilance. Cunning and obstinate, as well as audacious, they only laugh at traps and scarecrows, and the report of a gun only disperses them for the moment, to return in still greater numbers. Of all winged creatures it is the sparrow who best represents the rabble of our towns and villages. Nature, however, has her reasons for having created sparrows. The sparrow is one wheel in the great mechanism of the globe, and it has only become obnoxious by excessive increase. This brings us to the point of finding a means of reducing the number of sparrows to its proper proportion. Does this mean exist? We do not hesitate to reply in the affirmative; not only does the means exist, but it is most simple, and this perhaps is the reason that nobody has availed himself of it.

What should we think of the inhabitants of a town who were in the habit of incessantly destroying their policemen, detectives, and magistrates—in brief, all those in whose hands lie the repose and security of the city? Nobody would hesitate to pronounce them fools, and their town would ere long become the refuge and the prey of all the highwaymen, thieves and pickpockets, bandits and assassins of the country. It would not be habitable, and it would either be necessary to find safety elsewhere, or to be continually on the *qui vive* and armed to the teeth to repel the attacks, which would occur daily. Now, this is precisely the folly we have committed, and if we are pillaged and impoverished by the sparrows, we only get what we deserve. Nature, who has created everything in due proportion—*numero, pondere, et mensura*—has provided along with the sparrows constables and detectives whose office it is to reduce these marauders to their reasonable proportion. The constables are the little diurnal birds of prey (kestrels, sparrow-hawks, &c.), and the detectives are the nocturnal owls, which are glad enough to live in outbuildings, barns, towers, belfries, old ruins—in a word, in any place where sparrows congregate.

Every one will agree that they are our most useful auxiliaries against a rapacious race, auxiliaries who work absolutely for nothing. The most ordinary observers of these birds ought to respect them; but, on the contrary, we declare a war of extermination against them. If only one of these poor winged detectives or constables shows his beak anywhere, it is the sign for the whole village, gamekeepers, sportsmen, and poachers alike, to give chase. It is a chance if the bird escapes, and if he is killed, they do not fail to make a trophy of him by nailing him with outspread wings to the chief door of the place. Thus it is that civilised man of the nineteenth century repays the service rendered him; consequently

sparrows, rats, and other vermin rejoice and multiply more and more, and it is we who have to defray the expenses. Is it impossible to instil a little common sense into the minds of residents in the country? Is it impossible to form local regulations prohibiting the taking of the nests and the destruction of these useful servants of day and night? How much villainous saltpetre might be spared? How many fingers or other limbs might be preserved that are now blown off by the unskilful handling of untrustworthy firearms? How many millions would thus be saved in seeds and fruits if we could persuade both town and country denizens to desist from the wretched cruelty called pleasure of killing creatures from whom they cannot obtain the least advantage after they are dead, but who are so useful to them whilst they are alive. We may do better still by encouraging birds of prey, by forming for them in the neighbourhood of our dwellings, or even in our dwellings, retreats where they might rear their young in perfect safety. Old hollow trees, ruins, church towers, deserted dove-cotes, and even places built on purpose, such as towers pierced with holes, will attract them in sufficient numbers, or we might import a few pairs of these birds, taken young, and instal them, giving them the necessary food until they are able to procure it for themselves.

An "owbery" would not be more difficult to establish than a rookery, and would be quite as useful. Those who would like to try the experiment have the choice of three or four little species, amongst which the Scops and the Noctue rank first. Bold, courageous, well armed for carnage, these birds, scarcely larger than a blackbird, can slip into the smallest holes, when seeking for sparrows' nests, and not one escapes them. Naturally, the sparrows will avoid the neighbourhood, and half a dozen pairs of *Strix passerina*, L., would be quite enough to rid a village of them. Some people may object to the ugliness of these night-birds; beauty and ugliness are, however, only subjective sensations, purely imaginary, or at least relative, and to many lovers of Nature these birds lack neither beauty in their way nor originality. We may easily persuade ourselves that the Scops, decorated with their horn-shaped tufts, are very elegant; and as to their plaintive cry in the silence of the night, above all in the clear moonlight, why, there are few melancholy individuals or dreamers who do not find pleasure in hearing it.

—NEW FORM OF DISEASE IN POTATOS.—We have been informed, through Mr. WORTHINGTON G. SMITH, of a virulent and virtually new form of fungoid disease having broken out during the last week or two amongst Potatos, bought for "Champions," in Ireland. This new condition of things with the Potatos is, we hear, very bad indeed. We hope to publish illustrations with a description in our next number.

—AGRICULTURAL RETURNS OF GREAT BRITAIN.—From a summary of the agricultural returns of the current year, issued by the Board of Trade on Tuesday, we learn that the extent of land in Great Britain under Wheat is 2,909,148 acres; Barley, 2,467,831; Oats, 2,796,905; Potatos, 550,931; and Hops, 66,737. As compared with the returns of 1879, these figures show an increase in the acreage under Wheat to the extent of 18,904 acres; Oats, 14,287; and Potatos, 9587; and a decrease of 199,345 acres in the case of Barley, and 934 of Hops. The total number of live stock is recorded as, cattle, 5,912,046; sheep, 17,187,816; lambs, 9,433,908; and pigs, 2,000,722—showing a decrease in sheep and lambs of 1,535,357, and pigs 90,837, and an increase of 55,690 cattle.

—FRUIT CULTURE IN ENGLAND.—A writer in the *Monatsschrift des Vereines zur Beförderung des Gartenbaues*, &c., for July, records his views on some points in practical gardening observed in this country. He is particularly severe on the carelessness and

ignorance he observed in the training and pruning of fruit-trees in many establishments; and generally speaking, he thinks we have much to learn from the Germans in regard to the treatment of deciduous trees. The evergreen element he considers is too prominent in many gardens; but the ridiculous "rockeries" of clinkers and masses of overburnt bricks so commonly seen in suburban gardens he regards as the extreme of bad taste. When he says that a great preference exists for yellow flowers we are not able to follow him.

—NATIONAL ROSE SOCIETY.—At a meeting held at the Horticultural Club on Tuesday last, of the General Committee, it was decided that the invitation of the Sheffield Botanic Society, to hold the provincial show in that town in July, 1881, should be accepted.

—LILIAM SUPERBUM AND CANADENSE.—Mr. WILSON, writing from Heatherbank on Wednesday, says:—"I cut yesterday in our wood garden a *Lilium superbum* 11 feet 5 inches high, and a *L. canadense* 6 feet."

—THE BLIGHT ON THE SILVER FIR.—Every traveller in Switzerland must have noticed the frequency with which the young shoots of the Silver Fir are blighted, but not every one has noticed that this occurs only, or at least mainly, at certain elevations, and in places where the alpine *Rhododendrons* grow. M. DE BARY has studied the fungus producing the disease in the Silver Fir, and has, by a combination of observation, induction, and direct experiment, which alone would suffice to stamp him as a naturalist of the first rank, succeeded in unravelling the whole history of the fungus. As in so many cases the fungus is found to lead a dual existence—part of its life is spent on one plant, part on another. While it is on one plant it assumes one form, while it is on another it has a quite different appearance. The spawn exists during the winter months in the leaves of the *Rhododendron*. When spring comes these spawn threads produce Puccinia-like spores like those of the corn mildew, on the under surface of the leaves. These sprout and produce sporidia or minute reproductive bodies, which are wafted by the wind to the young leaves of the Silver Fir, whereon they germinate and produce during the summer months the peculiar cluster-cups (*Ecidium*) so long known. Sporules from these cluster-cups fall in their turn on the leaves of the *Rhododendron*, pass through the breathing pores (stomates) and hibernate in the tissue of the leaf till the spring comes, when they begin again the cycle of their existence.

—HIGHBURY, NEAR BIRMINGHAM, the property of the Right Hon. JOSEPH CHAMBERLAIN, M.P., President of the Board of Trade, is the name of a new place rapidly approaching completion, which, unless we are much mistaken, will before many years have passed become famous among English gardens. Situated within four miles of the centre of the busy town which its owner so ably represents in Parliament, it occupies a delightful situation, commanding glorious views over a pleasant part of Worcestershire, with the Lickey Hills for conspicuous and picturesque objects in the foreground. The site was naturally lovely, and its charms have been skilfully and artistically handled and heightened by Mr. MILNER, to whom Mr. CHAMBERLAIN entrusted the work of laying it out. Placed on a southern slope, finely undulated, it was already enriched by many fine old timber trees which have been supplemented by some judicious planting, the effect of which will naturally be increasingly visible year by year. A grand range of houses has been erected for plant growing, and are already partly occupied, the collection of Orchids being on such an extensive scale that Highbury will no doubt become famous for them if for nothing else. Out-of-doors attention is being paid to hardy herbaceous plants, and there is already promise of most successful results. The mansion is a noble one, and will soon be ready for occupation, the decorators being busily engaged in giving the finishing touches. Some day we shall hope to be enabled to give a detailed account of this interesting place; at present, it would be premature to do so, but we have seen enough in a recent visit to convince us that Highbury has a history before it; and it was gratifying to learn that the President of the Board of Trade is not only

an eager politician, but has also a warm and real interest in high class gardening. Mr. COOPER, who has charge of the gardens, is to be envied, as the occupant of a position in which all the appliances that money, skill and enthusiasm for horticulture can provide are placed at his disposal. As he undoubtedly realises the advantages by which he is surrounded, we shall probably have to chronicle gratifying results of his labours in due course of time.

— *ACER PLATANOIDES* "VAR. AUREO-VARIEGATUM BUNTZLERI."—Under the above name a handsome variegated variety of this Maple is figured and described in the Berlin *Monatsschrift*. The leaves are elegantly variegated with golden-yellow and

previous days the temperature had risen to 90° in the shade. Then came heavy rains, and the sudden thawing of the snow in the mountains combined to inundate the country, causing immense destruction to buildings and cattle. And the locusts in millions and millions were desolating the country, though every one, civil and military, had been engaged in their destruction. Hundreds of puds of eggs had been collected. The only hope was that the torrents of rain might effect what man had failed to.

— BOTANY AND CLIMATOLOGY OF MEXICO. —From a report drawn up by Don MARIANO BARENENA, Director of the Central Meteorological Observatory of Mexico, we learn that it is proposed to

tively small beds, which look ineffective in the great area. The shrubberies dotted about the garden have been improved by judicious thinning-out, but they are still too full of rubbishy stuff, which should have been cleared out long ago, and replaced by choicer plants suitable to the soil and situation. In many cases the shrubberies would be better suppressed altogether, as, for instance, near the houses, where their place would be better occupied by borders wherein the choicer bulbous and herbaceous plants might be grown to advantage, and where the shelter of a wall might be given to low-growing, creeping evergreen shrubs kept within bounds. The fierce red of the houses is happily toning down into a quieter, more agreeable tint.



FIG. 47.—A GUIANAN SAVANNA. (SEE P. 243.)

dark green, some parts of the surface being mottled with the two colours, whilst in others one half of a lobe is yellow and the other half green. It is in the hands of the raiser, Mr. BUNTZEL, nurseryman, in Nieder-Schoenweide, but in consequence of the severe frosts of last May having destroyed a large portion of the grafted stock it will not be sent out for two years.

— THE SPRING WEATHER AT TIFLIS.—We are apt to think of Transcaucasia (or Georgia) as a delightful country, but it has been anything than agreeable this season judging from a letter in *REGEL'S Gartenflora*, written by Mr. SCHARER, the Director of the Botanic Garden at Tiflis. Nothing, he states, is flourishing except the locusts. Writing on May 4, he states that after long-continued cold, the weather had suddenly changed, and during a few

establish a large number of stations throughout Mexico for the uniform record of observations on the temperature, pressure, rainfall, vegetation, &c. Should this project be properly inaugurated and continued, it will be of the greatest service to science. The observers will likewise report on the state of the crops, prices of grain, and other commodities, &c., as affected by the weather.

— FLOWER-GARDENING AT KEW.—Although the season has not been very favourable, and the planting not so effective and good as it might be, yet a great improvement has been effected, in our opinion, by suppressing a considerable number of the beds and turfing them over. It is a question whether, another season, it would not be better to have a few very large beds on either side of the broad walk at distant intervals rather than a greater number of rela-

The show-house is gay with ordinary greenhouse stuff. To our thinking it is not necessary to do very much in this way at Kew, but what is done should be of the best quality attainable, so as to serve not only for decorative purposes, but to furnish illustrative examples of new or rare plants suitable for ornamental purposes, and illustrations of good general cultivation. At Kew we principally look for what we cannot see elsewhere; we turn to it for novelty and instruction. If commonplace stuff must be employed to make a show it should be the best of its kind.

— "A WISE DETERMINATION."—Such is the heading of a letter with some editorial remarks in the *Revue Horticole*. The letter is from a nurseryman of Bergerac, who states his intention of discontinuing the cultivation of certain shrubs, which he enumerates, because they are not perfectly hardy. For our own

part, although we always recommend planting perfectly hardy trees and shrubs in all situations where permanent and uninterrupted effect is required, we would not exclude shrubs that are liable to succumb to the rigours of exceptionally severe winters. Were the gardeners of Paris, for instance, to act on this principle, what a process of elimination would have taken place this spring. We have now before us a list of species killed or seriously injured at Ghent during the past winter, and if planters there rejected in future merely those which were killed outright, the number of ornamental species thus excluded would be very large, and embrace many subjects generally regarded as indispensable. Thus Aucubas, Laurels, Cedars, Cypresses, Berberis Darwinii, and a host of other things would share this fate. Coming to useful trees, even Apple trees would follow in some localities.

— THE RELATION OF THE JAPANESE AND OF THE EASTERN AMERICAN FLORAS.—Dr. GRAY writes as follows:—"A leading article in the *Gardeners' Chronicle* of July 17 discourses of Dr. GRAY's 'notion as to the migration of Japanese plants across Asia and Europe to Eastern America' (p. 80). How can the writer have supposed that Dr. GRAY ever entertained or published any such 'notion' as this? So far as any latitudinal migration was suggested it is supposed to connect Eastern Asia and Eastern North America in exactly the opposite direction. But the transference of vegetation referred to, as taught by Dr. GRAY, was one from the north and ante-glacial, supplying Japan and the Atlantic side of North America from a common source, supplying Oregon and California no less. The likeness between the floras of North-east Asia and North-east America was attributed to the similarity of climate and such-like influences, which have selected similar forms and types for preservation, while others proved better adapted to the western side of our continent." We are glad of the opportunity of inserting Dr. GRAY's concise account of his views. For our own part we admit that we had in our mind when writing not so much the original article of Dr. GRAY's as the comments upon it in the late ANDREW MURRAY's *Geographical Distribution of Mammals*, p. 46, where elaborate calculations are given showing the loss by extinction in the assumed passage from Japan to Central Europe, thence to Newfoundland, and onwards to California. These calculations are in one case founded on Dr. GRAY's own estimates, from which it is made to appear that out of a total of 1550 Japanese flowering plants, "supposing them to have spread in the direction and from the point specified, by the time they reach Europe they are reduced to 157; by the time they come to Eastern North America they only number 134; and when they get so far as Western North America we find only 120 species." The inference from this, of course, is, that there was a highway open to the plants all the way round the world from Japan to California; and that as they got further and further on their journey, species kept dropping off until, when they reached its end, only 120 species remained out of 1550.

— STRAWBERRIES.—The Cercle d'Arboriculture of Belgium held an exhibition of Strawberries in June last at Ghent, which was very successful. M. STRUBLENS showed two Strawberries of the variety named after M. PYNAERT, and which weighed respectively 60 and 58 grammes (1 gramme=15 grains). One of these fruits measured 215 millimetres in circumference (about 7½ inches) and 76 millimetres in diameter (nearly 3 inches).

— MEXICAN GRASSES.—The last part of the *Annales des Sciences Naturelles* to hand contains an interesting article on the geographical distribution of the grasses of Mexico, by Mr. E. FOURNIER. Out of 643 species, 371 are peculiar to the flora of Mexico proper, and sixteen out of 123 genera are endemic. Eleven of these endemic genera are monotypes. Twenty-nine of the species occur in the Old World, and this category includes *Phleum alpinum* and *Agrostis borealis*. With reference to the distribution of the species which extend to other regions of America, and number 272, the author states that he was very much struck by the fact that only three of them occur in California. It is true, he adds, that he had seen very little material from the neighbouring State of Sonora. Having ourselves studied the vegetation of the same regions, though by no means so

exhaustively as Mr. FOURNIER has for the family in question, we are able generally to say that the limits of the flora coincide very nearly with the northern boundary of the country. Another singular fact is, that sixty-five of the Mexican species are common to the eastern United States, whilst only thirty-three are common to Texas and Mexico. Riparian grasses have, generally speaking, a wider range than the others, some of them extending from Mexico to the Argentine Republic, a distance of 70° of latitude.

— VARRELL'S "BRITISH BIRDS."—The fourth edition drags its slow length along. The last issued part (xiii.) contains the account of the jay, the nutcracker, the various swallows, the nightjar, and the cuckoo. It will be seen from the mere enumeration of the names of what interest the part is, while the excellence of the woodcuts is a recommendation to all who see them.

— IRISH AGRICULTURAL STATISTICS.—The Registrar-General's returns for the current year, issued last week, show a decrease in the total acreage under all crops of 40,609 acres, as compared with last year, the total acreage in 1879 being 5,121,833 acres; and in the present year 5,081,224 acres. As compared with 1879 there is an increase of 51,682 acres in the acreage under Oats, 7 acres under Beans and Peas, 2951 acres in that under Cabbage, and 29,513 acres in that under Flax. There is a decrease of 8875 acres under Wheat, of 36,273 acres under Barley, of 1984 acres under Bere and Rye, 21,943 acres under Potatoes, 11,929 acres under Turnips, 9645 acres under Mangel Wurzel and Beetroot, 2160 acres under Carrots, Parsnips, and other green crops, 4605 acres under Vetches and Rape, and 27,348 acres under meadow and Clover; 4,639,059 acres are included under "Bog and Marsh, Barren Mountain Land, Water, Roads, Fences, &c." The returns of live stock show a decrease in all descriptions. The total acreage under Potatoes is 820,728; and under Flax, 157,534 acres; while the total number of scutching mills enumerated is 1175.

— A MONSTER PEACH.—A fruit of Lord Palmerston Peach, grown in Colonel JONES' garden, at Templeogue, this season was quite a wonder in its way. It weighed 17 oz. and girthed somewhere about 11 inches. The tree, which is about four years planted, besides this mammoth fruit, bore a goodly crop of choice Peaches, each averaging from 10 to 11 oz. Have any of our readers met with a Peach whose weight was in excess of the above? *Irish Farmers' Gazette*.

— FERTILISATION OF YUCCA FILAMENTOSA.—Mr. MEEHAN writes from Germantown, Philadelphia:—"In the *Gardeners' Chronicle* of July 24 we read—'More interesting is the relation of some experiments and observations of Mr. MEEHAN, who asserted that notwithstanding the presence of the Yucca moth, Yucca filamentosa never produced fruit unless he himself artificially pollenised it.' I can readily excuse the *Gardeners' Chronicle* for this statement, because it is substantially as given in the paper quoted from the *American Entomologist*; but it is only fair to myself to say that Mr. RILEY has misrepresented me in that paper. I never said in my address to the American Association anything of the kind in connection with Yucca filamentosa, and it amazes me that one with Professor RILEY's reputation should have read so carelessly, especially when preparing an important scientific paper. I enclose you a copy of my paper in which you will see that I say—'Pronuba yuccasella, and which proves to be the insect which fertilises the flower;' and further that I said, 'I exhibit seed-vessels of Yucca filamentosa infested by the Pronuba yuccasella, as this species always is when it seeds at all.' In addition I remark, 'but the fact remains, that the Yucca is so arranged that it must have external aid before it can use pollen.' The purport of my address was not to show that Yucca did not require insect or other aid in fertilisation, but that Professor RILEY and Dr. ENGELMANN had probably misinterpreted some facts in connection with the insect and with Yucca, and which led Professor RILEY to believe that the insect had been 'wonderfully modified,' that it alone could possibly successfully apply the pollen. As I have expressed it in the address, 'that the elaborate and wonderful ingenuity of the insect in applying pollen, as described by our

friend (Professor RILEY), is wholly unnecessary.' It is the peculiar ingenuity, and not the actual fact of insect agency, that I was disputing. I may say, in conclusion, that I have never known a case in America, where any Yucca was made fertile without artificial aid; and I should suspect, in the European cases, where fertility has resulted, that if there be no insect agency in the cases, pollen has been brought to the stigma by fading petals from other flowers, or, in some other extraneous way."

— GARDENING CHANGES.—The fame of the Aston Lower Grounds, near Birmingham, has reached far and wide, and in no public garden have happier results been achieved by means of beautiful and artistic displays of sub-tropical gardening, spring, summer, and carpet-bedding. With those famous gardens the name of Mr. W. SPINKS, the experienced and talented gardener, has long been associated, but we regret to say the connection will shortly be severed. We can only hope that Mr. SPINKS may soon be fixed in a new position, where he will have full scope for the exercise of his undoubted ability as a cultivator. Mr. SPINKS is a certificated pupil of the Royal Horticultural Society, and has had experience in French and English gardens, including a long and varied course at Chiswick.

— NEW AURICULAS.—Mr. B. SIMONITE, of Rough Bank, Sheffield, is about to distribute two of his new Auriculas—viz., Talisman, green edge, and Frank Simonite, white edge. Both are flowers of fine quality, and excellent additions to two of the weakest classes of Auriculas—the green and the white edges—while the self and grey edges are very strong. Of late years there has been a pause in the production of new Auriculas; at any rate of such as can claim to be of first-class merits; and the new departure in the matter of Mr. SIMONITE's flowers is likely to be followed by the distribution of other varieties that have made a good reputation during the past three or four years.

— A NEW TROPEOLUM.—Mr. INGLIS, gardener to Earl GREY, at Howick, has sent us a seedling Tropeolum, the result of a cross between King of Tom Thumbs and the climbing Bothwelliana, and which he states is at present perfection as a climber, being one mass of flowers. It is certainly a very fine one, the flowers being large and bright, and the foliage vigorous and purple-tinted. The habit would appear to be that of the Lobbianum type, but the flowers are considerably larger. We have, therefore, no doubt it is, as Mr. INGLIS affirms, "a good greenhouse climber," and we are not surprised to learn that "grown in a greenhouse, there are always plenty of flowers, summer and winter."

— THE WEATHER.—General remarks on the weather during the week ending Aug. 16, issued by the Meteorological Office, London:—"The weather during this period, though dull on some days, has been much finer than of late, and very dry. Thunderstorms, however, were experienced in the West of Ireland on several evenings, especially on the 14th and 15th, but were not accompanied by much rain at any of our stations. The temperature was considerably above the mean in Ireland and Scotland, and 2° or 3° above it in most of the English districts, but in "England, E." it was about its mean value. The highest readings observed were much in excess of those recorded for a long time past, the maxima being 82° in "Ireland, W.," and 79° to 81° in nearly all other districts. The thermometer was lowest during the morning of the 10th, when it went down to 45° in the eastern and central parts of England; on the whole, however, the nights were mild. The rainfall was scarcely measurable in any district excepting "Ireland, S.," and even there it was very slight. Bright sunshine has been much more prevalent than it was during last week, but the number of hours recorded was nowhere very great. The percentage of possible duration varied from 61 in "England, S.W." to 37 in "England, E." The wind on the 10th was generally south-westerly, and on the following day very variable, but during the remainder of the period it was generally north-easterly. In force it was moderate or light in all parts of the kingdom."

— GARDENING APPOINTMENTS.—Mr. J. S. BELLIS, for eight years Gardener to Major THOYTS, at Sulhamstead House, near Reading, has been appointed to succeed Mr. J. W. LAURENCE, as Head Gardener to W. F. WEBB, Esq., Newstead Abbey, Notts.—Mr. H. DOBBIE, late Foreman at Cranfield Court, Beds, has been appointed Gardener to Admiral Sir GEORGE GIFFORD, at Brightleigh, Redhill, Surrey.

A GUIANAN SAVANNA.

BRITISH GUIANA, say the authorities, may be roughly mapped out into five physical or botanico-geographical provinces. The whole area of the colony is about 50,000 square miles, as against 30,000 for the Dutch, and 14,000 for the French possessions in that part of the globe. The surface is quite low and flat everywhere for 50 miles or more from the coast. First comes the sugar tract, which is the only part of the colony in which cultivation is carried on, or that is inhabited by the European settlers. A timber tract bounds this on the south, extending as far up the rivers as their lowest cataracts, but Mr. im'Thurn tells us that nearly all its fine trees have now been felled or destroyed, and unless means are taken to allow the forests to recover and either to maintain a successive growth of large trees or else to open out highways further into the interior, the timber trade of the colony will soon come to an end. This timber tract is inhabited only by a few negroes and Indians. Next comes the forest tract, a region everywhere covered by a dense forest of a characteristically tropical character, as yet untouched by the wood-cutter, consisting largely of the two most valuable trees of the colony, the lauraceous "Greenheart," *Nectandra Rodiaei* and the leguminous "Mora," *Mora excelsa*. In the west, between the fourth and sixth parallels of North latitude, extending into both Venezuela and the north corner of Brazil, rise the magnificent mountains of Roracma and Humirida, the peaks of which reach an elevation of from 5000 to 8000 feet above sea level, with magnificent cataracts down their steep slopes. East of these, through the interior, bordering the greater portion of the length of the Essequibo and Corentyne Rivers, stretches what Schomburgk calls the Savanna region. It extends over not less than 5° of latitude, forming, in fact, part of the great grassy plain which occupies so much of the interior of the South American continent, and in general character much resembles the llanos and pampas of Brazil and the Argentine Confederation. Schomburgk calculates the area which it occupies in British Guiana at 14,000 square miles. In the swampy hollows there is an abundant growth of Cyperuses and Scirpi, and in the damper parts grow also *Abolboda*, *Xyris*, and various *Eriocaulons*. The scrubby wood consists to a large extent of *Curatella*, and the principal orders are Leguminosae, represented by *Mimosas* and *Cassias*, *Rubiaceae* by *Paliourea rigida*, *Malpighiaceae* by upright-growing, densely tomentose types; such as *Byrsonima crassifolia* and *verbascofolia*; *Melastomaceae* by *Diplochita Fothergilla* and *Tibouchina aspera* and *Verbenaceae* by *Ægiphila*. Amongst the herbaceous or half-herbaceous types associated with these Mallows, Turneras, Ipomeas, Melochias, and *Evolvuli* are plentiful. Our woodcut (fig. 47, p. 241) is a copy of a photograph taken by Mr. im'Thurn in November, 1878, of the savanna at the top of the Kaie-teur Falls, a cataract which in height, volume, and beauty of the surrounding scenery, must rank amongst the finest waterfalls in the world. It is situated on the Potaro or Black River, which flows from the mountain tract of the Venezuelan border to join the Essequibo about 100 miles from its mouth. A few years ago a path was cut through the forest up to the base of the waterfall from the highest point to which a steamer can make its way up the Essequibo, but this has been very little used, and much of it is already obliterated by the rapid growth of the tropical vegetation. Although the great waterfall is not more than 30 miles from the Essequibo, as yet it has been visited by very few Europeans. The principal object in the foreground of the photograph is a *Fourcroya*-like plant, of which Mr. im'Thurn secured specimens, and which proves to be an undescribed species of the genus *Cordylina*, of which only one species has been previously found on the American continent. It may be named and characterised as follows, viz. :—

Cordylina micrantha,^{*} Baker, n. sp. — General habit of a *Fourcroya* of the cubensis and tuberosa group, the rosettes at first sessile, but in old plants elevated on a thick simple stem as long as the leaves. Leaves (I know them from the photograph only) lanceolate, entire, stiffly suberect. Inflorescence

* Fruticoso, trunco simplici demum foliis æquilongis, foliis dense rosulatis late lanceolatis rigidis suberectis, floribus in paniculam amplam elongatam decompisatam dispositis, ramis ultimis laxe subsupercatis, bracteis lanceolatis infimis flore æquilongis, perianthio pro genere minimo, segmentis oblongis obtusis tubo infundibulari æquilongis, genitalibus inclusis, J. G. B.

three or four times as long as the leaves, the decom-pound panicle made up of erecto-patent bipinnate branches, the lower ones more than 2 feet long, the leaves of their lower part lanceolate, subrigid in texture and nearly a foot in length. Ultimate branches subsupercate, 2–3 inches long; flowers lax, solitary, nearly sessile, each subtended by a single lanceolate bract, the lower bracts as long as the flowers. Perianth not more than $\frac{1}{4}$ inch long; segments oblong, equalling the funnel-shaped tube in length. Stamens and style included. J. G. Baker.

THE LIFE OF PLANTS.*

At every step in the investigation of what takes place within the plant itself we are obliged to confess our ignorance! How is the sugar elaborated which we extract from the Beetroot?—how is the oil formed which we find in seeds and fruits?—how are the alkaloids secreted in the Poppy?—the nicotine in the tobacco? We do not know the principles which guide these actions. The practical operations of everyday life as conducted by the farm labourer or market gardener—what of them? How does the air act on the earth broken up by the plough?—what function is performed by the lime which we throw by cartloads on our soils to increase their fertility?—why is it necessary to place under frames the vegetables whose development we wish to hasten?—to obtain a higher temperature, no doubt; but how does this heat act?—what are the changes that it brings about? . . . I should never finish if I were to mention to you all that we are ignorant of and all wish to know.

In this lecture-room we shall try to show you the actual state of the science, to demonstrate to you by the aid of numerous experiments that which words sometimes leave undecided, and to conduct you by ways which we shall try not to make too difficult, to the limit of our knowledge, and to give you personal experience of the obstacles which impede our progress. At the end of the lectures we shall ask such among you as are willing not only to know the results obtained, but are also desirous of knowing how they are arrived at, to follow us to the laboratory, and there we will put in practice the processes employed in the researches. We shall endeavour to furnish you with well-tempered arms in which you can have confidence to engage in new studies, but we shall not pretend to direct you there. What is the instinct which guides the original investigator?—how is it that he has a secret presentiment that in engaging in such and such a course, he will arrive at his aim?—on what fugitive indications does he rely? No one can precisely determine. Priestley, whose name we shall so often repeat in these lectures, believed in chance, and was often repeating, not without some ostentation, that it was by chance that he had made his discoveries. Sometimes a happy chance may place before attentive eyes a fortunate circumstance which proves the germ of an important discovery, but it must be well understood that long study is necessary before a new fact dawns upon one. There must be hard, uninterrupted work in order that from this unexpected fact may be drawn the consequences which it entails, the conditions must be varied under which this fact was produced, and they must be scrutinised one by one. A happy chance may be the origin of a discovery, but according to Buffon, the long patience which renders a chance observation useful pertains only to genius!

It is not possible to teach others how to make discoveries, but we can point out how they have been made.

Our studies will include the following subjects :—1, germination; 2, nutrition of the plant; 3, elaboration of the chief components; 4, movement of water in the plant; 5, diffusion of the chief components; 6, maturation.

GERMINATION.

The choice of the seed is of primary importance, for on its quality depends the success of the harvest. Its age, its purity, can be regularly controlled, and I intend to establish in the laboratory a department for the trial of seeds, such as exists in a great number of German laboratories.

The control processes do not, however, solve all

* The subjoined condensed extracts are translated from M. Dehérain's lecture introductory to the course of vegetable physiology at the Jardin des Plantes, Paris.

questions concerning the choice of seeds. Their origin, which is sometimes of primary importance, especially in the case of the sugar-Beet, is indicated neither by their appearance nor by their composition. The root of the Beet contains sugar in very variable proportions. I have found some which contained 22 per cent. of sugar, and others which only contained 3 per cent. What is the cause of this enormous difference? Doubtless the mode of cultivation tends in great measure to modify the richness of the root. Without doubt, also, the action of the season is considerable, but the origin of the seeds has a still greater influence, as was well proved in the experiments undertaken a few years ago by M. Frémy and myself. Seeds sown in artificial soils composed of the same elements, enriched with the same manures, living under the same conditions, developed rich or poor Beets according to the nature of the seed sown. The seed duly selected, should it be placed at once in the earth, or should it be submitted to certain preparations which hasten its evolution, and be protected from the injurious agencies which it may have to encounter? Some methods of preparing the seed have been much praised, and we will examine them, although at present none have furnished sufficiently decisive results for their use to become general. The seed having been sown, in order that its evolution may commence, three conditions are necessary: moisture, a certain degree of temperature, and the presence of oxygen. The study of the change of volume, of the composition of a fixed atmosphere maintained in contact with the seeds while germinating, will furnish us with an opportunity of showing you in the laboratory the best methods of measuring and analysing gases.

To understand well how the materials accumulated in the albumen of the seed are utilised in the formation of new organs we must compare the composition of the new plant with that of the seed from which it springs, and in time show you the processes for estimating the quantities of the starch, fatty matters, cellulose, glucose, dextrine, albumenoid matters, and asparagine.

However useful may be the analytical mode of determining the function of the diverse substances which the albumen contains, it does not explain the phenomenon of the nutrition of the embryo to the same extent as do the synthetic researches of my learned colleague, M. van Tieghem, who has with marvellous dexterity dissected the seed, taken away the alimentary matter which surrounds the embryo, and replaced it by a paste composed of certain materials. In spite of this substitution the embryo developed as if it had been in a normal condition.

Botanists have often called attention to the admirable organisation of the seed, so well adapted to be carried away by the wind, and thus to ensure the wide dispersion of the species. Chemists share their admiration while noticing the provision of alimentary material which surrounds the embryo and furnishes it with the elements of its primary organs, but, nevertheless, there is a dark side to this picture. It sometimes happens that the seed does not contain exactly all that is necessary for its evolution. That was demonstrated a few years ago by an eminent Austrian physiologist, M. Boehm. He discovered that the common Haricot germinates properly in distilled water, but that the materials contained in the cotyledons remain inert, and are not utilised, so long as the water into which the radicles are plunged is pure and contains no salt or mineral matter in solution. Under these conditions, instead of shrinking little by little, shrivelling and decaying in consequence of the loss of the substances which they contain, the cotyledons remain hard, swollen, and turgid; evolution is arrested, the stem remains short, stunted, and the plant finally dies. One of these days we will show you the results of this curious experiment, which offers to physiologists a problem of diffusion of extreme delicacy which is far from being solved. The experiment of M. Boehm proves that, however admirable its organisation may be, the seed does not always contain all the elements necessary for its evolution.

It is not only by the sowing of seeds that vegetables are multiplied; tubers and bulbs also serve to propagate them. The analysis of these organs will prove to us the existence of matters often identical with, sometimes only analogous to, those contained in the seed; but although the chemist distinguishes the inuline of the Dahlia and the Jerusalem Artichoke from the starch of the Potato, the physiological functions of these substances are not different, and the

development of the tubers and bulbs requires the same external conditions as that of the seeds.

In woody plants the material necessary for the formation of new organs is stored up in the cells of the pith, and in the medullary rays. There are to be found starch, nitrogenous compounds, associated with their faithful companions the phosphates, forming the reserve substances which at the first call of spring are utilised by the growing bud and leaves. The study of the starchy reserves which the wood contains during the winter—of their disappearance in spring, soon to be followed by the processes which result in the formation of fresh supplies—the analogies presented by the expansion of buds and the germination of seeds, pointed out by a learned German forester, M. Hartig, were the object of the studies of a young physiologist, M. A. Gris, too soon taken from the scene of his labours in this establishment.

During the germination of the seed and the expansion of the buds the plant lives on itself at the expense of the materials stored up in its tissues, but from this time it will draw from the soil and the atmosphere the substances which must take part in its development.

NUTRITION OF THE PLANT.

This second part of our teaching is of great importance. We not only seek to know what are the substances which the soil should furnish to the plant, and thus to satisfy a legitimate curiosity; but we wish to be acquainted with these nutritious substances, in order to place them in the soils where requisite. Our agricultural operations can only be executed by collecting together a large number of individuals of the same species. It is necessary that these individuals should be developed at the same time. Success lies in the fact that they all should grow simultaneously, and should all be matured at the same time. Now all these individuals of the same species must experience at the same instant the same wants; it is, therefore, necessary that our stores should be so well furnished as to provide for each one of them what it requires. It is on the care which we take to assure this regular supply of food that the abundance of the harvest depends.

Sources of the Food.—We have to find out where and how the plant can obtain the materials which it employs in order to raise in a few months a stem several metres in length. A seed of Tobacco does not weigh a milligramme when placed in the earth in the month of March, but it furnishes in October a plant of 2 metres in height, weighing several kilogrammes. Where has it found the carbon which forms half of its dry material?—or the hydrogen and oxygen which enter into the composition of all its tissues?—or the nitrogen which is contained in the alkaloids, which are sometimes violent poisons, as well as in those precious albuminous materials which form the staple food of men and animals?—or, finally, whence has it obtained the mineral constituents of the ashes which are never wanting without causing the arrest of the growth of the plant?

Source of the Carbon.—There are few questions that have given rise to as much investigation as the origin of the carbon of vegetables. It was at the end of the last century, in 1772, that Priestley observed for the first time that green plants restore the purity of the air lost by the combustion of carbon or by animal respiration. The admirable discovery of Priestley was incomplete. Senebier soon made it clear that vegetables only return oxygen to an atmosphere charged with carbonic acid, and the celebrated physiologist, Ingen-Housz, finally discovered the cause of the phenomenon which Priestley had failed to observe. Ingen-Housz proved that it was only under the influence of the polar rays that the decomposition of carbonic acid by the chlorophyll regularly takes place. It is desirable that nothing be left uncertain in the study of this important phenomenon. At the commencement of this century Th. de Saussure undertook some researches to discover the proportion of the quantity of carbonic acid decomposed to that of the oxygen given off. Later on Messrs. Boussingault, Draper, Ed. Becquerel, Clézet and Gratiolet, Sachs, Cailletet, Prilleux, Barthélemy, Merget, Timiriazeff studied minutely all the details of the problem; Frémy, Fihlhol, Gauthier, Pringsheim, isolated the chlorophyll, decomposed it, and obtained it in a state of purity; they ascertained how it is traversed by the luminous rays, how it absorbs them or transmits them, so that real progress has been made in the study of this important phenomenon, which establishes from one

point of view so striking an opposition between the two kingdoms, vegetable and animal.

Is the carbonic acid of the air the only source whence plants derive their carbon? I thought so once, but my long sojourn at the school of Grignon, the numerous experiments which I have tried there, and the observations which I have collected, have led me to be of the same opinion as my learned friend, M. le Baron Thénard, viz., that what is true in certain cases is not so in all, and that if several plants develop normally under the sole influence of the carbonic acid of the air, and only derive from the soil nitrogenous materials and mineral substances, there are others that benefit to such a degree by the use of carbonaceous manures, that they seem to find in them the elements of their growth.

Sources of Nitrogen.—We shall try to find out also under what form the nitrogen is assimilated which forms the integral part of several of the components of plants; we shall show you that the nitrates, the ammoniacal salts, favour the development of certain species, while they exercise on the growth of others no favourable influence. For these it seems necessary to provide the nitrogen in the form of those complex combinations which contain nitrogen united with carbon, hydrogen and oxygen, combinations which exist in farmyard manure, and which M. Thénard has succeeded in reproducing by synthesis, and which he has studied for a number of years with such admirable perseverance.

We shall discuss, with regard to the origin of the nitrogen of vegetables, an important question, which, in spite of many efforts, is not yet completely solved:—A forest constantly exhausts the soil, and nitrogenous matters are taken away in the timber, although we never take the trouble to give back to the soil that which has been taken from it. Nevertheless, the forest shows no signs of perishing. The high mountain pastures, where animals graze all the summer, never receive any artificial manure. It would appear as if they must be constantly impoverished, since the nitrogen contained in the cheese made from the milk of the animals, the wool which covers them, even the flesh of the animals that have increased in weight, is derived from the soil of that meadow. No artificial restitution is made, yet every year the soil is covered with a new verdure, offering the same supplies of food to the flocks. Thus, if like M. Boussingault, we analyse the manures distributed over the soil when regularly cultivated, and afterwards the crop developed under the influence of these manures, and thus establish a balance between the nitrogen introduced and that taken away, we shall often find that there is more nitrogen in the crops taken away than in the manures put on, but yet the soil does not become sterile.

Now, since Lavoisier's time, we have known that matter is neither created nor destroyed. It is therefore obvious that the nitrogen must be restored under some form, to the forest, the meadow, and to arable land. How is this restitution made? How does the nitrogen of the atmosphere find its way into the tissues of plants? Many attempts have been made to discover this; my colleague, M. G. Ville, thinks that plants are capable of taking directly from the air the atmospheric nitrogen, and of mixing it with their carbonaceous materials. The numerous experiments which he has made to maintain his views have been controverted in France by M. Boussingault, in England by Messrs. Lawes, Gilbert, and Pugh. Does the nitrogen combine with the ulmic materials of arable soil? The experiments I have made on this subject still present some uncertainties. In the last few years M. Berthelot has discovered that under the influence of electricity nitrogen acquires new properties, and that losing its habitual inertia it becomes capable of combining with carbonaceous materials. We shall adopt this opinion, which will give us the opportunity of discussing a question which greatly occupied the physiologists of the 18th century, viz., the influence of electricity on vegetation.

We shall have finally to discuss the theory proposed by a distinguished chemist, M. Schlessing, who, depending on an old experiment of Cavendish, attributes to the direct union of oxygen and nitrogen under the influence of thunder, the sole origin of new nitrogenous combinations. According to the views of M. Schlessing the nitric acid produced in our atmosphere is changed in the sea into ammonia; this escapes from the ocean, is diffused in the air, and reaches the leaves of plants, to which it contributes the food.

Source of Mineral Constituents.—When we have examined the manner in which plants assimilate

carbon, and the nitrogen which enter into the substances contained in their cells, we shall not even then have finished with the phenomena of nutrition. All plants when burnt leave in their ashes the mineral matters necessary for their nutrition. We shall see how their proportions vary according to the nature and the age of the burnt organs. We shall point out the method of ascertaining the presence and the amount of the mineral substances, such as phosphoric acid, potash, lime, magnesia, which are met with in all plants, such, for instance, as silicic acid, which, very abundant in some species, is wanting in others, soda which, in spite of its great resemblance to potash, is yet absolutely wanting, as has been proved by the eminent chemist, M. Péligot, in many terrestrial plants. The composition of the ashes of plants is therefore far from being uniform; we shall try to make you understand how it is that two plants placed in the same soil develop together, and while their roots entwine yet they each draw from the same soil different mineral elements. In the same field are often sown together Clover and Wheat: the leguminous plant is protected during the first year of its growth by the cereal, and the following year, when its taller companion has disappeared, it becomes vigorous, and acquires full possession of the soil. Now, if we analyse the ashes of these two plants, we find that lime is abundant in the Clover, and that it is rare in the Wheat. In the ashes of the latter there exists a considerable proportion of silica, which is absolutely wanting in the ashes of the Clover. If in the same soil Potatoes and Beetroots are grown, and if nitrate of soda be applied to stimulate their growth it will be found that the soda is notably present in the ashes of the Beetroot, but that there is not a trace of it in those of the Potatoes.

The roots can then select from the soil certain matters in preference to certain others. It will be interesting to study the mechanism of this elective assimilation of mineral matters. Such investigations lead to results of great interest. They show in particular that all the substances contained in the ashes are far from having equal importance on the growth of the plant. The successful establishment of the elegant method of cultivation by means of nutritive solutions (water culture) is based upon these circumstances. There are some species—Buckwheat, Cress, and Beans, &c.—that can fulfil all the stages of their growth without having their roots in the earth at all, but which are placed in an artificial solution composed at will. If the materials are well chosen, and the proportions well adjusted, the plant will develop normally; if it does not find in the water all the food necessary for it it remains small, stunted, or perishes.

MM. Knopp, Nobbe, Erdmann, and Schreder, in Germany, and in France M. Raulin, have lately elicited from these experiments results of great interest. Before this M. Boussingault and M. G. Ville had occupied themselves with solving the same question by cultivating plants in barren sand, which has the advantage of maintaining the plants in their natural conditions.

The second chapter of the course, which we must call the nutrition of the plant, being finished, we shall commence another subject—the elaboration of the component parts, without concealing the difficulties presented by it.

(To be continued.)

RUSH-BEARING.

THIS ancient custom formerly prevailed in many parts of England. The floors of the rude churches in country places were unpaved and uncomfortable, and the covering of Rushes was useful in keeping the feet warm; hence the custom of carpeting the floor with Rushes from time to time, and hence the annual Rush-bearing which in time was converted into a festival. Even when the paving of churches had been improved, the covering of Rushes was still continued. At first the Rushes were merely strewn over the floor, afterwards they were woven into mats.

The present ceremonial of Rush-bearing is derived from the period when loose Rushes were employed upon earthen floors, and it is therefore a memorial of a usage of our earliest ancestors which obtained long before the Conquest, at a time when the churches of Saxon England were wooden buildings few and far between.

At Rochdale in Lancashire, where the ceremony was long kept up, the Rushes were laid transversely in the Rush cart, and were cut with sharp knives into

the desired form. When the cart was finished the load was decorated with Carnations and other flowers in various devices, and surmounted with branches of Oak, the driver riding on the top. The cart was drawn by horses or by twenty or thirty couples of men decked out in ribbons and finery. Men with horse-bells preceded them, and kept grotesquely jumping from side to side, and jingling the bells as they passed along. A band of music followed, with morris-dancers, followed by young women bearing garlands. After them, in the long procession, came the Rush-banner of silk, adorned with Roses. The banner was 4 or 5 yards broad by 6 or 8 yards long, and it had for its main device Britannia and the Royal arms. This odd pageant was flanked by men carrying long cart whips, which they kept continually cracking, ostensibly to clear the way, but really for the sake of the din, which is so dear to rustic people, whose nerves are strong. It was a matter of rivalry between neighbouring villages which should mount the best cart and display the best banner, and sometimes they quarrelled on these points.

The details of the observance varied at different places. At Warton, in Yorkshire, hard Rushes from the marsh were cut up into bundles, dressed up with fine home-spun linen, silk ribbons, and flowers. These bundles were carried erect in procession by the young women of the place, attended by all the people, and accompanied by the pomp of music and loud drums and the clashing of bells. At the church they entered at the west door, set down their burdens and stripped them of their ornaments, leaving the heads of them alone, with their decorations of flowers and cut paper, in the chancel of the church. A feast followed, and then, weather permitting, a dance around the Maypole, which was decorated for the occasion.

At the Rush-bearing at Grasmere paper garlands, tastefully cut, were deposited in the vestry by the girls of the village. Norwich Cathedral used to be strewn with Rushes on the Mayor's day, when the Corporation attended service, and rites of a floral character were observed.

At Ambleside the population in July includes a large number of visitors, who are probably in the proper temper for studying the picturesque, and subscribing towards its effective display. Accordingly, the Rush-bearing at that place has assumed the dimensions of a moving flower show of large proportions. A numerous procession of young people is preceded by a band of music, and the village children who assist receive, as of old, a pennyworth of gingerbread, and a small gratuity at the church door. Rush-bearing still survives in Westmoreland, and has been continuously observed from old times at Ambleside, Grasmere, and Warcop. It has been revived, after disuse, at some other places. *Cor.*

THE PEA MIDGE.

AMONGST the very numerous species of two-winged insects which, in one way or another, infest or attack our vegetable productions, there are none more remarkable for their structure, or more interesting on account of the diversity of their habits, than the delicate little midges which compose the genus *Cecidomyia*. These are amongst the most delicately formed and fragile of insects; their bodies and legs are of great length, and so feeble that the latter break off at the slightest touch, whilst their antennæ are very long and generally formed of a series of little knots surrounded by whorls of hairs, rendering them very beautiful objects for the microscope. Their wings are also fringed with long fine hairs. Their habits are varied, and it is quite remarkable that such delicate creatures should be able to produce such extensive effects upon the different plants which they attack. Several of the species have already been illustrated and described in the *Gardeners' Chronicle* by Mr. Curtis and myself, including the Wheat midge (*Gardeners' Chronicle*, 1847, p. 604), the female of which deposits its eggs in the ears of Wheat whilst in blossom, the young orange-coloured larvæ feeding upon the pollen and sucking the newly formed grain, and thus often causing very considerable injury to the crop. The Yellow Rocket midge (*Gardeners' Chronicle*, 1845, p. 400) infests the flowers of the Bitter Winter Cress, or Yellow Rocket (*Barbarea vulgaris*) stunting the flower-spikes and injuring the young leaflets, on opening which the bright red pupæ of the midge are found inclosed in little whitish silken cocoons, the ochre-coloured larvæ being also found in the distorted

buds. Another species infests the young twigs of Willows, causing much injury to the shoots used in basket-making, by boring into the soft wood, and when fully grown protruding their little pupa-cases half out of the twigs in the same way as the Goat-moth chrysalis does (*Gardeners' Chronicle*, 1847, p. 588). In the different figures illustrating these species we may notice that the length and extreme fragility of the limbs are not sufficiently represented.

The species of this and a few others closely allied genera constitute a separate section in the family Tipulidæ, named Gallicoles, from the habit of many of the species of raising galls upon plants similar to those produced by the Cynipidæ. De Gur has represented the transformations of several of these gall midges, including *Cecidomyia Loli* and *Pini*, and *Lasioplera Juniperi*, and Swammerdan described another species under the name of the Rose-Willow midge, from the Rose-like growth of the young Willow shoots caused by the presence of the larvæ of this species. References to the natural history of various other species are given in my *Introduction*, vol. ii., p. 520.

We have now to add another species to the list of these little flies, which we have recently ascertained to be very injurious in the pods of the garden Pea (*Pisum sativum*) at the end of July. On looking over



FIG. 48.—CECIDOMYIA PISI.

a row of the Premier Pea we found many of the pods near the upper part of the plants shrivelled and blackened and otherwise distorted, and on opening them some were found coated inside with blackish mould in parts, with the Peas more or less abortive, whilst on the inner surface of the pods and on the Peas themselves were found a great number of minute white or yellowish maggots. In some cases the pods and inclosed Peas were well formed, as in our figure (fig. 48), but swarming with the little parasites, of which we counted more than 150 in one pod, and in another pod the number was still greater, giving the appearance shown in our figure, except that the little maggots represented by short black lines are in reality almost colourless. In the upper part of our figure, on the left-hand side, is given a magnified view of one of these maggots, which when full grown (as shown in the small circle) are about one-twelfth of an inch in length. In the next figure is shown the front of the body, the head terminated by a small, somewhat conical joint, with two very minute points; and beneath this is shown the extremity of the body, with two pairs of small obtuse points. These little larvæ crawl about with considerable ease, notwithstanding their want of legs, by the assistance of the points at each end of the body. They have also the habit of bending the body into a circle, fastening the points of the head into those of the tail, and then suddenly letting them go with a jerk, causing the insect to

spring to the distance of several inches, a muscular feat which is almost as if a man were able to take a leap of a hundred yards. When full grown they fall to the ground and bury themselves in the earth, where we must leave them until the final transformation of those which are now under our investigation is effected, when we will again record the result of our observations. Running about, and even within some of the infested pods, we found specimens of a minute black, shining Hymenopterous parasite, represented in our lower figure, which is evidently the *Leptacis scutellaris*, Thomson, an insect closely allied to the *Ichneumon* Tipulæ and *Ichneumon insores* of Kirby, which are parasitic on the larvæ of the *Cecidomyia* of the Wheat, and we have no doubt that our little species is in like manner parasitic on the larvæ of the Pea-midge.

I find that Reaumur had observed the little Pea-midge larvæ and had noticed their jumping powers, but had not succeeded in rearing them. Professor Loew, in his memoir on the gall-midges ("Die Gallmücken"), described the larvæ. Mr. Curtis also, in his *Farm Insects*, shortly notices the maggots, which he thought were the larvæ of "some two-winged fly." The perfect midges have, however, been described by Winnertz (*Stettin Zeitung*, 1854, p. 322), under the name of *Cecidomyia* (*Diplosis*) *Pisi*. *I. O. W.*

Home Correspondence.

Early Peaches.—Noticing two articles on the Early Louise and the new American Peach, the Alexander, I give my experience with respect to both of these fine Peaches. I do not think any one fruited either of these before I did, unless it was Mr. Thos. Rivers himself, of course, who was the raiser of Early Louise, and his son, who introduced the American variety to us. As to Early Louise, there is no doubt whatever in my mind that it is the best very early Peach we have. It is prolific, well developed and coloured, and of good flavour, and is much esteemed on the Continent as such already. Early Rivers, but for the defect of the stone cracking, when the fruit ceases to ripen and insects creep into the stone, would certainly be the best, much resembling, as it does, a fine Noblesse. As to Early Beatrice, which is in favour in Texas, I find it too small, though otherwise excellent. The Alexander is a new and valuable introduction, something like Early York, and as good. I should like to see a cross between it and Early Rivers. No one need hesitate about choosing Early Louise and Alexander for very early sorts. The Amsden June (the other new American) is also a very fine Peach, larger than the Alexander, and a few days later with me. The dates given in the two articles alluded to of the ripening of forced Peaches, before the introduction of these earlier seedlings, shows what intelligent culture can do. There is also no doubt that in Peach culture the constitution of the variety is of great importance, particularly in forcing, and in these miserable, sunless seasons, on the open wall, the tender sorts are quite valueless. I shall quite give up open-air culture now, as I find that blistered leaves ruin the ripening of the wood; the trees, too, become out of all shape, and disfigure the walls. All our future culture tends glasswards, and glass copings have proved here of great service. Could they be rendered safer against a sudden spring gale they would be nearly perfect. While on this subject, let me add that standard trellises of cordon Pears are not to be relied on in such spring weather as we now habitually expect; but with a removable paling to guard them against driving winds and cold rains these succeed fairly, though not to be named with walls. *Thos. C. Bréhaut, Richmond House, Guernsey.*

The Tulip Tree.—I would feel obliged by your inserting the following letter from Mr. Henry Shaw, of Tower Grove Park, St. Louis, regarding his own experience in the culture of the Tulip-tree. "I have been planting constantly Tulip-trees for more than a quarter of a century. They are delicate and require careful treatment in respect to planting; planting in autumn has seldom succeeded with me, spring planting suits them better. A nursery transplanted tree from 3 to 5 feet high, planted in moist mild April weather has generally succeeded except the spring be followed by dryness in early summer. When planted 10 or 12 feet high, as you

may an Elm, an Ash, or a Poplar, they never succeed; nor in a wet cold situation. They like a light warm soil well drained, and seldom succeed planted as park or avenue trees, north of Saint Louis; one standing a short distance from whence I write was planted in 1852, is 60 feet high, has a straight stem, vigorous and erect, and has stood 20° below zero more than one winter. Tower Green Park has several hundreds of them, and I consider them first-class trees for compactness of form and vivid green foliage." I must beg to be permitted through the medium of your journal to express my best thanks to Mr. Shaw for his obliging communication. *John Colebrook.*

Castle Kennedy Fig.—This noble-looking and somewhat shy-bearing Fig has borne a nice crop of fine fruit outside with us this season. This tree, like all the other Fig trees on the place, has received no protection whatever during the winter months for several years past, neither do they require any—in this part of the country, at all events—judging by the crops which they bear each succeeding year. And of this we have had conclusive evidence during the last two years, especially the winter of 1879-80, succeeding as it did such a cold and wet summer and autumn, with consequent immaturity of the wood. On all trees that depend upon solar heat for the maturation of their wood, but more especially in the case of the Fig, which is of a pithy nature, one might have reasonably expected that the consequences, under such circumstances, would have been disastrous if not permanently injurious—to say nothing of the prospect of their bearing an average crop of fruit the following season. The fact is, the Fig, like many other things, is coddled too much. *H. W. Ward.*

Reclaimed Land.—I remember that one year, when Potatoes throughout all England and Wales were very much diseased, some tubers planted in soil bordering the shore which had been reclaimed from the sea at Pembrey, South Wales, yielded a remarkably fine sound crop. Seakale likes a sandy soil. It is natural to it, and I have known both lime and manure used with good effect in a case like the one described by "F. F." *Helen Watney.*

The Pea Thrips.—Personally I feel much indebted to "I. O. W." and yourself for the illustration of this troublesome pest in your last number. "I. O. W." says, "We have in vain sought for any previous account of its attacks on the Pea, and are inclined to regard it as an undescribed species." I can say for myself that it has ravaged the Peas in my garden for the last ten years, and has so injured the crop that I had made up my mind to discontinue growing Peas altogether. Hoping that change of seed would get rid of them I tried that method; but in vain. No sooner does the Pea come into flower than you see there is something amiss. The flowers are flabby, do not open freely, and afterwards cling to the pod either at the upper or lower extremity. It is under cover of this envelope that the thrips shelter themselves, and pierce the tender skin of the young pod. The pod then becomes deformed, as shown in the drawing, and where the insect abounds it is painful to see the distorted or discoloured pods, many of them quite black. I do not find the creature touches the Peas, only the shells. I have examined to-day the Peas of my neighbours, and found them equally affected. I notice also that the orange-coloured creatures have all the dark-coloured extremity mentioned by "I. O. W." *W. Marshall, Ely.*

The Lucombe Oak.—There is a good specimen of the Lucombe Oak here, which my late employer (R. W. Gausson, Esq.) was very fond of. He was of opinion, and I have heard others say the same, that it is one of the finest, if not the finest, tree in the kingdom. It measures in circumference at the ground line 16 feet 5 inches, and at 10 feet high, 12 feet 10 inches. The spread of the branches is 67 feet one way, and 56 feet the other; and its height is 80 feet. There is also a Wellingtonia here, which is 36 feet high and 12 feet 3 inches round the trunk. It was planted in 1855. *A. Grant, Gr., Brookman's Park, Hatfield.*

Cottage Gardens and Allotments.—A friend of ours has recently been engaged in examining some cottage gardens and allotments for the purpose of awarding to those which have been best cultivated some trifling rewards offered by the Vicar of the parish and a few friends. The Vicar is a good gardener, and although only resident two years, has by precept and example entirely altered the character of his

parish so far as regards gardening. Our friend says in a letter to us:—"One of the gardens occupied by a hay-tyer was as well cropped as any gentleman's garden could be. There was as much variety in the crops grown as any one could desire; the kinds were all good and all excellently grown. This garden was placed first. The second place was taken by a garden occupied by an elderly man, a carpenter, who walks three miles morning and night to and from his work, and yet manages to find time to cultivate a good sized garden excellently; and it was very pleasant to see how fond the industrious fellow is of flowers. He has growing now several beds of seedling florists' flowers, Carnations, Pansies, &c., and alongside them lots of old-fashioned herbaceous plants. The tug of war came when I had to decide which garden should be placed third, and at last I was compelled in justice to bracket together five as equally deserving. The allotment plots were less satisfactory. One alone was a model of good cultivation. Unfortunately the plots are in too few hands: one man has five, all of them foul with weeds; another has four, and they are scarcely better; several have two, but none of these double holdings were well done. I strongly recommended that only one or at most two plots should be let to a tenant, and that any plot found habitually unweeded should be taken from the idle tenant and let to a tidier and more industrious one. My friend the Vicar has been at immense pains to introduce good sorts of vegetables into the parish, and he has been successful in doing so, to the great benefit of his humble parishioners. He has also created a taste for Rose growing by purchasing dwarfs of the best kinds in considerable quantities, and so getting them at a low price and letting his cottagers buy from him, which many of them have gladly done." We think some of our clerical friends may usefully follow the example of this truly influential parson. *Philanthos.*

Lesbia's Sparrow.—It is very probable that "E. T. M." may find some light thrown on this subject by Catullus in his poems. Both Byron and Moore have verses to Lesbia, the latter's are, I think, a translation or copy of some by Catullus on Lesbia; and I always fancied, though I have never read the old Roman poet's works, that Lesbia was an imaginary character, but perhaps also, like Petrarch's Laura, really had a local habitation and a name. *Helen Watney.*

Michauxia campanuloides.—"Multa renascitur quæ jam cecidit verba," says Horace, referring to the words of a language; one may say as much for plants which formerly held a place of honour in our gardens, and which have since disappeared. When they reappear they have almost the merit of novelty, and they regain their lost favour. Without being Pythagorean, we may suppose that beings only die to be re-born; who knows after all, if the eternal alternation of life and death, be not the law of Nature? Certainly Horace's axiom may be justly applied to *Michauxia campanuloides*, which now-a-days is but little known, and of which I only find mention in the *Gardeners' Chronicle*, p. 213, 1870, where Mr. Harpur-Crewe praises it in glowing terms, which I think are well deserved. We have had *Michauxia campanuloides* this year at the Villa Thuret, where it has grown spontaneously on a rockery without any particular care save occasional watering. It is a truly superb plant, more than 6 feet high, branching from the base to the summit, and forming a full pyramid, very leafy, and flowering not less freely. Its flowers, to the number of several hundreds, turned downwards, are white with a very pale pink tinge on them. The eight divisions of the corolla turn back against the peduncle, and recall in a striking manner a Cyclamen, which it almost equals in grandeur. Why has this remarkable Campanula been so long ignored? I cannot conceive, for it is as hardy as beautiful, and its culture amounts almost to nothing at all—at least under our southern sky. I believe in Engand it would thrive best on a rockery slightly raised above-ground; that is to say, in a situation naturally drained. Like many other Campanulas it seems to prefer a stony soil. *Ch. Naudin.*

"The Noble Tuber."—The Potato is designated "noble" in an article signed "S. H." in the *Gardeners' Magazine*, January 29, 1870, p. 48. In the same paper, same year, p. 105, a correspondent describes it as "humble." In the same paper, same year, p. 160, Potato fanciers are spoken of as "Pomedeirrigists." *Buttermouth.*

Mathiola bicornis.—Lovers of sweet-scented flowers to whom this deliciously perfumed night-blooming Stock is unknown should make a note to grow it in future. As the day draws to its close the flowers open freely and emit the sweetest of perfumes. Towards morning the perfume gets fainter and at last becomes imperceptible, the flowers shrivel up and do not reopen. A fresh supply of blooms open and dispense their sweetness as night draws nigh again. *B.*

Mulching.—I quite agree with "J. S." in the importance of mulching in dry weather—and especially on light land and in dry localities. But I am rather amused at this clever writer writing of our heavy downpour being imaginary. Well, this is rather rich after a June and July almost as wet as those of last year, and plenty of soaked and half rotten hay not carried till August. One would be glad to know where "J. S." hailed from; in fact, I thought I did know, but must be mistaken. Rusty lawns, and the mulching of Peaches, Nectarines, Pears, &c., in the open air have been quite out of our line this year. As for Peas, the chief difficulty has been to get the best Marrows to set in the rain, and some of them need a ladder to reach. But notwithstanding this divergence of experience of this season I quite agree with "J. S.'s" views in general on the excellent effects of mulching, and especially for Briers and Roses. Tan and cocoa-fibre refuse are more likely to generate fungus indoors than out, though I should certainly not recommend either in quantity, or at all in close proximity to the roots of Peaches or other trees. Both are capital for Potatoes, and on heavy soils are exceeding useful. *D. T. Fish.*

The Phylloxera.—As an amateur I hoped to have seen some remarks and advice in last journal given by some who had suffered and gained experience in dealing with the above disease. I feel the more anxious on this point, as "A Gardener" in p. 180 appears to have done his utmost to try and stamp out the same. I remember having obtained from a good firm, four years since, some Vines which some months after being planted, and making good growth, suddenly showed unmistakable signs of Phylloxera; they were immediately taken up and burnt, the border removed, the walls and woodwork inside and out well scrubbed with boiling water and soft soap, &c., thinking to destroy any latent germs, but the effort was useless. The new border was made, and good healthy Vines planted, but in two years after the disease again returned, and in a very violent manner. *Dorset.*

Paragon Cucumber.—Respecting the complaint of your correspondent, that he cannot get this Cucumber to fruit freely, the fact that what fruit he does get comes with prominent spines, shows me that he has not got the true variety, for when obtained true it has scarcely any spines, and is one of the most fruitful Cucumbers for a house that I am acquainted with. I do not consider it so well adapted for frame work as some others. I first saw this Cucumber under the raiser's care before it was sent out, and I certainly considered it the finest of the many fine varieties the Messrs. Kelway had distributed. I feel certain that when obtained true, and under suitable cultivation, it is a prolific bearer. *J. C. Clarke, Cothelstone, Taunton.*

—My experience of the above Cucumber coincides with that of Mr. Gibbons. With me it grows freely enough, but produces fruit very sparingly. About three months ago I planted a house with Telegraph, and one plant of Paragon amongst them. I subsequently cut out the Telegraph, and let the Paragon fill the house, with the intention of fully testing its merits. The result is disappointing, for I have now a house full of vine, with only one or two Cucumbers on it, whereas had I kept the Telegraph in I should now be cutting scores of fruit; fortunately, I am not depending on this house for my supply. Telegraph is undoubtedly one of the best Cucumbers for any one to grow who wants a constant supply; it is most prolific both in winter and summer, is a handsome fruit, and grows to a good size. Some find a difficulty in obtaining it true, but I have always got it true from Messrs. Veitch & Sons. There is a sort sent out by Messrs. Carter & Co. as "Carter's Improved Telegraph." I have grown it three times, but can see no improvement; on the contrary, it is much inferior to the variety it is said to supersede. *A. Barker.*

—I am inclined to think your correspondent Mr. Gibbon has been unfortunate in obtaining Paragon Cucumber (true), for with me and some of my neighbours here it has proved the two last seasons a most profuse bearer, of good quality; it is by no means coarse in growth, the fruit is very uniform, averaging about 18 inches in length, and in most instances is produced in pairs, and oftentimes three at a joint. I am now cutting from a two-light box, which has yielded some hundreds of fruit since the second week in March, when I first began cutting. So sanguine am I as to its merits, that I should have no hesitation in recommending it to every one who grows Cucumbers, especially for market or large establishments, neither would a brace of them disgrace an exhibition table; in short Paragon Cucumber (true) stands second to none. Next season I would advise Mr. Gibbons to favour the Messrs. Carter with his order for this Cucumber, and I doubt not but he will be able to bear me out in what I have here stated. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Cordon Fruit Trees at Hardwicke.—Those interested in the culture of fruits on the cordon system should endeavour to pay a visit to Mr. Fish, at Hardwicke Gardens, Bury St. Edmunds. His diamond-trained cordon Apple trees are this year having capital crops, whereas pyramids and bushes have generally but little fruit. Lord Suffield, Cellini, and other kitchen sorts show best. The most remarkable sight is, however, the Plums, single and double cordons at the sides of the walks. The produce is wonderful. The fruit is literally hanging in clusters, and fine fruit, too. The plan, which is a very inexpensive one, might most advantageously be adopted in many kitchen gardens, large and small, and not only be productive of good crops of fruit, but improve the appearance of the garden, for when in blossom, or bearing fruit, or even with only green foliage, they furnish the walks with an ornamental and interesting fence, and occupy but little space. A fine old tree of Ickworth Imperatrice Plum, on a south-west wall, usually a shy bearer here, is this year giving a large crop of fruit. *R. O.*

Rose Budding.—I am afraid that "J. S." is under some misapprehension as to what I said about this, and probably I was not explicit enough. Mr. Paul very kindly pointed out to me the difference of the second growths; on some of the new French varieties many of the second growths were not showing flower-buds while on the same plant some of these were furnished with flower-buds; and Mr. Paul assured me that if the buds were taken from the flowerless growths the plants produced from these buds would not be autumn bloomers, and his men were very careful only to take the buds from the flowering growths. Mr. Paul's life-long experience amongst Roses has taught him this amongst other things; and if it did not make any difference whether the buds were taken from flowering or flowerless growths I fancy they would know at Cheshunt. *J. Douglas.*

Horse Radish Sauce.—Grate a stick of Horse Radish and stir it into a wineglassful of cream, add a teaspoonful of mustard and a little salt, mix all up well together, and then stir in half a tumblerful of the best vinegar; let it stand five minutes before serving. This is for roast beef. Horse Radish sauce for fish is made with anchovies and butter, but no cream. *Helen Watney.*

Reclamation of Colliery Banks.—Passengers along the railway from Bath to Bournemouth may see, near Radstock, some praiseworthy efforts to rob the hideous colliery spoil banks of some of their repulsiveness. One, which is like a miniature mountain, has been planted with Fir trees, which appear to be thriving, and will soon hide the ugliness of the spot. Another has been made fairly level, and a thin stratum of soil placed on it, in which some good vegetable crops are now being grown. These are examples worth copying wherever it is possible to do so. *B.*

Cause and Cure of Potato Blight.—Many causes have been assigned for its appearance, and numberless experiments have been tried to prevent, and many to discover, its cause and cure. I have tried many experiments to prevent it, but all failed. Acting upon my own judgment, I at last broached the doctrine that it was atmospheric: on that supposition I have acted for more than thirty years with perfect success. I generally plant the last week in March (if not frosty), rather deeply. I generally commence in July to look for the disease, and as soon as I discover, later or earlier, the leaves on the lowest branches turning yellow, I mow off all the tops about 1 inch from the soil. If the disease attacks the next upper branches, it is then too late to cut off the tops, the disease will have affected the tubers. Yet a great many may be saved if not allowed to infect the upper branches. I cut off the tops in 1879, August 23—in 1878, July 30. I have never known it later than August 23. In 1879 I had only one diseased Potato. I have not had a single haul in thirty years. Stems of Carrot seed are affected at the same time as it affects the Potato tops, and destroys the whole of the seed in a very few days. *R. Stimmer, Surgeon, Formby, Liverpool, August 14.* N.B. I shall cut this year (1880), Monday, August 16, as the disease has just appeared in my garden.

Peas.—Your correspondent, "J. E." (see p. 216), aptly hits the mark. I think Criterion still among the best. G. F. Wilson is also a grand Pea, and Marvel with me this year is indeed a marvel—4 feet high, and literally podded from top to bottom. Among new Peas not yet out, John Bull stands prominent—4 feet high, well-filled pods of a delicious flavour are among its chief characteristics. I may also note a white Marrow of great excellence, called Reading Trumpet, which I have grown this season. I had almost forgotten Stratagem, which is the gem of Messrs. Carter's three. *R. Gilbert.*

Market Pelargoniums.—I am much obliged to Mr. Brown for correcting me in reference to Captain Raikes not being a seedling. I had always understood it to be a sport, and it was through inadvertence that I included it amongst the seedlings raised by Mr. Wetherell. As to who were the raisers of several of the varieties of Pelargonium cultivated by the market growers, that is a question for the growers to decide amongst themselves, for I have heard several lay claim to having produced more than one variety that is largely grown. In my notice of the place I did not say that the named varieties I mentioned as grown by Mr. Wetherell were raised by him. *T. Baines.*

Proposed Testimonial to Mr. Grieve.—I have been requested by the committee of the Grieve Testimonial to ask your permission to inform the horticultural public, through your pages, of our intention to present our friend and neighbour, Mr. Grieve, on his leaving Culford, with a proof of our esteem and regard. Should any one wish to join us in this honouring "the Father of the Tricolors," subscriptions or donations will be thankfully received by any member of the committee, or by Joseph Harrison, Esq., treasurer and secretary. *D. T. Fish.*

The Potato Crop.—In the Ilford district the Potatoes made the most marvellous growth ever seen, and gave promise of a good crop, but all this has been changed during the last two weeks. Our Ash-leaf Kidneys were smitten first with the disease, and five-sixths of those left for planting were destroyed. The later kidneys have suffered terribly. A very good variety, Prince Arthur, promised to give a splendid crop, but the disease has taken them. Beauty of Hebron, Early Rose, and Schoolmaster, were attacked ten days ago; the last-named seem to stand it the best. We have several acres of Victoria and Regents; the haul is just spotted, but on lifting several of the shaws I find that they are alike diseased; one-third of them is bad, two-thirds will be diseased in a week. Champions are not touched as yet, nor is the Magnum Bonum, and we hope if fine weather lasts that they will escape. We have had no rain for a whole week, and the glass is high. Some persons say, Dig up all that are ready and send them to market. What is the use of that when the best quality has been sent up, and the price returned for "ware" last week was 25s. a ton? This does not pay for digging and marketing; and all hands are engaged cutting the grain crops, and even there the losses are great—all our Wheat has been laid by the storms. Things look very unpromising this year again. *J. Douglas.*

— In this locality the crop is a very good one both in quality and quantity, more especially the early varieties; but since the middle of July, when disease first set in, it has spread with great rapidity, necessitating the late crop to be lifted earlier than it otherwise would have been. *H. E. Gribble, Canon Hill Gardens, Maidenhead, Berks.*

— There is no doubt that the Potato disease is rife in some places in this county. I heard of it on the 7th inst. as having broken out in Canobie, and that it had shown itself on the Champion. In this neighbourhood I have seen it in several places, very strongly within half a mile of this. It is in the field some 3 miles from here, and I was told this day by a good authority that it was showing itself day by day. I enquired yesterday of a neighbouring grower whether he had any disease in his crop? "None: we have none—that is, not in the tubers, only on the leaf." I fear there are others who hope like this one to escape in the tuber what they see on the shaw. In my own garden I have another patch of Potatoes affected since the 5th. The name of this lot I do not know, as it was in the ground when I came, and I never could get it. It is a good round Potato, and as it stood two seasons without disease, I am very much disappointed. The shaws have fairly gone to the ground in a few hours. Yielding to prejudice I have, with a view to confound prejudice, drawn the shaws of only six rows of Snowflakes, six rows I have permitted to be cut as being better than drawing, and ten I have permitted to remain as being superior to drawing or cutting. I am told confidently as to the great mistake I have made in drawing my shaws! There is no appearance of the disease on Champions or Skerry Blues in the small quantity I have in the field as yet. I watch them with some anxiety. The weather since the 11th has been very hot and close up till to-day. There was light rain last night; thermometer at noon, north side, 64° on the wall; aneroid 30.45, tendency downwards. *J. A. C., Northfield, Annon, N.B., August 18.*

Flower Gardening at the Lower Grounds, Aston, Birmingham.—Possibly in the distant future, at some period between this and the time when Macaulay's New Zealander stands contemplating London in ruins, the public will become educated up to the desired point in matters of form and colour in flower gardening. But to a certainty this consummation has not yet arrived, as is well known by those

who cater in places of public resort; such, for instance, as the Aston Lower Ground, where, as those who have been in the habit of seeing the place are aware, bedding is largely carried out. Within the last two years Mr. Spinks, the head of the gardening department here, has completely remodelled the space occupied by the flower garden; and well he has done it as regards the ground collectively, and also the beds and borders occupied by the flowers. In the planting he has been equally successful, the many different combinations of colour and form being well worked out. Assemblages of distinct handsome foliated plants—generally known as subtypical gardening—are largely done, and look remarkably well, nothing being used that will not stand the weather sufficiently to have a healthy pleasing appearance. Such plants as the following are employed:—*Wigandia caracasana*, raised from cuttings; *Abutilons*, *Palms*, *Acacia lophantha*, *Jacarandas*, *Solanum atropurpureum*, *Hemp*, variegated *Maize*, *Aralia papyrifera*, *Solanum reticulatum*, large *Yuccas*, *Cannas*, *Agaves*, and other things. Dwarf Dahlias of distinct colours are freely used amongst some of these larger leaved plants. An idea of the extent of the carpet bedding may be formed from the fact that 20,000 *Alternantheras* are put out, and half that number of *Mesembryanthemum cordifolium*. As green plants to form a setting for the brighter coloured subjects, in addition to *Mentha Pulegium*, Mr. Spinks is partial to *Herniaria glabra*, dark green, and *Saxifraga hypnoides*, light green; both are slower growers than the *Mentha*, but are better plants when enough are at hand. Things that are suitable for giving relief to the surface of the lowest growers are plentifully used, such as *Fourcroyas*, *Agave Whipplei*, *Echeveria metallica*, *Centaurea*, and small green and variegated *Yuccas*. The yellow leaved *Abutilon vexillarium* and the yellow and purple foliated *Fuchsia Meteor* are used pegged down so as to give lines of colour. Notwithstanding the cold ungenial weather that necessitated delay in putting out many of the plants, the whole arrangement has made such progress as to be very effective. *T. B.*

The Alnwick Seedling Grape.—I see Mr. Bell still contends that there are two varieties of this Grape, and, as a matter of course, that his is the true variety. Both the varieties are fruiting here this season, and, as a matter of fact, there is not the shadow of a difference between the Vine I bought of Mr. Williams when first sent out and the grafts received direct from Mr. Bell by Mr. King, gr., Devizes Castle, and given by him to me to test the variety. The fruit sets, swells, and colours equally well on the Vines from both sources. I therefore as confidently affirm the two, so-called, varieties are one and the same, as does Mr. Bell the contrary. Its non-setting in some places is to me unaccountable, as here no pains whatever was taken anent fertilisation. *W. Wildsmith, Heckfield.*

Fruit Crops.—Apples on the whole are under the average, although some trees are bearing a good crop. The Hawthorn, Lord Suffield, Keswick Codlin, Cockle Pippin, and two or three more are the best. Pears are worse than I expected; the quality is bad. Marie Louise on a wall is the only tree that may be said to bear a crop. We had plenty of Strawberries, but they were scarcely ever dry from the time they began to ripen until they were either gathered or destroyed. Raspberries, red Currants, and Gooseberries were abundant, while black Currants were not half a crop. *J. Douglas, Loxford.*

Florists' Flowers.

THE GARDEN PINK.—The Carnation, Picotee, and Clove have all come in for their share of approbation, and most people think they deserve all the good things that have been said in their favour. In the meantime the more humble Pink must not be neglected. The varieties of the garden Pink are much more hardy than the Carnation and Picotee, and are even more esteemed by some. *Dianthus plumarius* is presumed to be the progenitor of the garden Pink, while other varieties may also be said to claim affinity to *D. deltoides*. The early flowering Pinks are not so much grown as they ought to be in the open borders. There is very much diversity in the form, colour, and habit of the flowers, and their sweet and peculiar perfume is very grateful.

They are so easily propagated, even without the aid of glass frames, that no one need be without them. The pipings of this section should be taken off a month or six weeks earlier than the florist type. Where glass accommodation is limited it is a good plan to dig out a trench, say 9 inches deep and 1 foot wide. In the bottom of the trench should be placed some finely-sifted sandy loam, pressed down rather

firmly and made quite level; in this insert the pipings about 2 or 3 inches apart; water with the fine rose of a water-pot, and then cover the trench over with a square of glass. It is very easy to throw some shading material over this during bright sunshine. This early flowering section is also very well adapted for forcing, but to obtain good plants for this purpose I take the pipings from plants that have been forced about the 1st of May, and strike them in pots over a gentle hotbed. When they have formed roots, they are gradually inured to the open air, and planted out in beds, allowing a space of 9 inches between each plant. These will form very large tufts by the end of summer, and each plant will be capable of producing a score or more of fine flowers by forcing in March or April, when sweet-scented and beautiful flowers are much valued. The largest tufts should be potted in 6-inch pots, the smaller in pots bearing some proportion to their size. They may be potted up any time during the month of September, to become well-established before the winter. Place them in a cold frame until they are ready to be removed to the forcing-house.

The greatest favourite is the pure white-flowered variety, *Lady Blanche* (Gibbons); it produces more flowers than any of the others, and they are invaluable for bouquets. There is another white variety with semi-double fringed flowers, which is also pretty and sweet-scented. Next to this I would place the variety *Lord Lyons* (Clark); it is not so free in growth, but is well adapted for forcing, and produces a large quantity of flowers for the size of the plant: these are of a rich rosy-purple colour, smooth, and of large size. *Derby Day* is another flower of the same type, but the plants do not maintain their health so well; still, this is also a good variety. *Anna Boleyn* is another very old flower of the same type as the two last-named. It is a vigorous grower, and a very useful variety for forcing. *Newmarket*, a reddish-purple self, should also be grown, as it is very distinct. *Mrs. Moore* and *Mrs. Pettifer* are useful flowers, more resembling the florist type: they are white with dark centres.

Where sweet-scented flowers are wanted in large establishments during April, May, and June, all the above should be grown in quantities. From the middle of June and well into July the florist section will furnish a wealth of cut flowers from the open borders, or grown as they ought to be, in beds specially prepared for them. They may be propagated in the same way as the forcing Pinks, and should be planted in October. If the beds could be prepared for them now, the soil will be in excellent condition by planting time, especially if the surface can be forked over two or three times. The Pinks succeed better on light sandy soil than Carnations, and they also succeed well in town gardens.

At one time smoky, dingy Sheffield used to be the headquarters of the Pink. Forty years ago Mr. John Simonite, now a veteran of fourscore years, was a raiser of them, but nearly all of his raising have been lost. The flowers of that date were much thinner than those now in cultivation, and the constitution of them was not so good. In later times Mr. Turner, of Slough; the late Dr. Maclean, of Colchester; and Mr. Hooper, of Bath, have been the principal raisers. Mr. Turner's flowers are very full, and as large as Carnations. Boiard is very large, but the lacing is perfect. Dr. Masters has a poor constitution, but the flowers are also large. Shirley Hibberd is another of the group of large flowers; and if these three were selected to produce seeds quite a distinct strain of flowers would be produced.

If it is intended to save seeds one variety must be crossed with another. This is done by gathering the pollen every day when it is fine with a small brush, and dusting the stigmas with it. That portion of the flower is elegantly curled, but is rather inelegantly termed the horns. The seed-pods should be gathered when it is seen that they change colour; they should be laid out to dry, and the seeds may be preserved in the pods until it is time to sow them in April the following season. A few of the very best varieties besides those named are *Annie*, *Bertram*, *Blondin*, *Christabel*, *Devise*, *Dr. Maclean*, *Emerald*, *Emily*, *Excellent*, *Excelsior*, *Freedom*, *Godfrey*, *Harry Hooper*, *John Ball*, *Lady Craven*, *Lord Kirkcaldy*, *Mildred*, *Mrs. Howarth*, *Mrs. Mitchell*, *Mrs. Waite*, *Nina*, *President*, *Prince Frederick William*, *Reliance*, *Rev. George Jeans*, *Rosy Gem*, and *Sarah*. *J. Douglas, Loxford.*

Reports of Societies.

National Carnation and Picotee.—The exhibition of the Northern Division of the Society was held in the Botanical Garden, Old Trafford, Manchester, on the 14th inst., and was a great success. By common opinion it was the finest exhibition yet held by the Society in the North, and when the difficulties created by the abnormal character of 1879, and the unpropitious influences of July and early August for the development of flowers are taken into account, we feel bound to say the display did great credit to the several contributors, and was a splendid example of what may be effected with the simplest means when accompanied with the watchful, patient perseverance and skill characterising the possessor and sustainer of the genuine floral fire.

As is always the case, the character of the season was marked in the productions of most of the contributors, and while some had brought flowers from a waning bloom, others had caught the very day.

It is manifest the exhibitions of the Society, both North and South, are influencing in a large degree the cultivation of these flowers, and the number of good seedlings being brought forward is correspondingly great. In the South Mr. Dodwell has been patiently at work, and in the North, Mr. Hewitt, Mr. Simonite, and Mr. Richard Gorton respectively, have originated varieties of the highest character and greatest merit. Mr. Gorton, in his stand of twelve dissimilar flowers, Carnations, Class A, which took the 1st place, had four seedling rose flakes and four crimson or pink and purple bizzars respectively, remarkable for high character, quality, and beauty of development. One only was named—*William Skirving*—after the late father of Mrs. Gorton, a gentleman so long and honourably associated with floriculture, and is worthy of the respected name it bears. Each of the others, as may be imagined from the position obtained, in the face of severe competition, was of the highest order of merit. A description in detail we shall reserve for a future opportunity, when the varieties may be available for distribution.

Mr. Simonite brought forward three S.B.'s, one, in the style of Curzon, especially promising. Were Mr. Simonite's flowers not subject to the deteriorating influence of a Sheffield atmosphere he must have reaped long ere this a modest competency from the sale of the fine varieties his skill and unconquerable patience have successively raised, but unhappily again and again fine varieties have succumbed to these baleful influences, and thus his reward has been snatched from his hand, and a wide circle of his floral brethren have lost a never-ending gratification. We counsel Mr. Simonite in the future, so soon as he has originated a fine variety, to place the whole stock in hands and places where Sheffield's destructive atmosphere has no power.

Mr. W. M. Hewitt, of Chesterfield, brought two seedlings, *Master Fred*, C.B., a variety more highly coloured than any C.B. we have hitherto seen, and of the highest excellence in every property. This was selected as the premier Carnation of the exhibition, and deserved the honour, though it had very worthy competitors. As will be seen in the list of awards the three blooms shown obtained 1st, 2d, and 3d places in the class for single specimens, where only Mr. Hewitt could exhibit. E. S. Dodwell, another variety from the same raiser, is also of great excellence, something in the style of J. D. Hextall, though quite dissimilar, and worthy a place alongside that grand old variety. Various other good and promising new flowers were produced, but the above were the most remarkable.

Picotees relatively scarcely sustained the great excellence of the Carnation, but this is to be taken as relative only, and because the excellence of the Carnation was so marked. Seedlings also were less numerous. In Mr. Gorton's stand in Class D we noticed a very pure light-edged purple of a very distinct character, which we thought highly of, and for which we predict a high place even in this richly-provided class.

Mr. Sharp from Birmingham had several flowers very promising in character, but more development was needed before confident opinion could be pronounced.

The exhibition was materially aided by contributions of cut flowers, *Roses*, *Gladioli*, herbaceous plants, and *Orchids*, *Lilies*, *Ericas*, *Ixoras*, &c., from *Dickson & Son*, *Dickson & Robinson*, *Dickson, Tait & Brown*, and *Cole & Sons*, respectively, and was admirably relieved by a copious use of *Ferns* and *foliage plants*, tastefully disposed by the Curator of the garden, Mr. Findlay. Annexed are the awards of the judges:—

Class A, Carnations, twelve dissimilar.—1st, Richard Gorton, Esq., The Woodlands, Gildabrook, Eccles, with *William Skirving*, C.B.; James Cheetham, S.F.; Earl of Wilton, P.F.; Seedling, R.F.; Seedling, R.F.; Seedling, C.B.; Admiral Curzon, S.B.; Rifleman, C.B., ex. ex.; Seedling, C.B., especially fine; Seedling, R.F., very rich; Seedling, C.B.; and Seedling, R.F. A fine stand of admirably grown, well balanced, and well contrasted flowers. 2d, Mr. George Rudd, of Undercliffe, near Bradford, with *Mars*, Sybil, Dan Godfrey, Lord Milton, Lord Napier, Admiral Curzon, James Taylor, and five seedlings. A well grown collection, but the hand of the dresser had been somewhat too heavy on one or two of the flowers. 3d, Mr. B. Simonite, Rough Bank, Sheffield, with *Mayor of Nottingham*, Albion's Pride, Sybil, Sportsman, Seedling, S.B.; ditto, ditto; James Douglas, James Taylor, Joseph Crossland, S.B.; Seedling, S.B.; Mrs. Pattersby, S.F.; and Seedling, S.B. A stand of large, well grown flowers, but, unfortunately, waning in their beauty. 4th, Mr. John Beswick, Middleton; 5th, Mr. E. Booth, Moberley; 6th, Mr. J. Booth, Failswoth.

Class B, twelve Picotees, dissimilar.—1st, Mr. John Beswick, Middleton, with *Miss Wood*, L.R.; Lord Valentia, H.R.; Miss Horner, H.R.; Mary, L.P.;

Zerlina, H.P.; Miss Allcroft, L.R.; Ann Lord, L.P.; Mrs. Lord, H.R.; Minnie, L.P.; Edith Dombain, H.R.; Violet Douglas, L.R.; and Mrs. Harland, 2d, Mr. Jonathan Booth, Failswoth, Manchester, with J. B. Bryant, Ethel, Mrs. Bowers, Brunette, Zerlina, Master Norman, Mary, Miss Lee, Edith Dombain, Minnie, Mrs. Allcroft, and Medina. 3d, Mr. E. Booth, Moberley, with Brunette, Mary, Miss Wood, Zerlina, Mrs. Summers, Mrs. Allcroft, John Smith, Minnie, Miss Horner, Wm. Summers, Mrs. Lord, and Medina. 4th, Mr. James Sharp, Perry Barr, near Birmingham, with John Smith, Mrs. Payne, Mrs. Niven, Royal Visit, Mary, Minnie, and six Seedlings. 5th, Mr. George Rudd. 6th, Mr. B. Simonite.

Class C, twelve Carnations, nine at least dissimilar.—1st, Mr. Thomas Mellor, Ashton-under-Lyne, with Sybil, Jas. Douglas, Crista-galli, James Taylor, Sarah Payne, Admiral Curzon, Dan Godfrey, Sybil, Ivanhoe, Juno, Rifleman, Lord Ranciliffe. 2d, Mr. William Taylor, Middleton, with Crista-galli, William IV., James Taylor, Crista-galli, Lovely Ann, Lady Peel, Curzon, Lord Milton, Curzon, Clipper, James Merryweather, and Annihilator. 3d, Mr. John Fletcher, Low Moor, Bradford, with *Mars* (two), Sybil, Lord Napier (two), Juno, Dan Godfrey, and five Seedlings. 4th, Mr. James Sharp with *Garibaldi*, President (two), *Mars*, Sybil (two), Eccentric Jack, Unexpected, Jas. Merryweather, C.B., Jas. Merryweather, R.F., Curzon, and Seedling. 5th, Mr. Joseph Chadwick, Dukfield. 6th, Mr. Wm. Slack, Chesterfield.

Class D, twelve Picotees, nine at least dissimilar.—1st, Mr. Thomas Mellor, Ashton-under-Lyne, with Ann Lord, Norfolk Beauty, Mary (two), Mrs. Lord, Mrs. Wood, Violet Douglas, Miss Horner, Master Norman, Rosy Queen, J. B. Bryant, and Bertha. 2d, Richard Gorton, Esq., Eccles, with J. B. Bryant, Mary (two), Mrs. Nichol (two), Alliance, Lady Louisa, Seedling, Light purple edged (two), Purity, Zerlina, and Mrs. Hannaford. 3d, Mr. William Taylor, Middleton, Seedlings (four), Wm. Lord, J. B. Bryant, Mary, Mrs. Allcroft, Ann Lord (two), Wm. Summers, and Miss Wood. 4th, Mr. Joseph Chadwick, Dukfield. 5th, Mr. John Fletcher, Low Moor, Bradford.

Class E, six Carnations, dissimilar.—1st, Samuel Barlow, Esq., Stakehill House, Castleton, Manchester, with Sportsman, James Taylor, J. D. Hextall, Jas. Merryweather, Squire Meynell, and Admiral Curzon. A fine stand, well grown, and well set up, and though without competitors, quite worthy the 1st prize awarded.

Class F, six Picotees, dissimilar.—1st, Saml. Barlow, Esq., with Alice, Fanny Helen, Mrs. Norman, Ann Lord, Mary, and Edith Dombain. Like the Carnations from the same contributor, these were well-grown and well selected flowers. 2d, Mr. Wm. Slack, Chesterfield, with Mary, Her Majesty, Mrs. Auckland, Mrs. Payne, Miss Williams, and J. B. Bryant. 3d, Mr. Sharp, Perry Barr, Birmingham.

For the special prizes for twelve selfs or fancies, including yellow grounds, five competitors appeared, the awards going to R. Gorton, Esq., and Samuel Barlow, Esq., in the order named, each of whom had flowers of great merit. From the fact that the Society (Northern division) attaches no names to non-winning stands, we can give none of the other competitors—a practice, in the interests of exhibitors and public alike, we recommend this section of the Society speedily to correct.

Single specimens in classes: Carnations—scarlet bizzars.—1st and 4th, Mr. John Beswick, with Admiral Curzon; 2d, Mr. John Fletcher, with *Mars*; 3d, Mr. T. Mellor, with Curzon; 5th, Mr. B. Simonite, with Seedling; 6th, Mr. Wm. Taylor, with Curzon.

Crimson bizzars.—1st, 2d, and 3d, Mr. Hewitt, with *Master Fred*; 4th, Mr. Jon. Booth, with *Black Diamond*; 5th, Mr. Jos. Chadwick, with Lord Milton; 6th, Mr. John Fletcher, with Seedling.

Pink and purple bizzars.—1st, Mr. John Beswick, with *Falconbridge*; 2d, 5th, and 6th, Mr. W. M. Hewitt, with *Sir Garnet Wolseley*; 3d, Mr. Thos. Mellor, with *Falconbridge*; 4th, Mr. W. Taylor, with *Falconbridge*.

Scarlet flakes.—1st, Mr. John Booth, with *Clipper*; 2d, Mr. Ben Simonite, with *Clipper*; 3d, Mr. H. Taylor, with *Clipper*; 4th, Mr. Jas. Sharp, with *Curzon-sport*; 5th, Mr. Robt. Lord, with *Clipper*; 6th, Mr. Wm. Taylor, with *William IV*.

Purple flakes.—1st, 2d, 3d, 4th, and 6th, Mr. Robt. Lord, with Dr. Foster; 5th, Mr. John Beswick, with *Mayor of Nottingham*.

Rose flakes.—1st, Mr. John Beswick, with *Jas. Merryweather*; 2d, Mr. G. Rudd, with Seedling; 3d, Mr. R. Lord, with Sybil; 4th, Mr. R. Lord, with Mrs. Dodwell; 5th, Mr. John Fletcher, with Sybil; 6th, Mr. R. Gorton, with *Crista-galli*.

Picotees: heavy red-edged.—1st and 6th, Mr. Jon. Booth, with J. B. Bryant and Brunette; 2d, 3d, and 5th, Mr. John Beswick, with Lord Valentia; 4th, Mr. G. Rudd, with *Master Norman*.

Light red-edged.—1st, Mr. Ben Simonite, with Seedling; 2d and 5th, Mr. Robt. Lord, with *Clara*; 3d, Mr. John Beswick, with *Violet Douglas*; 4th and 6th, Mr. T. Mellor, with *Violet Douglas*.

Purple: heavy edged.—1st, Mr. Jon. Booth, with Zerlina; 2d, Mr. Jas. Chadwick, with Alliance; 3d, Mr. B. Simonite, with Zerlina; 4th, Mr. B. Simonite, with Mrs. Niven; 5th and 6th, Mr. Jas. Chadwick, with Miss Chadwick.

Purple: light edged.—1st, Mr. T. Mellor, with Ann Lord; 2d, Mr. John Beswick, with Minnie; 3d, Mr. R. Gorton, with Minnie; 4th, Mr. Jon. Booth, with Minnie; 5th, Mr. John Beswick, with Minnie; 6th, Mr. B. Simonite, with Mary.

Rose: heavy edged.—1st, 2d, 3d, and 4th, Mr. Robert Lord, with *Miss Horner*; 5th, Mr. John Beswick, with *Miss Horner*; 6th, Mr. Wm. Slack, for Mrs. Payne.

Rose: light edged.—1st, 2d, 4th, and 5th, Mr. Robert

Lord, with Miss Wood; 3d, Mr. John Beswick, with Miss Wood; 6th, Mr. Jon. Booth, with Mrs. Allcroft.

Premier Carnation selected from the whole exhibition, Master Fred, C.B., exhibited by Mr. W. M. Hewitt.

Premier Picotee, also selected from the whole exhibition, Miss Horner, exhibited by Mr. Robert Lord.

Weymouth Horticultural Exhibition.—The exhibition, the first of its kind, which was held under the auspices of the Weymouth Horticultural Society on the 11th ult., was a fortunate venture for the committee, as the weather was beautifully fine, and visitors poured in by hundreds from the first hour that the exhibition was opened. The show, therefore, must have been a great financial success, and no doubt this fact will stimulate the promoters to still greater exertions another year. I had long desired to visit the famous watering-place, and a special invitation from Mr. Thiselton, the able secretary, enabled me to set aside all indecision, and so, early on the morning of the 11th ult., I found myself rolling along in a railway carriage, my destination being Weymouth flower show. Amateurs and cottagers in this part of the country are celebrated for their love of flowers, and there is hardly a village or hamlet, with which I am acquainted, where there is not a keen spirit of rivalry existing among the inhabitants as to who shall possess the neatest and best kept garden. Many excellent forms of the mule Pink and Brompton Stock are carefully nursed in cottage gardens, and the knowledge many of the holders of these small tenements have acquired of hybridisation and cross-breeding is creditable in the extreme, and enables many of them not only to be the envied possessors of well stocked gardens, but also to add a little to their small incomes by raising seedlings and cuttings of popular plants, to sell to those who look upon gardening pursuits as being irksome duties, or who choose to spend a little money rather than undertake the work themselves.

That, however, there are exceptions to all rules was clearly proved by the following horticultural dialogue which took place between a lady and gentleman who travelled in the same carriage with me en route to the exhibition. The lady, who carried a gigantic bouquet of flowers, consisting of Dahlias, Phloxes, and Asters, in a way that indicated not a little pride, was accosted by the gentleman, who was evidently a humble type of cottager, but a gardener at heart as well as a critic. The question addressed to the lady was as to the name of the pretty white flower which formed the centre of the bunch. The lady seemed rather taken aback at the question, but upon recovering her self-possession authoritatively answered, "Why, a 'Vibenia,' of course!" At which the keen eye of the male connoisseur and interrogator sparkled with delight at so palpable a blunder—the flower being actually a Phlox. But reasoning was useless, for the lady, true to the instincts of her sex, stoutly maintained (notwithstanding that the plant from which the flower had been cut was admitted to have been over 4 feet high) that the flower was a "Vibenia," and had been called so for over thirty years—and what more cogent evidence could any reasonable person require? Shortly afterwards the train arrived at its destination, and in a few minutes I found myself on the lovely esplanade, with the bright, still ocean before me radiant in the morning sun. On the left is a long chain of undulating hills, and the golden corn in ear could be recognised between broad streaks of green and narrow defiles, which give the landscape a striking appearance to any one having an eye for the beautiful or sublime in Nature. St. Alban's Head is at the extremity of this chain, and can be seen distinctly upon clear days. Turning to the right the display of bunting and flags was sufficient evidence that the flower show ground was not far distant. The exhibition was held in the Alexandra Gardens, and certainly the selection of the place was a happy conception. The arrangements, as might be expected, were rather defective, but the cordiality with which exhibitors were received by the secretary and committee made up in a great degree for the deficiency of organisation, and with more experience the same application and kindness on the part of the management will make matters more agreeable for all concerned.

The show upon the whole was excellent for a first venture—Grapes, Peaches, and Nectarines being well shown by Mr. Pullman, gr. to R. B. Sheridan, Esq., and other local exhibitors. The exhibition of hardy fruits, especially Apples, was very creditable. Plants were well shown by Mr. Harris, nurseryman, Dorchester, who won the chief prize for the best collection in the show, the prize being given, as well as several others of minor importance, by H. Edwards, Esq., M.P. Mr. Harris' best plants were a noble specimen of *Cassia corymbosa*, a fine *Croton Disraeli*, and several good examples of *Ixoras*, of which *Williamsii* was the best. Messrs. Keynes & Co., of Salisbury, exhibited fine stands of cut Roses, Verbenas and Asters; and Messrs. Kelway, of Langport, had a grand stand of choice kinds of *Gladioli* set up in their usual well known style—the most attractive group of cut flowers in the show. Ferns, Petunias, and Zonal Pelargoniums were creditably represented by local exhibitors, and hardy flowers were the speciality of the exhibition, the quantity of these that were exhibited, and the manner in which they were arranged, reflecting the greatest credit upon the exhibitors.

The table decoration was—what shall I say?—well, poor, and what is worse, it was horribly judged—the table set out by Miss Thiselton, and which was awarded the 2d prize, being by far the best in originality of design and chasteness of arrangement. It cannot be too forcibly impressed upon those who attempt table decoration that the glasses and everything else used should have a proper proportion to the size of the table. Once violate this undamental principle and chaos and confusion must

reign supreme. The show of vegetables by local gardeners and cottagers was of a very superior description, and indicates a high standard of cultivation. I have seldom seen finer Carrots, Celery, Onions, and Potatoes, especially the "noble tuber," which was furnished in large quantities, of size and quality, Mr. Miller obtaining the 1st prize for a collection of nine distinct kinds of vegetables, all of which were clean, well-grown samples.

One word as to management before I conclude. The work of organising a show is no slight duty, and cannot be carried out efficiently without the assistance of practical gardeners. Exhibitors who travel a distance should have the spaces allotted for their exhibits retained for them according to entry in order to save confusion on the morning of the show, and to prevent the unnecessary expense of going earlier to an exhibition than is absolutely necessary. People who are accustomed to exhibiting, if arrangements are good, seldom give much trouble; they lose cheerfully, and win in a matter-of-fact kind of way; but they look for reasonable facilities for getting through their work. Good management and kindness, with liberal prizes, will bring lots of exhibitors, and it should always be remembered that exhibitors make the attraction for visitors. With improved organisation, and competent men to adjudicate upon the exhibits, I have no doubt the Weymouth Horticultural Society will develop rapidly into an exhibition of considerable importance, while it will give increased impetus to horticulture in the neighbourhood. *Visitor.*

Weston-super-Mare Horticultural: Aug. 10.

—We occasionally hear of a few of the oldest and once flourishing exhibition societies having now a difficulty in holding their ground, but here, in the West of the kingdom, where the horticultural societies of more than ordinary consequence have come into being more recently, the watchword is ever "Onwards," and year after year brings keener competition in the various departments, particularly the principal open classes for plants, in which now many growers of the best collections in the country, induced by the prizes offered, come out in full force: this, coupled with the improved condition of the local growers, has done much within the last few years to increase the importance of these exhibitions. One noteworthy feature in these West-country shows is that whilst the promoters do all in their power by offering liberal prizes to make them second to none so far as the most effective objects are concerned, such as fine plants and fruits, they do not lose sight of the real benefit conferred on the cottage portion of the community by encouraging their more humble and less imposing exhibits, and who prove by the extraordinary displays they bring forward of vegetables, hardy fruit, flowers, and honey, that competitive exhibitions of this kind act as incentives which it would be difficult to equal by any other means.

The leading class for twelve plants, in or out of flower, brought five exhibitors, amongst which were Mr. G. Cole, gr. to—Lawless, Esq., Mr. Cypher, and Mr. Tudgey, gr. to J. F. G. Williams, Esq. The run was so close between Mr. Cypher and Mr. Cole that they received equal 1st, Mr. Tudgey and Mr. Milton, gr. to G. Corner, Esq., following as prize-takers in the order of their names. Mr. Cypher had specimens of both the white and the red *Lapageria* in fine condition; a grand *Erica æmula*, profusely flowered; *Ixora Fraseri*, large and full of bloom; and *Stephanotis floribunda*, covered with bunches of its white flowers, many of which were yet to open. In Mr. Cole's dozen were *Ixora amboinensis*, clothed with soft orange-tinted trusses; *Erica Irbyana*, *Austrianiana*, and *Jacksoni*, all in excellent order; an immense example of *Croton variegatus*, 8 feet in diameter; and *Gleichenia rupestris glaucescens*, 7 feet through.

For six plants in bloom, Mr. Tudgey had 1st honours, staging amongst others *Erica ampullacea* and *Williamsii*—large and well bloomed; this is one of the best of late flowering white Heaths. 2d, Mr. Mould. Six fine-foilage plants.—With these Mr. Tudgey was also 1st; Mr. Mould, 2d—having a fine specimen of *Dracæna Goldiana*. Six Clematis.—1st, Mr. S. Brown, who had good plants, well flowered. Mr. Brown likewise took 1st for six exotic Ferns, and for six *Adiantums*, in nice fresh condition. Fuchsias were well done, Mr. S. Brown scoring 1st honours with finely-bloomed pyramids 6 feet high; Mr. J. F. Mould, 2d. In the division confined to amateurs and gardeners, Mr. Tudgey took 1st in the class for six flowering plants with a healthy, fresh lot of medium sized specimens; Mr. Milton, 2d. Mr. Tudgey was 1st for six fine-foilage plants; Mr. G. Pain, gr. to W. Ash, Esq., 2d. Four Fuchsias.—1st, Mr. E. E. Bryant; 2d, Mr. H. Lewis.

There is always here an immense quantity of cut flowers, consisting of Roses, Dahlias, Hollyhocks, Phloxes, Asters, *Gladioli* and miscellaneous stove and greenhouse, as also hardy flowers, which make an effective display in themselves; but which, like the plants in the less important classes, it is impossible to mention in detail. Of Roses, as at other places, there were fewer than last year at this time. Messrs. Keynes had a very creditable twenty-four in threes, containing good flowers of *Xavier Olibo*, *Alfred Colomb*, *La France*, *Ferdinand de Lesseps*, and *Baroness Rothschild*. Mr. W. Smith 2d. Messrs. Keynes were 1st with twelve Tea varieties, as also twenty-four Dahlias and twelve Fancy Dahlias, showing these in their usual style. Messrs. Kelway took 1st for a very good stand of twenty-four *Gladioli*, in which were some seedlings of fine quality, two of which received First-class Certificates.—*Vicomtesse Glentworth*, ground colour bright rose flaked with purple, good spike and stout petals; *Hon. G. Cubit*, a grand flower, ground colour scarlet flaked with crimson, with a broad well-defined blotch of white on the lower part of bottom petals.

For a centre piece of fruit and flowers, the 1st prize went to Mr. Hookings, Clifton; and for a similar piece filled with flowers alone, Mr. Hookings was likewise 1st. In bouquets Mr. Cypher and Mr. Hookings were 1st and 2d.

There was a large show of fruit, much of which was of a meritorious character. With eight dishes, Mr. Austen, gr. to Sir Greville Smith, Ashton Court, took the lead, staging Muscat of Alexandria and Black Hamburg Grapes, Noblesse Peaches, Pitmaston Orange Nectarines, Brown Turkey Figs, an Eastnor Castle Melon, a Smooth Cayenne Pine, and a dish of Bananas, all in good condition. 2d, Mr. Fry, gr. to L. J. Baker, Esq., Pinner, who, with others in nice order, had a very handsome dish of Princess of Wales Peaches. Three bunches white Grapes.—1st, Mr. Loosemore, gr. to W. Cooper, Esq., Clifton, good bunches of Muscats, well coloured; 2d, Mr. Davey, gr. to J. Carver, Esq., finely coloured but thin bunches. Three bunches of Black Hamburg Grapes.—1st, Mr. Trotman, gr. to H. O. Wills, Esq., handsome bunches, well coloured; 2d, Mr. T. Rice, Three bunches of any other kind of black Grapes.—Here Mr. Daffurn, gr. to Colonel Walker, was 1st with very good Madresfield Court, large in berry and quite black; Mr. Gullick took 2d with Lady Downe's, Eight Peaches.—1st, Mr. Austen showing *Violette Hâtive*, beautifully coloured; Mr. Daffurn 2d, with *Grosse Mignonne*. Eight Nectarines.—1st, Mr. Austen, Newington, as fine in colour as they possibly could be; 2d, Mr. Trotman. Mr. Austen took 1st with a nice Queen Pine. With Figs Mr. Matthews, gr. to T. T. Knyfton, Esq., was 1st, Mr. Austen 2d. Mr. Gullick deservedly had 1st for a splendid dish of Ribston Pippin Apples grown under glass, the skins almost transparent.

Ramsgate and St. Lawrence Horticultural:

August 11.—This young Society, now, in the third year of its existence, deservedly prospers under the active management of its promoters. The show was, as last year, held in the grounds attached to Mrs. Wilkie's residence at Ellington, a pretty spot, with plenty of room, close to the town, so that the throng of visitors to this favourite seaside resort can without difficulty avail themselves of the opportunity of seeing the exhibition. Like most other places where shows have only recently been commenced, exhibitors generally succeed best with soft-wooded plants, or, at all events, such as are of quick growth, like Palms, Ferns, and other fine-leaved subjects, which were a prominent feature of the exhibition.

The groups of plants, confined to a limited space, were very nicely arranged, and consisted of the usual flowering and ornamental foliage things. For six stove and greenhouse plants in or out of flower.—1st, Mr. J. W. Chapman, with a nice half-dozen, in which was a good example of *Pandanus Veitchii* and the old-fashioned but, when well done, handsome *Hoya carnosa*; Mr. Burley was a close 2d. For six fine-foilage plants Mr. Chapman was again 1st, his best examples being *Chamærops Fortunei*, and *Phoenix dactylifera*, the Date Palm. *Achimenes* were very well shown—dwarf, compact, and full of flower—and with these Mr. Burley was 1st, and Mr. Chapman 2d. For six *Gloxinias* Mr. Burley was 1st with medium-sized plants, nicely bloomed, and mostly erect kinds; 2d, Mr. Chapman. *Pelargoniums* were in great force, and very well grown. With six Zonals in flower Mr. Hake was 1st, showing nicely done plants; Mr. West, who was 2d, had smaller but profusely-bloomed examples. The bronze *Pelargoniums* were amongst the best-managed plants in the exhibition; Mr. Miller had 1st honours for six, as also for variegated kinds, with a nice half-dozen, full of healthy foliage well coloured. Specimen plants in or out of bloom.—1st, Mr. Johncock, with a handsome *Latania borbonica*. The 1st prize for four Fuchsias went to Mr. Chapman.

In the division confined to amateurs who cultivate their plants themselves the prize for six was well won by Mr. G. Tunbridge, with a nice collection, in which was a large and well flowered *Nerium splendens*, which, when managed as this was, is still superior to many newer introductions. With three plants in the same division Mr. J. Hake took 1st.

Cut flowers were present in abundance, both in their respective classes, and also arranged in centrepieces, vases, baskets, &c. For a vase or basket Miss A. M. Smith was 1st with a tastefully arranged stand; Miss Ashley 2d. Centrepiece filled with flowers and fruit.—1st, Mrs. Bancroft. Bouquets were well shown in the case of those for competition, as well as others not so exhibited. Miss Hutchins took 1st, and Mr. J. W. Mott 2d. Mr. Mott had also a very handsome bride's bouquet, not for competition. Roses.—Messrs. Kinmont & Co. had 1st with twenty-four; Mr. Barton 2d. Twelve.—1st, Mr. Moore; 2d, Mr. J. Simmonds.

Fruit was not largely exhibited. With three bunches of black Grapes Mr. Silk took 1st, showing Black Hamburgs; Mr. Johncock 2d. Three kinds of Grapes, one bunch of each.—1st, Mr. Jarman, with Black Hamburg, Foster's Seedling, and Buckland Sweetwater, in good condition. Dish of Peaches.—1st, Mr. Johncock; 2d, Mr. Woodford. Apricots.—1st, Mr. Woodford; 2d, Mr. Silk. The season has been favourable for culinary vegetables, and here, as in most places, they were better shown than usual.

Taunton Dean Horticultural: Aug. 12.—The annual exhibition held by this Society took place as hitherto in the Vivary Park, Taunton. It is no unusual occurrence at horticultural tournaments to hear congratulatory expressions about the present being the best show that has been held in the place, but the Taunton committee may feel satisfied that their exhibitions, increasing gradually for some years in importance, now

stand unmistakably in the front rank both for the extent and also the general merits of the exhibits, invited through the comprehensive schedule. Plants, both flowering and fine-foliaged, were to be seen here in such numbers and condition as few who have not visited the Taunton show have any idea of. The same holds good with cut flowers, fruit, and vegetables. The various classes in each department were, with few exceptions, not only filled, but the competing exhibits were often so nearly balanced as to make it difficult to adjudicate on their merits. The whole occupied some five large tents, with side staging all around, in addition to the central spaces.

In the principal class for twelve stove and greenhouse plants, all, or a portion in flower, at the option of the exhibitor, Mr. G. Cole, gr. to —Lawless, Esq., took the lead of his opponent, Mr. Cypher, both on this occasion staging all bloomers. Mr. Cole had many of the plants he exhibited earlier in the week at Weston, with several fresh ones, which placed him in front. Amongst them was *Ixora Prince of Orange* —very bright and fresh; and *Dipladenia Brearleyana*, with large flowers better coloured than many growers manage to bring out. Mr. Cypher's plants were remarkably fresh, considering they had been shown before, for it may not be out of place to mention here that very few flowering stove subjects fail to show the effects of passing through the exhibition ordeal even for a single day, and with the greatest care. Mr. Tudgey, gr. to J. F. G. Williams, Esq., was 3d; Mr. Mould received an extra prize in this class.

For six stove and greenhouse specimens, Mr. Tudgey had 1st, staging a nice fresh half-dozen, in which *Dipladenia amabilis* and *Ixora coccinea* were the best; 2d, Mr. Mould.

Eight fine-foliaged plants.—With these Mr. Cole was a long way 1st, with a very large and handsome group; Mr. Tudgey was 2d. With eight Ferns Mr. Cole was likewise victorious, putting up a fine collection, which contained *Nephrolepis davallioides* furcans, 6 feet through; *Davallia Mooreana*, 8 feet; and a very good variety of *Gymnogramma chrysophylla*, 5 feet in diameter.

In the amateurs' division for twelve stove and greenhouse plants, Mr. Cole won 1st honours with a fine lot, amongst which was a nicely flowered example of the now seldom seen *Dipladenia crassinoda*, still one of the most beautiful of stove twiners; *Allamanda grandiflora*, and a large well grown *Nepenthes Rafflesiana* bearing big highly coloured pitchers. Mr. Perry, gr. to H. C. Miles, Esq., was 2d, showing mixed foliage and flowering subjects. The 1st prize in the amateurs' class for six stove and greenhouse plants went to Mr. Selway, gr. to Sir L. J. H. H. Amory; in his half-dozen was a nice example of *Rondeletia speciosa* major and the fine autumn flowering *Heath*, *E. retorta*, 2d, Mr. E. E. Bryant.

With a handsome half-dozen medium-sized Ferns, Mr. Cole was again 1st, the most noticeable being a fine specimen of *Thamnopteris Nidus* and *Davallia polyantha*, the red colouring in the young fronds of which is very handsome; Mr. Carter, gr. to W. Gore Langton, Esq., was 2d.

Roses were moderately shown, Messrs. Keynes being 1st for forty-eight single blooms, with, amongst others, good examples of *Beauty of Waltham*, *Duke of Wellington*, *Marguerite Brassac*, *Alfred Colomb*, and *Camille Bernardin*; 2d, Mr. W. Smith. With twenty-four, in threes, Messrs. Keynes were also 1st; their best flowers here were *Countess of Oxford*, *Dupuy Jamin*, *Alfred Colomb*, and *Xavier Olibo*—the last-named beautiful dark Rose has been better than usual this summer; Mr. Smith was 2d.

For twenty-four Dahlias Messrs. Keynes took the lead with a fine stand, for so early in the season, containing a very promising seedling named *W. K. Williams*, a deep purple; and a salmon-coloured unnamed seedling, with good outline and plenty of depth in the flower. With twelve Fancies Messrs. Keynes were likewise 1st. Mr. S. Dobree had 1st for a grand stand of twenty-four Gladioli, in which *Cymbeline*, the Rev. J. B. M. Camm, *Le Perle*, and *Beauty of England* were remarkably good.

To those who attend many flower shows, table decorations have lost the novelty that once was attached to them; but the way that ladies and gentlemen always crowd round them at a great floral gathering is evidence that the public have not had too much of these displays, especially when, as now, something like an acknowledged standard to guide both exhibitors and judges has been arrived at, avoiding the extremes of heavy masses of gaudy colour and the opposite of downright poverty, which latter one was held up as the point to be aimed at. Miss Cypher was 1st with a beautiful arrangement, consisting of a Palm for centre, with two medium-sized stands, sufficiently, but not over-filled, with white and pale-tinted flowers, Ferns, and grasses. Miss E. Virgo was a very close 2d; the blue and white *Cornflowers*, white *Francoas*, and *Oncidium flexuosum*, draped with *Lycopodium*, used in this decoration, were very pretty, the only fault being that the stands were too tall. For a single centrepiece Miss Virgo took 1st, Miss Cypher 2d. Miss Cypher had 1st for a bouquet with one of the most elegant we have ever seen produced by this accomplished artist in floral arrangements; Miss Virgo, 2d. Mrs. S. Reed was 1st for a beautifully-arranged bouquet of wild flowers; Mr. A. Pitman, 2d.

Common, hardy hedgerow Ferns, arranged in small groups, are here well done: Mr. T. H. Bennett took 1st, and Mr. Pole 2d.

A quantity of fruit was shown, some very good and some indifferent. With a collection of ten varieties Mr. Austen, gr. to Sir Greville Smith, took the lead easily; his best dishes were Muscat of Alexandria and Black Hamburg Grapes, *Violette Hâtive* Peaches, and Elrue Nectarines; 2d, Mr. Selway. For six dishes Mr. Austen was again 1st, with a nice lot, the most

noticeable of which were Noblesse Peaches and Pine-apple Nectarines, highly coloured; 2d, Mr. Crossman, gr. to W. Bagehot, Esq., the most meritorious examples here being Early York Peaches and Muscat Grapes. Two Pines.—1st, Mr. Brooks, gr. to W. Vaughan Lee Lee, Esq., M.P., with Smooth Cayenne; 2d, Mr. Carter, also showing Cayenne. Black Hamburgs, three bunches.—1st, Mr. Trotman, with very good examples, black and well covered with bloom; 2d, Mr. T. Rice.

Three bunches of any other black variety.—1st, Mr. Daffurn, with Madresfield Court, fine in every way; 2d, Mr. Frost, with Alicante. Muscats, three bunches.—1st, Mr. Loosemore, gr. to W. W. Cooper, Esq.; 2d, Mr. W. J. Crossman. Three bunches of any other white variety.—1st, Mr. Loosemore, with Foster's Seedling—good bunches, and better coloured than this kind is usually met with. Six Peaches.—1st, Mr. Daffurn, with very good Grosse Mignonne; 2d, Mr. Trotman, Vanguard, highly coloured. Six Nectarines.—1st, Mr. Crossman, showing Pitmaston Orange. Mr. Austen was placed 2d with Pine-apple, fine, and beautifully coloured. Six Apricots.—1st, Mr. Greenslade, Moor Park—unusually fine for the season. Melon.—1st, Mr. Perry.

The above are only a very small portion of the great number of exhibits that went to fill the 150 classes comprised in the comprehensive schedule issued by the Society. The cottagers' produce, to which a large tent was devoted, was in itself a sight well worth seeing. Mr. B. S. Williams had a very good group of new and rare plants, not for competition; and Messrs. Kelway sent a stand of their fine varieties of *Gladiolus*—likewise not for competition.

Birmingham Botanical and Horticultural: Aug. 13 and 14.—The principal show of this Society for the year took place in their pleasantly situated and well kept gardens at Edgbaston on the above mentioned days, and was very successful. The competition in the various classes of the schedule, although open to the United Kingdom, consists, in a great measure, of productions grown within a limited distance of Birmingham, and so far is a reflex of horticulture in the neighbourhood. It seems strange, yet somehow or other it is usually found that in the vicinity of large towns, where the business carried on is of a character to charge the air with smoke and noxious vapours so detrimental to vegetable life generally, plant cultivation in the affected areas is such as to bear favourable comparison with other localities where the atmosphere is more suited to gardening. This is the case at Birmingham, as evidenced by the display on the present occasion, the exhibition collectively being composed of healthy well grown plants as clean in foliage and full of flower as if they had been cultivated in the best atmosphere the country affords.

Flowering and fine-leaved subjects were well represented, the competition for the Silver Cup offered for six of each was very keen, Mr. Jones, gr. to C. E. Matthews, Esq., being closely run by his opponent, Mr. Dyer, gr. to T. W. Webley, Esq. Mr. Jinks, gr. to J. E. Wilson, Esq., received an extra prize for a very good dozen, which contained a beautiful example of *Pancratium fragrans*, bearing ten strong spikes of its elegant white, fragrant flowers, fully open. Mr. Jones was also 1st for six miscellaneous specimens, Mr. Crisp, gr. to B. Scarf, Esq., being 2d. In the class for three blooming plants Mr. Dyer took the lead, Mr. Jones being 2d. The competing groups in these classes were made up of the usual Palms, Tree Ferns, *Crotons*, *Alocasias*, and other fine-foliage plants, with *Ixoras*, *Bougainvilleas*, *Kalosanthes*, *Clerodendrons*, and *Stephanotis floribunda*, which, instead of being seen, as it used to be almost wholly at the spring shows, is now forthcoming in faultless condition all through the summer.

Dracenas were well shown, the plants furnished with healthy leaves, fully coloured. Mr. Jinks was 1st, and Mr. Dyer 2d.

Fuchsias, now too often exhibited in a condition scarcely presentable, were forthcoming here in excellent order, clothed with plenty of foliage, full of flower, and not too closely trained. The competition in the classes for both six and three was so close that it was very difficult to determine which was best. Six.—1st, Mr. Caldicott, gr. to W. Matthews, Esq.; 2d, Mr. McGregor, gr. to Mrs. Grice. Three.—1st, Mr. Watson, gr. to W. Udall, Esq. Zonal *Pelargoniums*, both double and single, were present in quantity, and very well done, but, as usual, some were too stiffly trained. With six, Mr. Stacy, gr. to F. Osler, Esq., took the lead.

Ferns were equally well represented, confined principally to the smaller-growing kinds, which are none the less interesting, if not so imposing in appearance, than the tree species. Mr. Caldicott, who was 1st for six, had, along with others, the almost invariably present *Davallia Mooreana*, *Gleichenia dicarpa*, and *Todea superba*; 2d, Mr. Jones, his plants being little behind the winning lot. Mr. Dyer received an extra prize in this class for a collection which was in beautiful condition.

With six Orchids, Mr. Shields, gr. to C. Winn, Esq., had 1st, showing *Zygopetalum Gautieri*, *Oncidium macranthum*, a good specimen of the highly coloured *Laelia elegans*, var. *Turneri*, &c. Mr. Shields also was 1st for a single Orchid, *Disa grandiflora*, bearing thirteen spikes, some of which were over a yard in height. Three new or rare plants in flower.—1st, Mr. Shields, with *Oncidium dasyle*, *Masdevallia bella*, and *M. Chimera*. One new or rare plant in flower.—1st, Mr. Shields. Three new or rare foliage plants.—1st, Mr. Jones. One new or rare foliage plant.—1st, Mr. Jinks. Four *Ixoras*.—1st, Mr. Jinks. Mr. Shields was awarded an extra prize for a collection of Orchids and other plants.

Mr. Vertegans exhibited, not for competition, a handsome group of flowering and fine leaved subjects. Roses, although contributed by only a few exhibitors,

were well represented for so late in the season, the Rev. J. A. Williams taking 1st, and Mr. G. H. Fewkes 2d. Mr. S. Brown and Mr. W. Jackson were 1st and 2d in the order of their names in the class for Carnations, and also for Picotees in the 1st prize stands; the flowers were large, and in every way meritorious.

Fruit was shown in moderate quantity, and some very good. The Cup offered for ten varieties was won by Mr. H. Gough, whose best dishes were Muscat of Alexandria Grapes and Black Hamburgs, finely finished; Barrington Peaches, beautifully coloured; and Lord Napier Nectarines. Black Grapes, two bunches.—1st, Mr. Faris, gr. to F. Everitt, Esq., Black Hamburgs, large bunches, thoroughly black and well finished, but a little loose in the bunch; 2d, Mr. Gough, with smaller but very good examples. White Grapes, two bunches.—1st, Mr. Elt, gr. to C. Webb, Esq., showing Golden Champion, very well done; Mr. Gough 2d, with Muscat of Alexandria. Queen Pine, single fruit.—1st, Mr. Crawford, gr. to J. E. Cartland, Esq.; 2d, Mr. Wilkes, gr. to J. H. Baker, Esq. Any other variety of Pine.—1st, Mr. Gough, a good Smooth Cayenne; 2d, Mr. Crawford. Six Peaches.—1st, Mr. Lee, gr. to H. Lowe, Esq., with a beautiful dish; 2d, Mr. McGregor. Six Nectarines.—1st, Mr. Lee, Pitmaston Orange, large and handsome; 2d, Mr. Stacy, Elrue. Six Apricots.—1st, Mr. Gough.

Torquay Horticultural: Aug. 13.—The summer show of this Society was held in the Bath Saloon, Torquay, on Friday, the 13th inst. It was a decided advance on all former shows held by this Society, both in regard to the number and quality of exhibits. The plants filled two large rooms and a tent, the vegetables and fruit filling another room. Of the plants staged for competition, the principal attraction was a class for twelve stove or greenhouse plants (open).—The 1st prize was won by Mr. J. Lawless, of Exeter (gr. to Mr. Cole), among whose group we noticed *Erica Jacksoni* in fine condition, and well bloomed; *Allamanda nobilis*, full of bloom; *Bougainvillea glabra*, very fine; *Dipladenia Brearleyana*, remarkable for its large and finely-coloured flowers. The 2d prize group, staged by Mr. Parkyns, of Exeter (gr. to Mr. Rowe), was also very good—*Crotons*, *Allamanda Hendersoni*, and *Ixoras Prince of Orange*. In the collection for six stove plants, Mr. Perkins (gr. to Mr. Prowse) staged good examples of *Croton interruptus*, *Vinca oculata*, and *Stephanotis floribunda*. The collection of fruit was good, the principal winners being Mr. G. Hore-Poignont, Mr. Fortesque (gr. to Mr. T. Cole), and Colonel Campbell (gr. to Mr. Yelland). Collections, not for competition, were sent by Messrs. Lucombe & Pince, of Exeter, whose groups were very fine, and consisted among other plants of fine plants of *Anthurium Scherzerianum*, *Crotons*, *Alocasias*, *Allamanda Hendersoni*, *Ixoras*, &c. Mr. Smale, Barton Nursery, Torquay, showed a good collection of plants, including *Alsophila excelsa*, *Araucaria excelsa*, *Caladium Prince Albert*, several choice zonal *Pelargoniums*, &c. Messrs. Hender & Son, of Plymouth, staged a magnificent collection of cut blooms of seedling *Petunias*, both single and double, and were given a First-class Certificate. Messrs. Curtis, Sanford & Co., of the Devon Rosery, astonished the judges by their display of cut Roses, which, considering the lateness of the season, were very fine. They also showed Dahlias, *Phlox Drummondii*, and *Gladioli*. Mr. Kerswill, of Plymouth, staged a fine collection of Dahlias.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, AUG. 18, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.				HYGROMETRICAL DE- DUCTIONS FROM GLASHER'S TABLES 6th Edition.		WIND.		RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 18 years.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.	
Aug. 12	29.98	+0.27	73.5	56.0	17.5	63.1	+0.9	55.5	77	N.E.	0.00
13	29.92	+0.15	76.0	57.0	19.0	63.6	+1.4	58.2	82	N.N.E.	0.00
14	29.91	+0.14	74.3	57.5	16.8	62.8	+0.6	58.2	85	W	0.00
15	29.92	+0.14	69.0	58.0	11.0	62.1	+0.4	57.8	86	N.W.	0.00
16	29.90	+0.13	67.3	54.3	13.0	59.3	-2.1	56.3	90	N.N.E.	0.00
17	29.93	+0.14	78.0	55.8	22.2	64.2	+3.0	57.8	80	N.E.	0.00
18	29.95	+0.16	68.4	55.0	13.4	60.6	-0.4	53.5	78	E.S.E.	0.00
Mean	29.93	+0.15	72.4	56.2	16.2	62.2	+0.5	56.8	83	N.E.	0.00

Aug. 12.—A fine day, very cloudy, and overcast at times.
13.—Dull morning, fine, bright, and warm afterwards.
14.—A fine day, generally cloudy. Overcast at night.
15.—A fine day, though dull and cloudy.
16.—A dull, cloudy day. Cool. A few drops of rain fell at 9 A.M.
17.—A fine warm day, partially cloudy. Overcast at night.
18.—A dull, cloudy, cool day. Generally overcast.

LONDON : Barometer.—During the week ending Saturday, August 14, in the vicinity of the metropolis, the reading of the barometer at the level of the sea rapidly increased from 29.27 inches at the end of the week to 30.31 inches by the morning of the 10th, decreased to 30.08 inches by the afternoon of the 14th, and increased to 30.10 inches by the end of the week.

The mean reading for the week at sea level was 30.10 inches, being 0.32 inch above that of the preceding week, and 0.15 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 78° on the 11th, and 77½° on the 10th to 66° on the 8th; the mean value for the week was 74½°. The lowest temperatures of the air observed by night varied from 50° on the 9th, to 57½° on the 14th; the mean value for the week was 54½°. The mean daily range of temperature in the week was 19½°, the greatest range in the day being 25½° on the 10th, and the least 14½° on the 8th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—8th, 58°, —4°; 9th, 60°, —1°; 10th, 63°, +0°; 11th, 65°, +3°; 12th, 63°, +1°; 13th, 63°, +1°; 14th, 62°, +0°. The mean temperature of the air for the week was 62°·4, being 0°·2 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 139° on the 13th, 138½° on the 12th, and 137° on the 10th; on the 14th the reading did not rise above 120°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 41½° on the 11th, 42½° on the 9th, and 43½° on the 10th; the mean of the seven lowest readings was 48°.

Wind.—The direction of the wind was W. and N.N.E., and its strength generally strong.

The weather during the week was fine, bright, and warm.

Rain fell on Sunday, the 8th inst.; the amount measured was 0.11 inch.

ENGLAND : Temperature.—During the week ending Saturday, August 14, the highest temperatures of the air observed by day were above 81° at Truro, Cambridge, Birmingham, Sunderland, and below 75° at Brighton and Nottingham; the mean value from all stations was 78½°. The lowest temperatures of the air observed by night were below 48° at Wolverhampton, Nottingham, and Sheffield, and above 54° at Truro, Plymouth, and Liverpool; the general mean from all places was 50½°. The extreme range of temperature in the week was above 32° at Cambridge, Birmingham, Wolverhampton, and Sunderland, and below 22° at Plymouth and Liverpool; the mean range of temperature in the week from all stations was 28½°.

The mean of the seven high day temperatures was above 76° at Truro and Birmingham, and below 71° at Plymouth, Nottingham and Liverpool; the mean value from all places was 73½°. The mean of the seven low night temperatures was below 54° at Wolverhampton, Nottingham, and Sheffield, and above 57° at Truro, Plymouth and Liverpool; the mean from all stations was 55°. The mean daily range of temperature in the week was above 20° at Cambridge and Birmingham, and below 14° at Plymouth and Liverpool; the mean daily range from all places was 18°.

The mean temperature of the air for the week from all stations was 62½°, being 1½° higher than the value for the corresponding week in 1879. The mean temperature was above 64° at Truro, Birmingham, and Sunderland, and below 60° at both Wolverhampton and Nottingham.

Rain.—Very little rain fell during the week. The heaviest fall was 0.73 inch, at Leeds; and the least, 0.01 inch, at Cambridge; at Truro, Brighton, Leicester, Sheffield, and Liverpool no rain fell. The average fall over the country was 0.15 inch only.

The weather during the week was fine, bright, and warm, and favourable for harvest operations.

Slight thunderstorms occurred at places on the 8th inst.

SCOTLAND : Temperature.—During the week ending Saturday, August 14, the highest temperatures of the air observed by day varied from 80½° at Aberdeen and 80° at Glasgow to 76° at Greenock and Leith; the general mean from all places was 76°. The lowest temperatures of the air observed by night varied from 41° at Paisley to 52½° at Leith; the mean from all stations was 49°. The mean range of temperature in the week from all places was 29°.

The mean temperature of the air for the week from all places was 63°, being 4½° higher than the value for the corresponding week in 1879. The mean temperature was above 63½° at Edinburgh and Dundee, and below 62° at Paisley.

Rain.—Scarcely any rain was measured, the weather being fine and dry. At Perth and Aberdeen one-tenth of an inch fell, but at most other places no rain

was measured; the average fall over the country was 0.03 inch.

DUBLIN.—The highest temperature of the air was 74½°, the lowest 49°, the extreme range 25½°, the mean 61½°, and the amount of rain 0.10 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

BOOKS : H. W. If you mean on the cultivation of Orchids, Mr. B. S. Williams' *Orchid Growers' Manual*, which is published by the author.

BRIDE'S BOUQUET : F. H. Clarke. A bride's bouquet should be made up of white flowers only.

COLEUS : A. J. B. The Coleus has nothing whatever to do with the Nettle, but as now known in gardens is a labiate plant, improved from some tropical weeds of that order.

EQUISETUM : A. B. P. Equisetum arvense is certainly a weed in cultivated land, and as certainly not a Fern.

ERRATA.—In the description of *Lilium auratum*, var. *tricolor*, at p. 198, for "stem 1½ inch long," read 1½ yard long.—In the note on Early Flowering Chrysanthemums, at p. 217, for "Cite" read *Præcité*.

NAMES OF FRUITS : T. W. O. 1, Lord Suffield; 2, not developed; 3, Dutch Codlin.

NAMES OF PLANTS : H. M. E. *Lychnis coronarium*.—*W. B. Boyd*. *Picrorhiza kurroa* (a very interesting plant), and *Gentiana septemfida*. The Fern is *Polypodium vulgare*, var. *pulcherrimum*.—*G. Wall*. 1, *Centaurea montana*; 2, *Collinsia bicolor*, var. *alba*; 3, *Armeria alpina*; 4, *Silene Armeria*.—*C. IV. D.* *Myosotis cæspitosa*; *Achillea Ptarmica*. Of the other insufficient material was sent.—*R. Barrington*. *Medicago falcata*.—*John Robson*. *Matricaria inodora flore-pleno*.—*E. C. C. D.* 1, *Echinops ruthenicus*; 2, *Lysimachia vulgaris*; 3, *Polygonum affine*.—*F. S.* 1, *Gentiana septemfida*, var. *cordifolia*—not *G. gelida*; 2, *Gentiana asclepiadea*.—*K. B.* *Liverpool*. *Holcus lanatus*. We do not know it as "Yorkshire White Hay," but it is called "Yorkshire Fog."—*W. R.* *Astrantia major*.—*F. H.* *Bath*. *Cattleya intermedia*, var. *pallida*, and *Mormodes pardina*, var. *unicolor*.—*F. D.* The specimen sent is certainly *Aster laevis*, of which there are several varieties in cultivation. —*H. M. E.* *Silene Armeria*—can be propagated by seeds or by division of the root-stock.—*E. G.* 1, *Cnicus pratensis*; 2, *Aster (Callimeris) flexuosa*; 3, *Lotus major*.—*A. W.* *Carke in Cartmel*. 1, *Senecio Jacobææ*; 2, *Actæa spicata*; 3, *Galeopsis Tetrahit*; 4, *Circaea lutetiana*; 5, *Asperula arvensis*.—*W. V.* *Nigella damascena*.—*W. H. Tuck*. *Chrysanthemum segetum*, a showy annual.

NURSERY MANAGEMENT : A. B. C. There are no books that we know of specially devoted to the management of nurseries, nor can the special knowledge required to conduct such a business successfully be acquired solely from such sources. For information on the special subjects mentioned read Brown's *Forester*, Grigor's *Arboriculture*, Baile's *The Art of Grafting*, Du Breuil's *Fruit Trees* (English edition), and Paul's *The Rose Garden*. You ought also to get Loudon's *Arboretum Britannicum*, if you can.

PYRETHRUMS : F. P. Boule de Neige, Mont Blanc, Aurora, Gloire de Stalle, Mons. Barral, Hermann Stenger, Michael Bucknel, Ne plus Ultra, Solfaterre, Haage de Schmidt, Achille, Captain Nares, Niveum Plenum, Vio Lactee, Princess de Metternich, Cleopatra, Amethyst, Chamois.

SWEET SULTAN : W. H. Tuck. Usually sown in spring with other annuals, but occasionally in autumn, when, if it survives, as it will do in sheltered places, it blooms earlier and more vigorously. The Sweet Sultan is purple, but the Yellow Sultan is equally, if not still more, beautiful.

* * Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED :—C. G. Van Tubergen, Jr. (Zwaneburg, Haarlem), Wholesale Catalogue of Flower Roots.—Dickson & Robinson (12, Old Millgate, Manchester), Catalogue of Hyacinths and other Choice Flowering Bulbs, Roses, Clematis, &c.—Thos. S. Ware (Hale Farm Nurseries, Tottenham), A B C Bulb Guide, and Catalogue of Hardy Perennials, &c.; also Abridged Catalogue of Hardy Florists' Flowers.—John Waterer & Sons (Bagshot, Surrey), Catalogue of Rhododendrons and other Plants.—James Veitch & Sons (King's Road, Chelsea, S.W.), Catalogue of Hyacinths and other Bulbous Roots.—Dicksons & Co. (1, Waterloo Place, Edinburgh), Catalogue of Select Dutch Flower Roots, Bedding Violas, &c.—B. S. Williams (Victoria and Paradise Nurseries, Upper Holloway), General Bulb Catalogue, and List of Fruit Trees, New Plants, and Roses.

COMMUNICATIONS RECEIVED :—T. M. W. M. W. T. E. O. —H. E. H. J. V. J. R. J. S. W. B. J. W. B. C. W. D. A. W. G. S. B. W. V. C. G. H. J. C. S. A. O. J. H. W. H. W. S. R. J. W. Miss S. W. S. W. F. W. B. Redwood—J. F. Amateur.

Markets.

COVENT GARDEN, August 19.

Trade is still very quiet, but there is a good demand for Peaches and Nectarines. The first consignment of English Filberts arrived this week. *James Webber, Wholesale Apple Market.*

FRUIT.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0 3 0	Lemons, per 100	6 0 10 0
Apricots, per box	1 0 1 6	Melons, each	2 0 5 0
Cherries, per ½-sieve	6 0 12 0	Oranges, per 100	6 0 10 0
Currents, black,		Peaches, per doz.	4 0 8 0
½-sieve	9 0 11 0	Pine-apples, per lb.	1 6 4 5
Gooseberries,		Raspberries, per lb.	3 0 0 0
½-sieve	2 3 3 6	Strawberries, per lb.	0 6 1 0
Grapes, per lb.	1 0 4 0		

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,		Horse Radish, p. bun.	4 0 —
per doz.	4 0 6 0	Lettuces, Cabbage,	
Aubergines, per doz.	3 0 —	per doz.	0 6 1 6
Beans, French, p. lb.	0 6 —	Mint, green, bunch.	0 4 —
Beet, per doz.	1 6 2 6	Mushrooms, p. bask.	1 6 2 0
Cabbages, per doz.	1 0 2 0	Onions, per bush.	5 0 —
Carrots, new, bunch.	0 4 0 6	— Spring, per bun.	0 6 —
Cauliflowers, Eng-		Parsley, per bunch.	0 4 —
lish, each	0 3 0 6	Peas, English, per qt.	1 6 —
Celery, per bundle	1 6 2 0	Radishes, per bun.	0 2 —
Chilis, per 100	3 0 —	Small salad, pun.	0 4 —
Cucumbers, per doz.	6 0 9 0	Spinach, per bush.	2 6 —
Endive, per 2 doz.	1 6 3 0	Tomatoes, per lb.	0 9 1 0
Garlic, per lb.	2 0 —	Turnips, new, bunch.	0 4 —
Herbs, per bunch	0 2 0 4	Vegt. Marrows, doz.	2 0 —

Potatoes are all much lower, and prices down all round from 4s to 6s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	3 0 6 0	Foliage Plants, vari-	
Balsams, per dozen	3 0 6 0	ous each	2 0 10 6
Begonias, per doz.	4 0 12 0	Fuchsias, per dozen	0 9 0 0
Bouvardias, per doz.	12 0 24 0	Lilium auratum, doz.	0 6 0 0
Calceolarias, per doz.	4 0 12 0	— various, per doz.	0 18 0 0
Chrysanth., per doz.	6 0 12 0	Lobelia, per dozen	3 0 6 0
Cockscombs, p. doz.	3 0 6 0	Mignonette, per doz.	0 6 0 0
Coleus, per dozen	3 0 9 0	Myrtles, per doz.	6 0 12 0
Cyperus, per dozen	4 0 9 0	Nasturtiums, dozen	3 0 6 0
Dracæna terminalis	30 0 60 0	Palms in var., each	2 6 2 0
— viridis, per doz.	12 0 24 0	Pelargoniums, dozen	9 0 24 0
Euonymus, various,		— Ivy-leaved, doz.	4 0 12 0
per dozen	6 0 18 0	— Tricolor	4 0 12 0
Ferns, in var., doz.	4 0 18 0	— scarlet, per doz.	2 0 6 0
Ficus elasticus, each	1 6 7 6	Rhodanthe, per doz.	6 0 9 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Mignonette, 12 bun.	2 0 6 0
Asters, 12 bunches	3 0 6 0	Pansies, 12 bunches	2 0 6 0
Bouvardias, per bun.	1 0 4 0	Pelargoniums, 12	
Calceolaria, p. bunch	0 9 1 0	sprays	0 6 1 0
Carnations, 12 bun.	1 0 9 0	— zonal, 12 sprays	0 3 0 6
Cornflower, per doz.	2 0 4 0	Phlox, 12 bunches	6 0 12 0
Eschscholtzia, 12 bun.	2 0 4 0	Primula, double, per	
Eucharis, per doz.	4 0 6 0	bunch	1 0 1 6
Feverfew, 12 bun.	4 0 6 0	Roses (indoor), doz.	1 0 6 0
Forget-me-not, 12		— outdoor, 12 bun.	4 0 9 0
bunches	3 0 9 0	Stephanotis, 12 spr.	3 0 6 0
Gardenias, 12 blms.	4 0 12 0	Tropæolum, 12 bun.	1 0 3 0
Heliotropes, 12 sp.	0 6 1 0	Tuberose, per dozen	1 0 2 0

SEEDS.

LONDON : Aug. 18.—Messrs. John Shaw & Sons, of 37, Mark Lane, report that there is now more business doing in farm seeds. *Trifolium incarnatum* is in short supply; and the inquiry for same having increased, values have consequently advanced. The new Essex Rape seed proving remarkably fine in quality and surprisingly low in price, meets with considerable favour. A sample of new home-grown white Mustard seed has been shown in Mark Lane, but its condition was most unsatisfactory. New giant Rye, suitable for sowing, can now be bought on moderate terms. Advices from Chicago describe this season's crop of Flax seed in Illinois as larger than ever. Buckwheat keeps steady. There is no quotable variation in either Canary or Hemp seed. Clover seeds are neglected. Of white Millet the stock here is exhausted. The new blue Peas which offer exhibit good quality. It is noteworthy that the imports into the United Kingdom of Clover and grass seeds were last month just 50 per cent. less than those during July, 1879.

POTATOS.

The Borough and Spitalfields Markets reports state that moderate supplies have been on sale, and sales have progressed slowly at barely late rates;—Kent kidneys, 7s.; ditto, Regents, 6s. to 7s.; English, ditto, 4s.; and Jersey kidneys, 6s. per cwt.—Supplies have been moderate from the Channel Islands. At the port of London, however, the arrivals consisted last week of 97 sacks from St. Nazaire and 26 packages from Boulogne.

COALS.

The following are the quotations current at market during the week:—Beaside West Hartley, 14s. 3d.; East Wylam, 14s. 6d.; Ravensworth West Hartley, 14s. 4d.; Walls End—Hetton Lyons, 13s. 6d.; Hawthorns, 13s. 9d.; Lambton, 14s. 6d.; Original Hartlepool, 15s.; Wear, 13s. 6d.; South Hetton, 15s.; Tunstall, 13s. 6d.; Chilton Tees, 14s. 6d.; Thornley, 14s. and 14s. 6d.; Hetton, 15s.; Vases, 13s. 6d.; Tees, 14s. 9d.; Radford Navigation, 15s. 9d.

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., $\frac{2}{3}$ d. per lb.—all colours. Improved Zinc White Paint, $\frac{4}{5}$ d. per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

HILL AND SMITH'S BLACK VARNISH
for Preserving Ironwork, Wood, or Stone.
(Registered Trade Mark.)



This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.

"Pierrefield Park, June 21, 1876.—Sirs, I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Pierrefield Park, Chepstow.—I am, Sirs, yours respectfully, Wm. Cox."

CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

Geometrical Mosaic and Encaustic

TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

MAW AND CO., Bentham Works, Broseley, Shropshire.

Gentlemen's Gardeners, Amateurs, and Others

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GARDEN POTS
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Price List on application. LONG TOM.

Rosher's Garden Edging Tiles.



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GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design. F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c. F. ROSHER AND CO., Brick and Tile Merchants.

See Addresses above.

SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post. FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEATS or LOAM supplied at lowest rates in any quantities.

F. ROSHER AND CO.—Addresses see above.

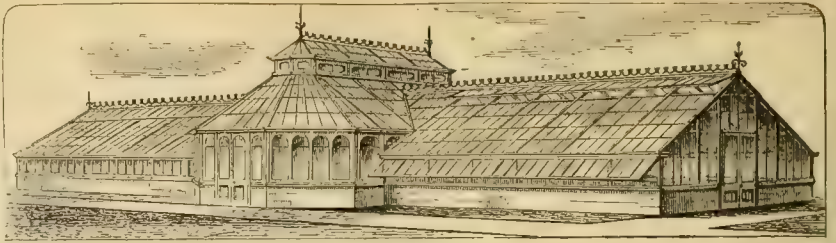
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Two Gold Medals awarded to us by Royal Horticultural Society, at the



Grand Show at Preston, July 1878, out of Fourteen Competitors.

Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very best class of buildings at an extremely low price. As we are the only firm in the kingdom that has ever been awarded Two Gold Medals by the Royal Horticultural Society, this will be some proof of the quality of our productions.

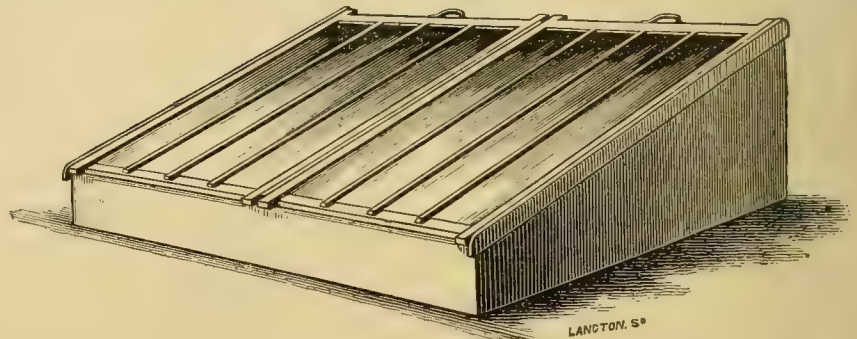
Our buildings are constructed so as to combine great strength, simplicity, and durability, with extreme lightness, and being made of the very best materials, will, with ordinary care, last a lifetime. The ventilators at top and bottom open the whole length with one handle to each series. The glass used is 21-oz. British sheet, and the paint the best genuine white lead and oil.

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2-light " 8 feet by 6 feet, .. 3 7 6	4-light " 16 feet by 6 feet, .. 6 7 6

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MIDLAND HORTICULTURAL BUILDING & HOT-WATER
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Horticultural Buildings erected on MESSINGER & CO.'s Patent Method of Construction are very strong, most durable, light, elegant, amply ventilated, perfect efficiency for intended purpose is guaranteed, are economical in cost and maintenance: combine the peculiar advantages of Wooden and of Iron Houses, without their disadvantages.

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Illustrated CATALOGUES of GREENHOUSES, VINERIES, HEATING APPARATUS, &c., sent free on application. Richly Illustrated CATALOGUE of HORTICULTURAL BUILDINGS and HEATING APPARATUS (the Designs taken from Works executed by M. & Co.), post-free for thirty-three stamps. Gentlemen consulting this Catalogue have the advantage of inspecting designs whose efficiency has been tested by actual experience.

NEW PATENT GRASS-CUTTERS

(PATRONISED BY THE BOARD OF WORKS).

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Begs to call public attention to a Patent Grass-Cutter he has just invented for use in the Garden and Farm, based upon the principle of the well-known "Clark's" Horse-clipping Machine, and which is, by its lightness of construction and rapidity of action, far preferable to the existing implements in use, and supplies a want long felt by every one who possesses a garden, namely, an instrument which will mow grass where inaccessible to the lawn mower, trim grass plot edges, clip Ivy and other creepers, also shrubs and trees, and keep in order Box borders and fancy Trees, &c.; all which this ingenious little instrument is capable of doing.

It is made in three sizes, to cut in breadth 8 inches, 12 inches, and 16 inches respectively; and is so easy in working, and at the same time so effective, that even ladies can work it without feeling fatigued, there being no occasion to stoop on account of the long wooden handles attached to the machine, and a greater quantity of work can be done in a given time than by any other method.

This invention is also applicable for Farm purposes—Reaping Corn and other Crops, Clover, Rye, &c., equally as well as accomplishing the objects for which it is required in the garden; and the cost being so small in proportion to the saving in time and quality of finish effected, it is placed within the reach of all, and needs but a trial to prove its superiority.

PRICES.

The 8-inch Machine, complete with Rollers and Tray		21s.
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It has all the improvements which have of late been introduced into this class of Machine, either in England or America. It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind.

It is cheaper than any other Machine of its class before the public.

It is made, as its name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron.

These Machines can also be SUPPLIED WITH ROLLERS at same price, and with Grass Boxes at a small extra cost.

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8-inch ..	£2 2 0
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Inches.		Inches.		Per 100 ft. Box.
15-oz.	20-oz.	15-oz.	20-oz.	
6 X 4 to 7 1/2 X 5 1/2, 95, 105, 115, 125.				
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10 X 8 to 12 X 10, 105, 115, 125, 135, 145.				
12 X 10 to 14 X 12, 115, 125, 135, 145, 155.				
14 X 12 to 16 X 14, 125, 135, 145, 155, 165.				
16 X 14 to 18 X 16, 135, 145, 155, 165, 175.				
18 X 16 to 20 X 18, 145, 155, 165, 175, 185.				
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GARDENER (HEAD), to any Gentleman requiring the services of a thorough practical working Gardener, who understands gardening in all its branches. Eight years' good character. Wife no objection to Dairy.—G. M., Blount's Court, Henley-on-Thames.

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GARDENER (HEAD).—Age 34, married, two children; twenty-two years' experience in all branches of the profession, and nine years as Head in present situation. Good character. South of England preferred.—S. BAILEY, Sawley Hall, Ripon.

GARDENER (HEAD), where a thorough practical energetic man of trust is required.—Age 35, married; nineteen years' experience in gardening, eight as Head Gardener, previously Foreman in extensive private establishments. Good references.—W. H., West Monkton, near Taunton

GARDENER (HEAD, WORKING).—Well up to his work. Five years' excellent character from present employer.—HORTUS, Hayes, 24, Porton Road, West Kensington Park, W.

GARDENER (HEAD, WORKING).—Married, no family; eighteen years' practical experience. Understands Grass Land. Good character from last employer.—G., 1, Southbrooke Road, Burnt Ash Lane, Lee, Kent.

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GARDENER (HEAD, WORKING).—Married; twenty-four years' practical experience in Early and Late Forcing of Fruits, Flowers, Vegetables, &c., Flower and Kitchen Gardening. Twelve years in present situation.—H. B., Istbourne, Stokenchurch, Oxon.

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GARDENER (SINGLE-HANDED).—Age 27, married, no family; understands Vines, Cucumbers, Greenhouse, Flower, and Kitchen Gardening. Good character.—E. M., 13, Featherstone Terrace, Southall.

GARDENER (SINGLE-HANDED).—Age 28; Vines, Melons, Cucumbers, Flower and Kitchen Gardening. Two and a half years' character.—M. E. SMITH, Belmont, Crouch End, Harnsey, N.

GARDENER (SINGLE-HANDED, or good SECOND).—Good knowledge of Vines, Melons, Cucumbers, Stove and Greenhouse Plants, Flower and Kitchen Gardening. Good character.—A. RIX, Lord Street, Huddesdon.

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GARDENER (SECOND, or SINGLE-HANDED).—Well experienced in all branches. Good references.—W. C., Bookstall, Chislehurst.

GARDENER (SECOND), where two or more are kept.—Age 26; understands Stove and Greenhouse Plants.—A. J. E., Gee's Villa, Bandon Hill, Croydon, S.E.

GARDENER (SECOND), in a Nobleman's or Gentleman's garden, in the Houses.—Age 24; nine years' experience. Good references.—GARDENER, Mr. Clark, Seedsman and Florist, Lewisham, S.E.

GARDENER (SECOND), where more are kept.—Knowledge of Stove and Greenhouses, Flower and Kitchen Gardening. Three years' character.—B. C., 7, Crescent Road, Holmsdale Road, Croydon.

GARDENER (SECOND, or good THIRD, in the Houses).—Age 21; six years' experience, two and a half years' character.—A. H., 2, Palace Terrace, George Street, Gipsy Hill, Upper Norwood, S.E.

GARDENER (UNDER).—Age 19; respectable. Willing to make himself useful. Eighteen months' good character.—J. G., 1, Hart Street, Battersea, S.W.

GARDENER (UNDER).—Age 21; six years' experience. Good character from last place.—H. STARK, Thorpe, Chertsey, Surrey.

GARDENER (UNDER), in a good Garden.—Two years' good character. For reference apply to HEAD GARDENER, Brookdale Hall, Newton Heath, Manchester.

GARDENER (UNDER), in a Nobleman's or Gentleman's Garden.—Age 21; good character.—Apply, by letter, to G. WILKS, 1, Haynes' Cottages, Perry Vale, Forest Hill, London, S.E.

GARDENER (UNDER), in a Gentleman's establishment.—Age 23; accustomed to both Indoor and Outdoor Work. Seven years' character from last place.—EDWIN CHEESMAN, Egham Wick, near Englefield Green, Staines.

FOREMAN, in a private establishment.—Age 25, single; has been in a similar situation, and can be well recommended.—H. O., Durrington, Worthing, Sussex.

To Gardeners.

FOREMAN, In or Out.—Age 24; well up to his work. Excellent references.—G. C., 55, Hammer-smith Road, W.

FOREMAN, under Glass, where two or more are kept.—Wanted by a young man a situation as above. Good references from past and present employer.—E. W. P., The Gardens, Woodham Hall, Woking, Surrey.

FOREMAN, in a good establishment.—Age 23; nine years' experience in all branches. Good references.—A. B., Mr. Higgs, East Horsley, Leatherhead, Surrey.

FOREMAN, in a private establishment.—Age 26; eleven years' experience, four years as above.—H. H., The Gardens, Oakwood, Crayford, Kent.

FOREMAN; age 25.—A. BELL, Gardener to the Earl of Cork, Marston House, Frome, would recommend his present Foreman (W. Coles) to any one in want of a good man in all branches of the business.

FOREMAN, where one or two are employed, in the Houses, or **SECOND** in a good place. Excellent character from Mr. Hinds.—C. P., The Gardens, Canford Manor, Wimborne, Dorset.

TO GENTLEMEN and GROWERS for MARKET.—ADVERTISER can with confidence recommend a man as Manager or Foreman to any Gentleman intending to grow indoor Fruit, Palms, Ferns Foliage and Flowering Plants for Market. Many years' experience in the above trade. Speaks three languages. Very steady and energetic. Single.—HORTICULTEUR, Post-office, Dersingham, Norfolk.

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JOURNEYMAN, in a good establishment.—Age 24; nine years' experience in several establishments, where Fruit and Plant Growing has been carried on extensively.—A. B., *Gardeners' Chronicle* Office, W.C.

JOURNEYMAN, in the Houses, in a good establishment.—Age 21; good general experience, and can be well recommended.—J. G., 29, Standford Road, King's Road, Chelsea, S.W.

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GROWER, or SALESMAN, inside.—Age 23; understands his work. Good references.—G. L., Henry Lee, Florist, Altrincham, Cheshire.

IMPROVER, in a Nobleman's Garden or Nursery.—Age 19.—E. HOLLICK, Florist, Allesley.

IMPROVER, under a Foreman, in the Houses.—Age 18; good character.—Please address, stating wages, to JAS. KNIGHT, Wood End Gardens, near Chichester.

IMPROVER, under a Head Gardener.—Age 20, single.—FRANCIS LEE, Preston, Uppingham.

IMPROVER, in the Houses in a Gentleman's establishment.—Age 18; four years' good character from last situation.—F. B., Plashet, Double Cottage, East Ham, Essex, E.

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To the Seed Trade.

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TO NURSERYMEN and SEEDSMEN.—Wanted, by a young man (age 21), a situation in a Seed and Nursery Establishment. Six years' experience. Good recommendations.—R., Mr. Usher, 26, Sunderland Street, Newcastle-on-Tyne.

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FARM BAILIFF.—Wanted, at Michaelmas, by a Norfolk man, age 33, a situation as Farm Bailiff. Thoroughly understands the Management of Light, Heavy, and Mixed Soils; the Rearing, Breeding, and Feeding all kinds of Stock; and the Management of all kinds of Agricultural Machinery. Wife a good Dairy and Poultry Manager. Excellent characters.—BAILIFF, Downside Farm, Cobham, Surrey.

TO NURSERYMEN and GARDENERS.—A master builder's son wants employment at his own trade, or to work in a Gentleman's Garden or Nursery, at which he has had experience, and is clever.—W. H. J., The Church, Frome St. Quinton, Evershot, Dorset.

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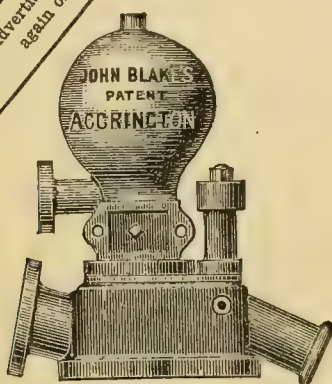
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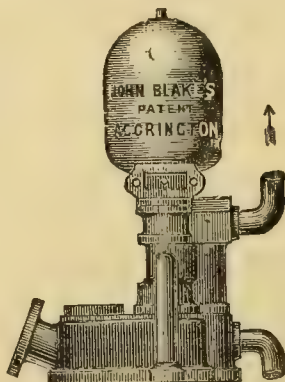
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This Advertisement will appear
again on Sept. 11.

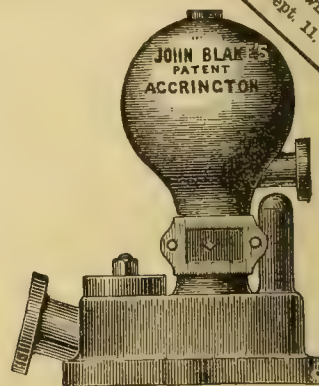


This Ram for small working falls.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 feet.

This Advertisement will appear
again on Sept. 11.



This Ram, for deep working falls, will force up one-third of the water passing through it

Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.

TESTIMONIALS.

From the Right Honourable the EARL of GRANARD, *Castle Forbes*, March 1, 1880.—“The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of a tower 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived.”

From Col. TREMAYNE, *Perrian-ar-Worthal, Cornwall*, March 7, 1880.—The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver.”

From W. SCARTH, Esq., *Agent to His Grace the Duke of Cleveland*, July 16, 1878.—The Hydraulic Ram you supplied to his Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised.”

From JOHN TAYLOR, Esq., *The Rocks, Bath*, August 22, 1878.—“The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 294 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height.”

From Major STARKIE, *Lovely Hall, Blackburn*, May 13, 1878.—“Sir, I have great pleasure in testifying to the good qualities possessed by the Ram you erected here last year. It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against.”

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne*, December 21, 1868.—“Sir.—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water.”



This view represents one Ram worked by water from a spring, and forcing it up to a Farm, Cattle Troughs, Kitchen Garden, and Mansion, all at different elevations, the highest being 444 feet, and to a distance of 2008 yards.

TESTIMONIALS.

From Capt. GANDY, *Castle Bank, Appleby*, February 11, 1880.—“The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week.”

From JOHN WALKER, Esq., *Mount St. John, Thirsk*, February 13, 1880.—“In reply to your enquiry I am glad to inform you that the Hydraulic Ram you fixed here in May last has fully answered my expectations, and your promises as to the quantity of water it would force to a height of 185 feet. I consider it a very good machine, and superior to one I had in use previously.”

From Captain TOWNSEND, *Wincham*, February 10, 1877.—“In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 1000 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000.”

From the Right Hon. T. SOTHERON-ESTCOURT, *Estcourt Park, Gloucestershire*, September 6, 1875.—“You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful.” (The delivery pipe in the above case is 4200 feet long, with 120 feet rise.)

From Mr. DEANEWATER, *Wilmslow*, November 27, 1873.—“Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. HANMER.”

From Mr. THOMAS MASON, *Alkincoates Hall, Colne*, September 30, 1871.—“Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet.”

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to “The Editors;” Advertisements and Business Letters to “The Publisher,” at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SATURDAY, AUGUST 28, 1880.

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Post-office as a Newspaper. } POST FREE, 5½d.

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Now Complete.

SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of the Numbers:—

1879.—Oct. 11, 25.	1880.—Jan. 10, 24.	1880.—May 8, 29.
Nov. 8.	Feb. 7, 21.	June 19.
15, 29.	Mar. 20, 27.	July 10.
Dec. 13.	April 3.	August 7.

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XIII., JANUARY to JUNE, 1880.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ALEXANDRA PALACE,

London, N.

THE NATIONAL FRUIT EXHIBITION, September 3, 4, 6, 7. Prize List forwarded on application. Exhibitors need not attend in person, provided due Notice be given of the Dispatch of the Exhibits.

JOS. FORSYTH JOHNSON.

Director of Horticultural Exhibitions.

THE INTERNATIONAL POTATO

SHOW will be held at the Crystal Palace, Sydenham, S.E., on SEPTEMBER 22 and 23. The Exhibition will be opened by the President, the Right Hon. the Lord Mayor of London. Last day of Entry, September 14. Schedules and all particulars to be obtained of

J. A. MCKENZIE,
Tower Chambers, Moorgate, London, E.C.

GLADIOLI.—There will be a GRAND DISPLAY at the BOTANIC GARDENS, MANCHESTER, on SATURDAY, September 4, by KELWAY AND SON, Langport, Somerset

ALBA PLENA CAMELLIA, healthy, well budded; height 7 feet, width 7 feet. Price £17.
J. HARROP, 6, Easton Street, Broughton, Manchester.

To the Trade.

NARCISSUS, PHEASANT'S EYE and DOUBLE WHITE.—Special low offer of the above Sweet-scented Narcissus on application.—GEORGE REID, Seed Merchant, 20, Castle Street, Long Acre, London, W.C.

ORCHID SPHAGNUM (fine Fresh Green), single bushels 2s. 6d., sacks 6s. and 7s. 6d. Choice Mosses for Dressing Bird Cases, small hamper, 5s. THOS. BEAUCHAMP, Woodfalls Cross, Downton, Salisbury.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES, HERE-FORD. (Established 1785.) Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

CHARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit. CHARTERS, the Queen's Seedsmen, High Holborn, London.

GLADIOLI FLOWERS.—10,000 Spikes may be cut daily for the next three months. Price on application to KELWAY AND SON, Langport, Somerset.

Butterfly Tulips, Calochorti. A well executed Chromo-Lithograph of these lovely, novel, and hardy flowers, is published in

HOOPER'S BULB CATALOGUE. Their Dutch Bulbs have also arrived in splendid condition, and the Prices are extremely low. The Catalogue may be had for 6 stamps post-free. HOOPER AND CO., Covent Garden, London, W.C.

Dutch Bulbs. C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, Crutched Friars, London, E.C.

Notice to the Trade. WAITE, NASH, HUGGINS AND CO.'S Wholesale CATALOGUE of HYACINTHS and OTHER BULBS has been Posted to all their Customers. If not received a copy shall be sent on application. 79, Southwark Street, London, S.E.

Hyacinths, Tulips, &c. BUDDENBORG BROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

Bulbs, Orchids, &c. THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application. Lion Walk, Colchester.

Begonias. JOHN LAING AND CO.'S unrivalled Gold Medal Collection is now in bloom. Inspection invited. Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out. LISTS free on application. The Nurseries, Forest Hill, London, S.E.

SPIRÆA ULMARIA VARIEGATA. Beautiful golden variegated foliage (see the Garden, of June 12, 1880, p. 513). Messrs. BUDDENBORG BROS., Hillegom, near Haarlem, Holland, offer fine plants of the above at 20s. per 100.

AZALEA INDICA, fine healthy plants, well shaped, covered with buds, of all the best varieties in commerce. Price from £3 4s. to £8 per 100; special price per 1000. L. DELARUVE-CARDON, Nurseryman, 98, Chaussée de Bruxelles, Ledeberg, near Ghent, Belgium.

Wanted, Rose Stocks. WANTED, 5000 Standard BRIER ROSE STOCKS, to be delivered in November. Address price and particulars to JOSHUA LE CORNU, High View Nurseries, Jersey.

WANTED, LILY FLOWERS (cut or in pots), for September 18: varieties of LILUM LANCIFOLIUM, L. AURATUM, GLADIOLUS, &c. State quantity and price. J. FORSYTH JOHNSON, Alexandra Palace, London, N.

WANTED, GERANIUM CUTTINGS, for bedding and pots. No variegated required. State varieties, and price per 100 or 1000. Mr. BAILEY, Holly Hill Gardens, Southampton.

WANTED, ARAUCARIA IMBRICATA, 2 to 3 feet high. Must be well established. Size and lowest price to Messrs. LEVASSEUR AND SON, Nurserymen, Ussy, Calvados, France.

To Herbal Gardeners WANTED, a Supply of DATURA STRAMONIUM, Green as plucked. Offers to Messrs. BALCOMBE AND CO., 148, Marylebone Road, N.W.

WANTED, Dwarf Maiden Moorpark APRICOTS, Noblesse and Royal George PEACHES, Victoria PLUMS, APPLES and PEARS of sorts, CLEMATIS, named sorts; PÆONIA ARBOREA, named sorts, own roots; double white and double lilac PRIM-ROSES. State quantity and price to C. J. BLACKTH AND CO., Horticultural Agents, 129, Lower Thames Street, London, E.C.

To Farmers, Market Gardeners, and Others. WANTED, FRUIT of all kinds. Prompt returns and moderate Commission.—WISE and RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

WANTED, VIRGINIA CORK BARK. Samples to be sent to GEO. W. JUBB, Beech Grove Gardens, College Road, Leeds.

SUTTON'S BULBS for FORCING. EARLY ROMAN HYACINTHS, 3s. per dozen, 21s. per 100. EARLY NARCISSUS, Double Roman, 2s. 6d. per dozen; Paper White, 17s. 6d. per 100. For full particulars see Sutton's Autumn CATALOGUE. Gratis and Post-free on application. SUTTON AND SONS, The Queen's Seedsmen, READING.

Christmas Roses. BUDDENBORG BROS., Bulb Growers, Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.

NEW ROSES in Pots.—Tea and Noisette ROSES in Pots.—CLEMATIS in Pots. INFALLIBLE MILDEW COMPOSITION. Special LISTS, with full particulars, now ready, gratis and post-free. EWING AND CO., EATON, NORWICH.

Vines for Present Planting. JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries. CATALOGUES free. The Trade supplied.

Gardenias. MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug. Royal Nurseries, Ascot, Berks.

Potentillas (Double and Single-flowered) in Pots. ROBERT PARKER begs to announce that he can supply the above-named by the dozen or 100 in 40 named varieties, from 9s. per dozen upwards. Priced LISTS with New General CATALOGUE of Hardy, Greenhouse, and Stove Plants, forwarded to applicants. Exotic Nursery, Tooting, Surrey, S.W.

To the Trade only. E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland. The Wholesale CATALOGUE (No. 3474) of Dutch Flower Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants, for 1880-81, is now ready, and may be had free on pre-paid application, by Nurserymen, Florists and Seedsmen.

EWING AND CO.'S Magnificent Collection of ROSES is NOW in FULL BLOOM. Intending purchasers are specially invited to inspect the stock. The Nurseries are open to the Public on Week-days. CATALOGUES of Roses and General Nursery Stock gratis and post-free. The Royal Norfolk Nurseries, Eaton, near Norwich.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 2s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—J. E. ALDERSON, Bell Farm, Hersham, near Walton-on-Thames, Surrey.

Illustrated Catalogue of Ferns. W. & J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

STRAWBERRIES. Strong Roots for Fruiting next year, 4s. per 100. Descriptive LIST on application. RICHARD SMITH AND CO., Nurserymen, Worcester.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once. CATALOGUE post-free. Special Prices for large quantities. H. CANNELL, Swanley.

STRAWBERRIES.—Strong and well-rooted Runners for fruiting next season. Descriptive LIST with Prices on application. THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s. W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

Strawberries. CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shrewest notice. The Royal Nurseries, Slough.

ED. LEIGH, Norcote Farm, near Guildford, Surrey, has to offer in any quantities, Drumhead Savoy, York, and Nonpareil CABBAGE; Cottagers' and Thousand-Head KALE; Late BROCCOLI and CAULIFLOWER PLANTS. Good strong stuff, at 2s. 6d. per 1000, on rail.

SALES BY AUCTION.

Dutch Bulbs.

MR. J. C. STEVENS will **SELL** by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **WEDNESDAY** and **SATURDAY**, September 1 and 4, at half-past 12 o'clock precisely each day, 600 lots of choice Double and Single **HYACINTHS** and **TULIPS** of all colours, for Pots, Borders, and Glasses; **CROCUSES**, **NARCISSUS**, and other **BULBS**, from well known farms in Holland, in lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

Imported and Established Orchids.

MR. J. C. STEVENS will **SELL** by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, September 2, at half-past 12 o'clock precisely, an Importation, just received, consisting of **ODONTOGLOSSUM PESCATOREI**, **O. TRIUMPHANS**, **MASDEVALLIAS**, **CYPRIPEDIUMS**, **AERIDES**, &c. Also some first-class **ESTABLISHED ORCHIDS**.

On view the morning of Sale, and Catalogues had.

Dutch Bulbs.—Special Trade Sale.

MESSRS. PROTHEROE AND MORRIS will **SELL**, at the Mart, Tokenhouse Yard, E.C., on **MONDAY**, August 30, at half past 11 o'clock precisely, first-class **HYACINTHS**, **TULIPS**, **CROCUS**, **NARCISSUS**, and various Bulbs from Holland, in lots to suit the Trade and other large buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Lee, S.E.

TWELFTH ANNUAL SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. B. Maller to **SELL** by AUCTION, on the Premises, Burnt Ash Nursery, Lee, on **TUESDAY**, September 21, 17,000 Winter Blooming **HEATHS**, unsurpassed in the trade; 10,000 **ERICA HYEMALIS** in 60-pots, 500 **SOLANUMS**, beautifully berried; 5000 remarkably fine **ADIAN-TUM CUNEATUM**, 3000 **CYCLAMEN PERSICUM**, and other stock.

N.B. Intending purchasers are invited to inspect the stock, which is in splendid condition.

Sales of Winter Blooming Heaths, &c.

MESSRS. PROTHEROE AND MORRIS beg to announce the **FOLLOWING SALES**:—**SEPTEMBER 17**.—At the **EFFINGHAM NURSERY**, LEE, By order of Messrs. Gregory & Evans. Clearance sale of Greenhouse Plants, including 16,000 winter-blooming **Heaths**.

LEA BRIDGE ROAD, LEYTON. Date not yet fixed. Annual Sale of **Heaths**, &c. By order of Mr. J. Frazer.

LEE, BURNT ASH NURSERY. Date not yet fixed. By order of Mr. B. Maller. Twelfth Annual Sale of **Heaths**, &c.

TOTTENHAM, BRUNSWICK NURSERY. Date not yet fixed. Annual Sale of **Heaths**, &c. By order of Mr. J. MALLER.

Further particulars will appear in future Advertisements.

Crown Nurseries, Reading.

Important to Gentlemen, Gardeners and others. Annual Autumn Sale of Winter Flowering Plants, Ferns, &c. **MR. J. MILLER** has received instructions from Messrs. James Holder & Son, to **SELL** by AUCTION, on the Premises, on **WEDNESDAY**, September 1, at 11 o'clock punctually, a large quantity of **ERICA** hybrids, **Willmoreana**, **gracilis**, **Hyemalis**, and other **Heaths**; **SOLANUMS** (with berries), double **PRIMULAS**, **BOUVARDIAS** in perfect health, **EPACRIS**, **DAFNE**, **BEGONIAS**, **CYTISUS**, **AZALEAS**, **EPHYLLUMS**, **TREE CARNATIONS**, **CAMELLIAS**, **CHRYSANTHEMUMS**; also a large and choice Collection of **FERNS** to name, **Hardy CLIMBING PLANTS**, &c.—On view the day previous and morning of Sale. Catalogues may be obtained at the Nurseries, and at the Offices of the Auctioneer, 37 and 38, Market Place, Reading.

Stapleford: Manor Farm.

7 miles from Salisbury, and 2 miles from Wifshord. **HAMPSHIRE DOWN BREEDING FLOCK**, Teams of **CART HORSES**, Clydesdale **STALLION NAGS**, **SWINE**, 700 **FLEECES OF WOOL**; three **HOTHOUSES**, 2000 choice selected **PEDIGREE POT ROSES**, and several thousand dozens of **FLOWER POTS** various sizes.

MESSRS. MARSH, DAWES AND DEAR are favoured with instructions, from H. Bennett, Esq., who is leaving his farm at Michaelmas next, to **SELL** by AUCTION, on the Premises, on **THURSDAY**, September 9, at 12 o'clock, the whole of the **LIVE** and **DEAD FARMING STOCK**, comprising 130 sixteenth Ewes, 176 two-tooth Ewes, 120 four-tooth Ewes, 300 chilver Lambs, 40 wether Lambs, to valuable **CART HORSES**, 2 Nags, portable Greenhouse by Bickley, 74 feet by 10 feet, with hot-water heating apparatus complete; portable Greenhouse by Paxton, 50 feet by 16 feet; portable Greenhouse, 52 feet by 17 feet, with Messenger's patent heating appliances; 200 dozens of **Pedigree Pot Roses**, 700 **Fleeces of Down Wool**, together with the modern **Farm Implements**, and numerous other effects;

Catalogues of which may be obtained of the Auctioneers, City Chambers, Salisbury, or Messrs. **MARSH AND DAWES**, Devizes.

Den Nursery, of Brechin.

THERE will be **RE-EXPOSED** to **LET** by **PUBLIC ROUP**, within the Court Room of Brechin, on **WEDNESDAY**, September 22, at 1 o'clock P.M., the well-known **DEN NURSERY** of Brechin, with Dwelling-house, Shop, and other Buildings, belonging to the Burgh of Brechin, all as possessed by the late Mr. George Henderson, Nurseryman, and as presently occupied by Mr. Alexander Annandale. This Nursery, the grounds of which are close to the Brechin Station of the Caledonian Railway, has been very favourably and widely known during a long period, and a first-class business has been maintained under the firm of Messrs. Henderson & Sons. The Lease will, in the option of the Tenant, be for 15, 20, or 25 years after Martinmas, 1882. Reduced Upset Rent, £70.

The Articles of Roup and Let may be seen and all information obtained on application to J. L. GORDON, Town Clerk, Brechin—Town Clerk's Office, Brechin, Aug. 20, 1880.

King's Newton, near Derby.

SALE OF QUICKS.

MESSRS. OLIVER, NEWBOLD, AND OLIVER beg to announce that they are instructed to **SELL** by AUCTION, during the month of **OCTOBER** NEXT, in lots, 3½ Acres of 3-years transplanted **QUICKS**.

Further particulars will be duly announced.

Wardwick, Derby, August 25.

FOR SALE, the old-established **NURSERY** and **SEED BUSINESS** of the late Mr. John Griers.—The Goodwill, Plant, and the whole of the valuable Stock-in-trade, at the Waterhead Nurseries, Ambleside, together with the Seed Business established by the late Mr. John Grier at the year 1846, are now offered for Sale at a very low price, in order to release the Trustees, by whom the business has been carried on during the last four years. The Grounds, which are about 7 Acres in extent, admirably laid out, fitted with necessary appliances, and known as the Waterhead Nurseries, are conveniently situated close to the head of Windermere Lake, in a central part of the English Lake District, and are easy of access by Rail or Steamer. A lease of grounds with the Houses will be granted, with all appliances in capital working order. Price for the whole, £550.

Further particulars of Mr. G. C. COOKMAN, 14, Henrietta Street, Covent Garden, London, W.C., or to Mr. WILLIAM BARTON, Crescent Villa, Ambleside.

FOR SALE, a great Bargain, with immediate possession, the LEASE of most convenient **NURSERYMAN'S PREMISES**, consisting of three extensive Forcing Houses, thoroughly heated with Hot Water, and full of Stock. Well stocked Garden, good Stabling and Cart Sheds, and House with Shop Window in main thoroughfare. All in first-rate order. Full particulars on application to **HENRY CONISBEE**, Madras Cottages, Southgate.

Nairn Nurseries.

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THE

Gardeners' Chronicle.

SATURDAY, AUGUST 28, 1880.

NAWORTH CASTLE.

A FEW miles east of Carlisle, close to that extraordinary wall, 18 feet high, with a ditch beneath it, 15 feet deep, which the Romans built to secure, if it might be possible, the exclusion of the North Britons, stands Naworth Castle. It will always prove impossible, however, to shut out South from North by means of a mere wall and vallum, and the stream of population will ever flow in the old direction southwards into England, so long as the sun this side the border shall ripen Wheat, while that on the other side only ripens Oats. The wall failed, and the crenellating of Naworth Castle was another attempt to prevent the incursions we complained of. Whether the name signify northward or new ward, the Castle was intended as a border stronghold, and is admirably situated for that purpose, overlooking a vast extent of the once debatable territory, with the hills of indomitable Scotland in the distance.

The first of the Howards who held this heirloom of their house was that famous son of the Duke of Norfolk, known in history and in minstrelsy as "Belted Will," who married Lady Elizabeth Dacre, heiress of Naworth and Gilsland, in the reign of Queen Elizabeth. The Dacres had owned the Castle 260 years,

"And minstrels, as they marched in order,
Play'd 'Noble Lord Dacre, he dwells on the
border.'"

Naworth had passed, in the course of its history, from the family of De Vaux to that of De Multon, then to that of Dacre, and finally to that of Howard; Lord William's son, therefore, as the head of "the Carlisle branch" of the illustrious house of Howard, was the heir of four great families. "Belted Will" himself set up in his hall four heraldic figures carved in Oak, the emblems of these four families, and there they still remain, life-like in size and exceedingly rampant in attitude. One of these is the red bull of the Dacre family, another is the sable griffin of De Vaux, another the Multon stag—an uncouth piece of carving, in the worst possible attitude for a stag; the fourth is a dolphin in a similar attitude, upright on his tail, bearing a banner between his fins. "What is it?" I inquired of a passing domestic. "A fish, sir," was the reply. "What kind of fish?" "A carp."—"And what is that?" I asked pointing to the Multon stag. "That is a calf," was the reply—"one of the offspring, I believe, of the red bull." Besides the unfortunate attitude of all these animals the dolphin is further mountebanked by a sort of red turban, intended to represent a beacon fire, on his head. The Baron of Bradwardine was quite correct when he said that heraldic animals should be placed in their best attitudes, as a greyhound curvant, a horse salient, a bear, not a bull, or a calf, rampant; and a ravenous animal *in actu ferociori*, or in a lacerating and

devouring position. It may be right to mention these points in connection with the most perfect remaining specimen of a border castle, and having mentioned these quaint emblems, I may add, that along the whole length of the hall, on each side, the heraldic shields of great houses allied to that of Howard are displayed on the corbels supporting the ribs of the roof, and as the moats which surrounded this strong castle precluded horticulture, the shields in question may be noted here as among the few decorations of a baronial residence before the age of gardening. They are those of the several houses of Howard, Mowbray, Braose (the family who built Bramber Castle), Segrave, De Brotherton, Fitzalan, Warren, Tilney, Audley, Uvedale, Cavendish, Dacre, De Multon, De Morville, Vaux, Engaine, Estravers, Greystoke, Grinthorp, Bolebec, De Merlay, and Boteler. The apartments specially used by Lord William, the accomplished man of letters, and Lord Warden of the Marches, whose *soubriquet* has been mentioned, were in the tower that bears his name. His library remains as he left it uninjured by the fire of 1844, which destroyed several of the adjoining apartments. Lord William was reading in his library one day when a captured moss-trooper was brought to the Castle, and the Lord Warden was abruptly made acquainted with the fact. "Oh, hang the fellow!" cried the Lord Warden, waving off the attendants who had interrupted his studies. An hour after he desired that the moss-trooper might be brought in for examination. The man, however, had already been suspended from one of the branches of the spreading Oak outside the gate, which still stands and bears the name of the "gallows tree." Lord William's eldest son was the grandfather of the first Earl of Carlisle, his second son was the first of the long line of Howards of Corby Castle.

The Castle was protected on three sides by a deep ravine cut to the depth of about 100 feet by two streamlets which meet beneath the ramparts and may be heard but not seen, the steep banks of this natural moat being quite concealed by their dense covering of Nature-planted shrubs. The great gateway is now an ornament of the shrubbery; a lesser entrance admits the visitor to the paved court, an irregular quadrangle, around which the living rooms and offices are ranged. The walls of this inner court are covered with creepers, and among them, at the entrance to the hall, Mr. Garrow, the gardener at Naworth, pointed out the Jasmine which the seventh Earl of Carlisle addressed in pleasing verses as

"My slender, winsome Jasmine Tree,
That bloomest in my Border Tower,
Thou art more dearly loved by me
Than all the wreaths of fairy bower."

The remainder of the old Castle was fenced by a moat, which now forms part of the flower garden, and is most appropriately filled with the old English herbaceous plants. The bedding system has been entirely superseded by a kind of garden far more characteristic of the place. In the centre of the flower garden there are eight clipped pyramidal Yews. Thence you may follow either of the walks, and you will find them all bordered with good old sorts of flowers in the good old English manner. There are Violas, Stocks, Dahlias, Ribbon-grass, Sweet William, Myosotis, Asters, Hollyhocks, Dielytras, Moss Roses, beds of Lilies of the Valley, Marigolds, Delphiniums, Lobelias, Pentstemons, Campanulas, Pinks, Carnations, Fuchsias, and a score of other familiar flowers. Several delightful little ferneries devoted to natives only are broadly belted with the Beech Fern, Honeysuckles, Jasmines, Roses. The Cotoneaster microphylla, Virginian creeper and Ivy grow on the Castle walls.

This most interesting residence stands in a.

park of 500 acres, and is well planted round about with ornamental timber trees—Limes, Sweet Chestnuts, and others—for shelter. An enclosure for lawn tennis is notable from its great extent, 200 yards long, at least. Through the kindness of the family this spot has become the rendezvous for picnic parties. Clubs and societies and various public bodies meet here for pleasure and recreation, and the general public is made welcome every week day. The Castle is at present occupied by the next heir to the earldom after Lord Lanerton of Castle Howard, Mr. G. Howard, the son of the late Mr. C. Howard, long M.P. for West Cumberland. *E.*

New Garden Plants.

ANGRÆCUM SCOTTIANUM, Rchb. f.

Messrs. Veitch just send me a flower with three sepals and petals, in lieu of five, the one very broad organ no doubt consisting of three, one petal and two sepals. Such things come under our eyes now and then, though each time they are very welcome. I like, however, to speak of the great improvement in the flower when compared with those flowers obtained in 1878 from Mr. Scott, in June, and from Herr Garteninspector Bouché, of the Botanic Garden, Berlin, in September, coming from the excellent Hildebrandt. The flower is larger by at least one-third, and bears a light reddish upright spur that may make you think of the upright trunk of an elephant. *H. G. Rchb. f.*

ODONTOGLOSSUM PURUM, Rchb. f.

Messrs. Veitch have just forwarded me a very extraordinary inflorescence of this nice species, received by them from W. Thompson, Esq., Stone, Staffordshire. It is a raceme of seven very well developed flowers. Numbering from the base, the first, the third, and the sixth flowers have a dark mauve-purple blotch on the anterior part of the blade of the lip, while the remaining four flowers have the same blade pure white—a very surprising sight for me! *H. G. Rchb. f.*

PELLIONIA DAVEAUNA, N. E. Br.

This is the plant recently figured and described as *Begonia* (?) *Daveauna* in the *Revue Horticole*, 1880, p. 290, but with a note at the end of the description to the effect that the plant having flowered it was found not to be a *Begonia* but a member of the natural order Urticaceæ. It being now in flower at Kew, I find on examination that it belongs to the genus *Pellionia*, and does not appear to have been previously known to science, as I do not find any description answering to it, and there are no specimens of it at present contained in the Kew herbarium. *P. Daveauna* is a creeping herb, with succulent glabrous stems about 1 line thick; leaves alternate, stipulate, stipules large, ovate-oblong acuminate, membranous; petiole very short; leaf-blade $\frac{1}{2}$ – $2\frac{1}{2}$ inches long, 5–13 lines broad, oblique, roundish elliptic or elliptic-oblong, obtuse, margins slightly crenate, quite glabrous, either entirely of a very dark bronzy olive-green slightly tinted with violet, or marked with a broad central irregular band of bright green. Inflorescence pedunculate, densely cymose; female flowers very minute, perianth 5-parted, green, stamens none, ovary ovoid, crowned with the penicillate white stigma; male flowers 6–8 times as large as the females, perianth 5-parted, green, stamens 5, anthers white, ovary rudimentary.

An excellent and very accurate coloured figure of this pretty plant is given at the place above quoted; when out of flower it has much the appearance of a creeping *Begonia*, and will no doubt be found to thrive under similar treatment to that given to the evergreen species of that genus.

It is a native of the island of Phugoc, Cochinchina, where it was discovered and introduced into cultivation by Mr. Godefroy Lebeuf. *N. E. Brown, Herbarium, Kew.*

*ACTINIDIA KOLOMIKTA.**

This is a semi-scandent shrub, cultivated at Messrs. Veitch's Combe Wood Nursery, to which it was introduced from Yesso by Mr. Maries. It seems to have been introduced into France a few years earlier.

The branches are glabrous, speckled brown; the membranous leaves measure 3–4 by $1\frac{1}{4}$ inches, with a petiole of 1 inch in length, and are ovate-oblong, rounded or sub-cordate at the base, and tapering gradually at the apex into a long acumens, margin thin, sharply and irregularly serrate, the serratures being alternately large and small; venation arcuate, veins remote, surfaces with a few scattered white setæ, especially on the under surface. On the upper sur-

face near the apex is a silvery-white blotch, which disappears on drying, and is not visible in herbarium specimens. Flowers solitary, axillary, or cymose, peduncles $\frac{1}{2}$ – $\frac{3}{4}$ inch long, covered with fluffy-white down, $\frac{3}{4}$ -bracteolate. Flower-buds globose. Flowers $\frac{3}{4}$ inch in diameter, sepals five, whitish, imbricate, oblong-obtuse; petals five, white, obovate-oblong, twice the size of the sepals; stamens indefinite, full; filaments thread-like; anthers yellow, sagittate at the base, and with the connective prolonged into a small appendage at the apex; ovaries abortive.

The species is a native of Amurland (Maximowicz!), Manchuria (Wilford!), Sachalin (Schmidt and Glehn!), and Yesso (Maries). We have no evidence of its occurrence in Japan proper.

The species has been confounded with *Lindleya A. callosa*, which has broader, more rounded, glabrous foliage, with a thick horny margin, and closer serratures all of about equal size. From the silvery variegation of its leaves and its white flowers this is an interesting plant for the shrubbery. *M. T. M.*

A GUIANAN SAVANNA.

To your account of the great Savanna of Guiana, which, as you say, is probably about 14,000 square miles in extent, and is only part of the tract of similar land which occupies much of the centre of the South American continent, I need add nothing. But I think it as well to explain that the particular savanna represented in the woodcut in your issue for last Saturday, which is a reproduction of a photograph taken for me, differs in many respects from that great savanna. In the first place, this particular Kaieteur Savanna, which is but a few miles in extent, forms part of a tract of sandstone which, though not extensive, yet is the only considerable tract of this formation in British Guiana. On the Kaieteur Savanna the sandstone is covered by a thin layer of hard conglomerate, the greater part of which is quite exposed and bare of soil, as is shown in the immediate foreground of the woodcut (fig. 47). The general appearance of the Savanna is that of a huge, bare, level rock, on which are scattered detached groups of plants, which spring apparently from the rock, but really, of course, from pockets of soil. These deposits of soil vary much in size, from such as are of sufficient extent to support thickets of large plants, and even of small trees, as shown in your illustration, to such as are too small to be shown in any ordinary photograph. In the latter, oddly enough, grows chiefly the round-leaved Sundew (*Drosera rotundifolia*). The larger patches of soil, excluding those of which small trees have taken possession, are completely occupied by a dense growth consisting chiefly of *Cordyline micrantha*, together with *Orchids* of two or three kinds, such as *Sobralia Elizabethæ* and *Cleistes rosea*, and some Ferns, of which the most abundant is the South American form of our common Bracken (*Pteris aquilina*), all which plants are rare elsewhere in the colony, and various species of *Cyperus*, *Scirpus*, *Xyris*, &c., similar but not identical with species growing in the other savanna districts. In short, as might be expected from the difference in geological character, the greater altitude (though the difference in this respect is not very great), and the unusual conditions of moisture, which I will describe presently, the vegetation of this sandstone savanna is somewhat peculiar in character.

The *Cordyline*, so far as I know, grows nowhere in British Guiana but here and (as I am told by a friend whom I can trust in such matters) near another waterfall in the neighbourhood of the mountain called Roraima, which is at the other end of this same tract of sandstone. Probably when the rest of this sandstone tract, which is the least known part of that little known colony, is explored, the plant will be found elsewhere, in similar positions, within the tract.

Standing on that bare rocky savanna at noon, during the dry season, when the rock is so hot that it is impossible to walk with bare feet on it, and when there is nowhere any sign of moisture, one cannot help feeling surprised that such a plant as the *Cordyline* can grow from such tiny deposits of soil. But from this small and partially enclosed savanna the Potaro River, 300 feet in width, falls straight down for nearly 800 feet, driving high into the air, and far over the country, clouds of spray so dense that from just before nightfall to early morning, when the sun is not present to disperse them, they cover everything as in a fog, and throughout the night these clouds fall over the savanna in fine rain. A glance at the

Cordyline shows that it is specially adapted for growth under such conditions as these. The sides of the base of each leaf are curved inward, and pressed against the central column of the plant in such a way as to form cups which receive and retain the falling spray. Very possibly the plant grows naturally only under such conditions as exist close by a big waterfall in this sandstone tract. I am inclined to think that the *Cordyline* is almost the first plant to establish itself on this rocky ground, and that it is in the vegetable matter gradually deposited by it that the other plants now growing on the savanna have been able to establish themselves.

The *Cordyline* had evidently recently passed out of flower when I visited the Kaieteur Savanna in October, 1878, and though there were plenty of withered flowering stems such as that shown on the left in your woodcut, it was with much difficulty that I found a few flowers in good condition to serve as specimens. Nor had it begun to show signs of flowering when I was again on the savanna in the following March; so that probably its time of flowering is about July and August—that is, at the end of the chief wet season. *Everard F. im Thurn, Aug. 23.*

EAST INDIAN ORCHIDS AT GUNNERSBURY PARK.

EAST INDIAN Orchids in bulk do not as a rule look happy in the various collections in this country. No doubt some species, such as *Vandas* and *Aerides*, do excellently, when possibly *Saccolabiums* and *Phalænopsis* do not "do" at all. There is no doubt a way, if we could get at it, by which health and even exuberance could be secured, but the difficulty all along has been in finding out the right track. Some advocate one mode of treatment, some another, until the novice is at his wits' end how to proceed. It is quite clear that uniform success cannot be secured unless wise cultural measures be adopted, and it is because there is such uniform success in the cultivation of the East Indian Orchids—not to speak of the other Orchids, which are equally creditable—at Gunnersbury Park, under Mr. Roberts' care, that I wish to speak a little of the conditions under which they live and are enjoying life.

The plants are placed in a hip-span house, about 35 feet long by (judging by the eye) 14 feet wide, with a path along the back and a narrow one in front, sunk at a lower level, for convenience of walking. The house is not lofty, and is ventilated at top by sliding sashes, after the old vinery principle, with apertures for air being let in from the low level. The central plot is a bed of cocoa-fibre, with stacks of piping underneath, giving off ample heat. There is also an auxiliary stack of pipes, four deep, in front, one on top of the other, and over this is a layer of gravel, on which is a luxurious cushion of *Selaginella*, relieved with the variegated *Panicum*. This is an admirable cushion, and it is doing duty as a moisture-supply medium for a covering of the best-grown *Phalænopsis* for their size that any one could see. Even *P. grandiflora* is luxuriating here, not to speak of *amabilis* and *Schilleriana*, which are in rude health, and have been prolific of bloom. These are suspended in square teak baskets over this living cushion, so that, what with the moisture it contains, and the heating power of the pipes underneath, there is a continuous current of warm, moist air passing, or, in other words, playing hide-and-seek among the succulent leaves. This sort of natural treatment exactly bears out what I saw for myself over twenty years ago at Sir John Cathcart's, when Mr. Dodds was his gardener, and when he exhibited possibly the two most wonderfully grown samples of *Phalænopsis grandiflora* and *amabilis* at the Regent's Park May show, that possibly ever were seen either before or since. Personally I was so anxious to know how these plants were cultivated that I went to see, and I found that they were growing suspended from the roof, with a forest of foliage underneath them; thus they were in a truly tropical climate, and under precisely the same conditions as the plants at Gunnersbury. Of course I speak now when *Phalænopsis* are grown by the thousand for the thousands; then they were grown by units for a limited number of people. The facts, however, are the same, and growers of this beautiful tribe of Moth Orchids would do well to profit by the hint. It is somewhat singular that the plants at Gunnersbury over this cushioned stack of pipes are doing much

* *Actinidia Kolomikta*, Maximowicz, *Primit. Flor. Amur.* 1859, p. 61; *Trochostigma Kolomikta*, Ruprecht, *l.c.*; *Actinidia callosa*, auct., var. et *Dyer* in Hook. *f. Flora Brit. Ind.* 1, 286, non Lindley.

better than a parallel lot a little further up the rafters, and away from the more immediate influence of the heated moistened air.

Then as to the *Saccolabiums* and *Aerides* and *Vandas* resting in the fibre, there is an extraordinary amount of vigour—indeed my first remark to Mr. Roberts on entering the house was, "This is magnificent: but will this sort of thing last?" *Aerides Schröderii* branching, and about 2 feet high, clothed to the bottom with a greenery that delights the eye to rest upon; *Aerides* affine the same—and such affines, too, as you might equal but could not surpass, for every culturist knows how rarely this ever gets up to specimen size without losing its lower leaves. And as it is with these so it is with every plant on that bed—there might be greater variety but there could not be a better state of growth. Growing is one thing and growth with consolidation to secure profuseness is quite another thing; but Mr. Roberts seems hitherto to have been accomplishing both. He is giving air most plentifully, but discouraging currents which are not good in a tropical atmosphere for either men or plants. Unlike our excellent Orchidophilist, Dr. Paterson, Mr. Roberts does not throw open his doors—indeed for a class of plants, such as *Phalænopsis* and *Saccolabiums*, it is the height of un-wisdom. There is this about the Doctor's houses which those who have not seen must bear in mind—they are attached to each other; first, cool-house, then Cattleya-house and East Indian-house at right angles; so that, supposing the doors to be open, the air is heated before it reaches the warmer climates. So far, however, as the case before us is concerned, there is copiousness of ground heat mollified, if I may so express myself, with as much moisture as it can carry, which is a capital safeguard for battling against sudden fluctuations out-of-doors, and the difficult plants show their appreciation of the conditions under which they live by the vigour of their growth. Every plant is absolutely clean, and shining like the coat of a well-kept roadster, and the pots are surfaced with living *Sphagnum*, thus enhancing the general appearance. A bed of this kind we all know forms a roost for cockroaches and is apt to get overrun with the spores of Fungi. Neither of these pests appear to be prevalent—indeed, there were no spores visible, and *Aerides Lobbii* is the best telltale for the presence of cockroaches, for if there be one in the house it will find its way to the roots of that beautiful Orchid. There was some appearance certainly of their bite in that plant, but taking the plants as a whole, they were remarkably free from mishap. I would advise all who have an opportunity to have a look in this little lot of plants. *James Anderson, Meadowbank.*

POTATOS.

LOOKING over the instructive reports upon the appearance of the Potato crop throughout the country, I turned with no inconsiderable interest to what was said with respect to the state of things in Ireland, and specially marked what was stated by Mr. T. Wadds, who tells us that the Scotch Champion is doing remarkably well, but with as yet nothing under the plants, and is, he fears, too late in tuberizing for that country. Mr. Wadds adds:—"Should the disease attack them, dishauling them would be certain ruin." How much does that statement, made by a resident in the country, bear out the remark made in these pages not long since, that there was too much reason to fear, in the mild humid climate of Ireland, that the Champion would continue to make haulm and little else until too late? Could the myriads of Irish cottier farmers but now be lifting such grand crops of the American Rose, Beauty of Hebron, Early Ohio, Manhattan, and many others that I have but recently taken up, they would indeed find in such a perfect Godsend. If their Champions should keep the word of promise to the ear and break it to the hope by giving them haulm only instead of tubers, then will it be a misfortune indeed. Although Mr. Fish, at p. 183, tells us he informed the cottagers of Higham that the only available method of saving the Potatos was by "whipping" them up at once, I must say that I do not find the lifting of a crop to be by any means such a rapid business. Indeed Mr. Fish rather contradicts or corrects himself farther on when he says, "The careful lifting and storing of Potatos is an arduous work;" and here I entirely coincide with him. It is much easier to write about "dishauling and lifting" than it is to do it, for the "doing" takes a lot of time even in cottagers' plots, whilst in fields

it is an impossible work, for the simple reason that it is wanted to be done at a time when all available labour is engaged in the harvest field.

Mr. Hill's suggestion, at p. 182, that the roots after the haulm are cut off, are still supplying the tubers with nutriment, is a curious one, and exhibits on the part of the writer not a large amount of knowledge of the physical construction of the Potato plant. I should as soon think of suggesting that the roots of a Cucumber plant were continuing to supply nutriment to the fruits after the stem was severed. With regard to my own liftings during the past week I would refer again to the American round, Triumph, having lifted more of it, as giving a splendid clean crop of fine even size. This is the earliest of all the Americans to ripen its foliage, and it shows no disease; were it but a white kind and possessing more flavour it would be a most valuable market variety. Manhattan, another American round, but purple in colour, gave a good clean crop and a handsome sample. Early Ohio, previously alluded to, in the later lifting maintained its excellent character for giving the most even sized crop of tubers of all the Rose family—no two-pounders or other big Gooseberries, but a fine lot of good table ware. Both for its short top, its excellent quality, and its admirable evenness of size, I prefer this kind to all the Rose section.

I had sent me last winter from Germany by M. Moogen, amongst some German and American sorts of Potatos, a handsome red kidney named Mr. Bresee. That it was of American origin the name is evidence. On lifting this the other day I found a grand clean crop and a fine lot of handsome tubers. It was probably, both for bulk and beauty, the best I have ever seen, and must, I think, size being allied to colour and beauty, put all other red kidneys into the shade. I tried to get a cross between this kind and Fenn's Bountiful, but failed. I hope to try again next year. Did Bountiful give us only two-thirds the average size of this Mr. Bresee it would be literally unapproachable as a table and show red kidney. A later lifting of Porter's Excelsior has given a fine crop, and a good handsome sample; Bedford Prolific, some unusually fine tubers and a clean crop; and a Walnut-leaf kind, named Melbourne Hero, a large produce and several handsome tubers. The Early and Late Rose kinds, whilst giving enormous crops, have too few shapely tubers, so many are big, but as a rule ungainly. Probably this defect will characterise many large-tubered kinds this year, and exhibitors, whilst making every allowance for a season that is productive of bulk, will do well not to be too much enchanted with size in selecting their tubers to ignore shapeliness and quality. *A. D.*

THE BLACK WALNUT TREE.

We are somewhat gratified, but not in the least surprised, to find our recent notice on "Fashions in Ornamental Woods, with Special Reference to the American Walnut," creating an amount of interest. To it we owe the letter from Mr. Robert Bucknall, of Vauxhall Cross Saw-mills, which appeared in our last issue, and other communications, mostly pointing to the wood of the Black Walnut tree. As Mr. Bucknall's letter opens a question upon which we have not previously dwelt—a question that ought ordinarily to be discussed in publications dealing with the growth of trees—it becomes a moot point whether in following the same we are not travelling beyond our legitimate ground. Be this as it may, we are inclined to respond to the call, trusting that the subject may, if not in the main, why, then in the abstract, prove interesting to our readers.

The field of literature connected with the American Black Walnut is very barren, and we know of no source from which information can be drawn better than the exhaustive, and, we may say, marvellous work of J. C. Loudon, Esq., *Arboretum et Fruticetum Britannicum*, which is a digest of trees and shrubs peculiar to the temperate regions of the globe. From the size, cost, and now scarcity of this work it is little known other than in the hands of leading foresters and men in the higher walks or grades of science. As a standard or text-book it may be found on the shelves of most of our great libraries. Briefly we may state we give this work as the authority for the matter we are about to advance. The Black Walnut (*Juglans nigra*) is peculiar to northern America, where it is sometimes called "the Black Hickory Nut;" it is found ranging from New England to Florida, on rich or fertile soil. In Kentucky its fruit is the finest, being there nearly as large as the European; but in Tennessee, where the climate is colder, it is not above half the size. It is found as far North as 40° 50', but is most abundant about Philadelphia. It requires a good soil for its growth, sand or swamp

being unsuitable. In appearance, judging from the plates furnished by Loudon, it ranges between the European Walnut and the broad-leaved Elm. Its leaves resemble our Walnut, except that the leaflets, in pairs, with an odd one as the termination, are about double in number. It is said to be planted in America as a shade for houses, and also as an edible fruit; but in this respect it is not so palatable as the European variety.

With regard to its size, on American soil it is usually found from 60 to 70 feet in height, with a diameter of trunk from 3 to 4 feet. Occasionally it is found of greater altitude, with a trunk from 6 to 7 feet in diameter. The largest tree we hear of is one the trunk of which was exhibited in London in 1827. It was grown on the south side of Lake Erie, in North America, and, like all large trees, was hollow at the heart; its diameter was 12 feet, and its interior was furnished as a sitting-room. When growing, this tree is said to have been 150 feet in height, and to have possessed branches 2 to 4 feet in diameter. Of its age it would be impossible to speak, but it must have been very great, as its bark was 12 inches in thickness.

The wood, as we know, is dark, approaching to black, and its uses in America are more varied than we could reasonably imagine. Its use is very extensive in the varied branches of furniture. It is (or was) used for wooden house-building, and for splitting into shingles 18 inches long and 4 to 6 inches in breadth. For gun-stocks, in position it is parallel to that of our own Walnut, in which respect it must be a well-known wood in the Continental armies. We further learn that it is largely used for the naves of wooden wheels, and in Philadelphia for coffins, a use to which its colour cannot be other than highly suitable. In point of durability we obtain some valuable evidence. Posts of this wood are said to have remained undecayed in the ground for twenty and even twenty-five years, and its qualities of durability have been strongly tested, when exposed to heat and moisture, the two most trying agents in the disintegration of wood. These qualities render it suitable for shipbuilding, and, although more brittle than white Oak, it is found in practice to be more durable. What is a greater consideration than all is, that it is free from the attacks of worms, which in the warm seas prey so lustily upon wood. The natives, knowing this, used it for their canoes. On the river Walnut canoes have been made of this wood, 40 feet in length and 2 feet 3 inches in width, hollowed from a single log—canoes which have been prized for their strength and durability.

As a wood it is considered heavier, stronger, and more free from the attacks of insects than the European Walnut, and fully capable of receiving as high or fine a polish. Further, it is more reliable in work, as it seldom warps after being fairly seasoned.

We now approach the subject of its suitability for growth upon English soil, and on this point we obtain some valuable notes. Although not generally known, it was one of the first trees to be introduced from the New Continent, and on this point it dates as far back as 1656. It is found to be a more hardy tree than the European Walnut, and fine specimens exist in this country, in France, Germany, and in Italy, in which countries it ripens its fruit, although the same is not so large as when grown on the most favoured soils of America. As to its hardy character, it will flourish as far north as Sweden; but it there fails in bearing fruit. When planted in England along with the European Walnut it is found to get on better, and to be by some degrees the hardier tree. It will bear fruit at eight to ten years' growth, and attain a height of 50 to 60 feet in forty years, and it is said to grow as quick, large, and good, on our favoured soils as it will on American. With us it is a tree of quicker growth than the European Walnut, and puts out its leaves much earlier in the spring, the date assigned to its foliage being the beginning of June. Its shade is sombre, and it will not admit of shrubs growing beneath it, and grass thrives but ill under its shadow.

In proof of the above statements we may turn to living examples of the tree. In the grounds of Fulham Palace a mature tree is shown 50 feet high, with a diameter in the trunk of 5 feet, and a spread in the branches of 50 feet. The age of this specimen is known to be 150 years.

At Syon another full-grown tree is shown 79 feet high, with a diameter of 2 feet 11 inches, and a spread in the branches of 59 feet, the age of which is not

given. At Testwood, in Hampshire, a tree is mentioned seventy years old, 52 feet high, and 2 feet in diameter. At Bowood, Wilts, one planted thirty-five years was 48 feet high, and 1 foot 4 inches in diameter. At Latham House, Lancashire, one planted forty years was 32 feet high, and 1 foot 2 inches in diameter. Travelling further north into Scotland, we find a tree at Tulloch Castle, Cromarty, 60 feet high, with a diameter of 3 feet, and another at Donibristle Park, Fifeshire, planted fourteen years, 35 feet high and 1 foot 1 inch in diameter. These trees must now afford better data, for the measurements were taken as far back as 1843, the work we extract from being published in 1844. It is certain that these trees were planted for ornamental purposes, and wholly irrespective of any value that might be attached to the wood. The great works of planting carried out during the early part of this century have been pursued in other trees than the Black Walnut, its wood at that time being but little known, and of no commercial value. Matters have changed in this half of the century, and there can be no doubt but the cultivation of the Black Walnut as a plantation or hedgerow tree would now be a wise and profitable operation. Michaux, the learned and travelled botanist, gave it as his opinion a generation ago, that it would be wise to grow trees of this kind on the highway sides in Europe, to replace the Elm, his argument being that a change of species on the soil would be beneficial. It is only fair to assert that there are other and stronger arguments to be advanced at the present time in favour of planting this tree; for there is no wood so quick of growth that possesses anything like such high commercial value.

The most ready way of largely introducing the trees is by nuts or seeds from America; these should be packed for transit in moist loam or moss, and placed in the ground within six months of the date of gathering. Loudon tells us that nuts or seeds of the Black Walnut could be purchased in London in his time at 9d. per quart, and plants at 18d. each, prices which it is fair to presume have been cheapened since his work was issued from the press.

We draw from these notes some interesting facts, not the least of which is that the wood of the Black Walnut is free from the attack of worms. If this extends, as we have no doubt it does, to the furniture beetle, which renders furniture made from our native Walnut so short-lived, it is a detail that counts as a valuable consideration, and one that removes, in the eyes of practical men, the greatest obstacle to the use of this new but highly fashionable wood. *Timber Trades Journal.*

GARDEN GOSSIP.

BY A LADY.

OLD-FASHIONED FLOWERS.—I have been so fortunate as to fall into the good graces of an old woman who lives in a small cottage near here, and who shows her good will by sending me nosegays from her cottage garden. This old woman and her husband formerly kept the turnpike which used to stand at that spot, and carts and waggons still pull up at their door, no longer to pay the toll, but to purchase the good ginger-beer which is manufactured in that small abode.

Perhaps the keeping of a turnpike on a road, the traffic on which is not great, is peculiarly favourable to the development of a taste for gardening, as it must necessitate a good deal of unoccupied time being spent at home. However that may be, the result in this case is that a succession of nosegays have been furnished to me from a garden so tiny that one wonders how a nosegay could be gathered from it at all; for the cottage is so hemmed in by the road in front, and the hill which rises abruptly at the back, that there seems to a passer-by to be barely room even for the Cabbages and Currant trees, and such-like useful products, which are by no means neglected for the flowers that grow among them. But the marvel, in my eyes, lies less in the fact that so many flowers grow in so small a garden as that every nosegay that reaches me contains some flowers of special interest, either from their peculiarity or from their association with bygone times.

Among the flowers in these nosegays (tied up in the stiff flat fashion which suggests the narrow accommodation of a cottage chimney-piece) were the York and Lancaster Rose, the Cabbage Rose, striped

Pinks identical with those which I remember in days of old, but which are seldom seen except in cottage gardens now; the Everlasting Pea, tall blue Larkspurs, a Cudweed—looking like Edelweiss on a small scale—and the dark blue spiked Veronica, which I remember to have seen growing wild on St. Vincent's Rocks at Clifton, tempting young botanists to their destruction; for it grew only on a few dangerous and inaccessible spots. They also contained a purple Linaria (a stranger to me), white Everlasting, and various other flowers more or less common; while for scent a background of Tansy was added, and variegated-leaved Thyme was mingled with the gayer flowers, recalling Bacon's advice "to set whole alleys of Thyme, Burnet, and Water Mints," to have the pleasure of their perfume "when you walk or tread."

Among these were two or three flowers which caught my eye as novelties, but on examination they proved to be double varieties of flowers which grow wild in this neighbourhood, such as the meadow Geranium, and Nettle-leaved Campanula. The double Geranium is really pretty, with its blue "buttons" of flowers, although rather smaller than its wild representative, the petals appearing to have diminished in size as they increased in quantity.

I suppose that all these flowers that I have named would have been called common a few years ago, but many of them are fast becoming uncommon, even in cottage gardens; for the poor are apt to copy the rich, and in those parts of the country where gentlemen's seats abound the cottage gardens are now mere imitations of those that may be seen at the Rectory or Hall. The eternal scarlet Pelargonium figures everywhere—giving brightness, no doubt, but with it a monotony from which we are glad to escape to rest our eyes on the softer colours of the hardy herbaceous plants with which the garden I have described is filled.

But gain without loss cannot be obtained in this world, and the great disadvantage of the old-fashioned flowers lies in their short duration—they are over when our modern gardens are at their gayest; and as our present habits necessitate autumn gardens, we cannot give up our bedding-out plants for any amount of interesting out-of-date flowers such as our ancestors delighted in. But then, on the other hand, the cultivation of hardy herbaceous plants does not entail such trials to the temper as are the lot of every gardener in the present day. For instance, such winters as the two last have no terrors to those who cultivate old-fashioned flowers alone. While we are bemoaning the loss of many a plant that had stood out successfully through the previous mild winters, and while our garden is decidedly less gay than before it suffered from the severe frosts which have visited us of late, our cottager neighbours can produce as many flowers as ever; and the tiny garden which I have described is, if anything, gayer than usual; it has not suffered any more than our hill-side, which is even more abundantly covered with wild flowers than is its usual wont.

Nor are hard winters the only evil from which the gardens of our forefathers escaped injury. When glass houses were scarce, and the panes in them of small dimensions, such a disaster as befell the Royal Gardens at Kew last year was an impossibility. Hailstorms might damage the appearance of a garden for a few days, or even weeks, but the hardy plants soon recovered, and the supply of flowers for the following year was unaffected; whereas now, when we depend so much on plants that must be housed through the winter, a wreck of glass may be the entire wreck of a gardener's hopes.

Let us remember this, and not be impatient at the never-ending grumbles which represent every season as unpropitious, and even hint at the climate of England having changed. The change is in our requirements; and if we expect so much more than of old, we must be prepared to treat with forbearance a race of men whose tempers need be angelic to withstand the disappointments and worries which our changeable climate and the modern style of gardening must necessarily produce. *A. B.*

IRIS KEMPFER.—The splendid Japanese varieties of this Iris have been blooming freely during the last two seasons at Messrs. Garaway's nursery, Durdham Downs, Bristol, who have tried to cross them with the best English kinds that happened to be in flower at the same time, but the pollen of the Japanese sorts does not seem to have had any effect on the seedlings.

NEW FORM OF DISEASE IN POTATOS.

THAT the disease of Potatos here described is entirely new in its devastating effects upon the Potato plant there can be no doubt; whether the parasite itself belongs to a new species of fungus or not is at present uncertain. The parasitic fungus, however, is probably some old enemy in a highly accelerated condition of growth. That this new hanger-on has now found a host in the Potato plant entirely suited to its wants is proved by complete evidence.

At different times, for several years past, whilst talking with Potato growers, I have heard of small granules, like little Peas, being seen within the stems of badly diseased Potatos. Parasitic growths of this nature are well known to occur upon and within old Cabbage stems, and upon and within various herbaceous plants. One of these, the commonest, is named *Sclerotium durum*, and its perfect condition is *Polyactis* (or *Botrytis*) cinerea, a fungus closely allied to the Potato fungus proper—*Peronospora infestans*. A second *Sclerotium* of the Cabbage and herbaceous plants is *S. semen*. The fungus now infesting Potatos does not agree well with either of these, though it may possibly belong to the first, as the ultimate condition of that *Sclerotium* (the *Polyactis*) sometimes attacks the Potato. The new growth may, however, belong to something quite fresh, something that has not been before detected, or some old fungus in a greatly exalted state. That it demands very serious attention is proved by its destructive ravages. How far the disease has got spread over Ireland or over this country no one at present knows, but no doubt facts will shortly be forthcoming.

On August 10 last Ambrose Balfe, Esq., Secretary to the Royal Horticultural Society of Ireland, sent me some Potato haulms from the West of Ireland badly affected in a way never seen before either by Mr. Balfe or myself. Mr. Balfe wrote: "On dividing the afflicted portion of the stems longitudinally, and seeing them hollowed out, and small black looking masses at intervals, I off-hand thought it was the work of a larva, and that the little dark bodies were the eggs. A moment's reflection told me they were rather large for the larva of an insect to deposit, so I picked out some, and dividing them saw they were in connection with a bed of mycelium that cushioned them, that the affection was of a fungoid nature, and to me, at all events, new and strange. These little amorphous bodies are like *Scleroderma* in miniature or ergot." Mr. Balfe also referred to the parasite as "an unfamiliar and very destructive enemy." The Potato plants afflicted with this new pest in Ireland were bought for Champions, and as far as present investigations have gone, this variety has been the only one afflicted. The manure used was sea-weed covered with farm-yard manure.

It is hardly necessary to say that Mr. Balfe was perfectly correct in his conclusions; the *Scleroderma* he mentions is a hard and worthless false Truffle, found on the surface of the ground in woody places. The *Sclerotium* of the Potato bears a great resemblance to a miniature *Scleroderma*. Both these words have a similar meaning: *Scleroderma* is named from *scleros* hard, and *derma*, a skin, in reference to the hard and woody bark of the fungus, whilst *Sclerotium* is taken from *sclerotes*, hardness, in allusion to the hardness of the entire substance of the object.

Before making an examination of Mr. Balfe's specimens, I was not at all prepared to see such a bad state of things, or to see *Sclerotia* of such a large size or so abundant inside and outside of the Potato haulms. I have not seen such large specimens in the Potato or Cabbage before, and this causes me to feel some doubt as to what fungus may ultimately arise from them. The haulms themselves were in the most wretched condition, cracked, blistered, corroded, and utterly exhausted, the leaves reduced to tinder, with mycelium traversing the plant in every direction, within and without. Horticulturists will easily be able to imagine the condition the Potato plants must be in, with the interior of all the stems quite stuffed up with dense masses of spawn, and thickly studded with large *Sclerotia*: the outside in a somewhat similar condition, the spawn reaching to where the leaves should be.

In the accompanying illustration (fig. 49) A, shows the exterior of a piece of Potato haulm with the *Sclerotia* nestling in beds of mycelium, or spawn, in various positions on the external surface. B, shows a longitudinal section through a similar piece of haulm

with the Sclerotia embedded in thick masses of mycelium within the stem—both figures natural size. C, shows a single Sclerotium enlarged four diameters, with part of the cushion of mycelial threads still attached: this figure gives a good idea of the large size of some of the Sclerotia: they are at first white, then brown, at length black. D, shows a section through a fragment of the surface of one of these bodies, enlarged 320 diameters; on the top are a few of the septate threads of the white mycelial cushion. Under these

condition; it arises and is formed from mycelium or spawn, and to this substance it is usually attached or cushioned, as in the present instance. Sclerotia frequently occur under the cuticle in plants; at other times they are deeply embedded in the substance. They grow in and on living plants, and in decaying vegetable and animal matter. Sclerotia are a peculiar condition of fungus mycelium, and when the mycelium is in this state the spawn is preserved from destruction in a dormant state for a period of time,

These spores will probably afflict next season's Potatoes with some destructive fungus, and with Sclerotia similar to the bodies here described.

What fungus the Sclerotia will give rise to no one can say for certain at present, but the probability points to some mildew allied to the Potato fungus proper. Botrytis (now more commonly known as *Polyactis*) cinerea arises from a Sclerotium not unlike the one here illustrated, but I have never seen such large specimens belonging to *Sclerotium durum*, and it would not be safe to assume that we are dealing with *Polyactis cinerea*, for the mycelium of the new pest of Potatoes is far too white for this species if the colour character is to be relied upon; besides, *Polyactis* generally attacks decayed vegetables, whilst it seems probable that the Irish Potatoes were attacked by some mildew whilst the plants were still apparently healthy.

It would be well if gardeners in different districts would now look to their haulms a little and report to the *Gardeners' Chronicle*. The haulms should be split open with the finger and thumb and the Sclerotia looked after in the interior of the stems. The nodules frequently appear to be white on a mere superficial examination; this appearance is caused by the coat of white spawn in which they are immersed: if this coat is lightly removed with the finger and thumb the brown or black Sclerotium will be seen within. It is very desirable that information should be forthcoming as to whether these bodies now occur in Potato haulms in widely separated districts, or whether the disease is at present local.

Since the above was written some further particulars have reached me, through the courtesy of Mr. Balfe, from the owner of the afflicted plants. He says the disease has increased much; the remainder of the field is planted with "Champions" and what are generally known here as "Protestants," the latter being nearly free from any disease. There was no difference in the preparation of the ground; all the sets were cut, and the disease was first noticed when the blossoms opened in the early part of July.

The infected field is reclaimed bog, first brought into cultivation about eight years ago, when three crops of Potatoes manured from the farmyard were taken consecutively. There was a coat of clay spread over and incorporated with the soil, the field was then laid down with a crop of Oats, and has been in grass since and meadowed. The meadow was found light, and the land was first planted this spring. Sea-weed was first spread on the grass, and about ten days afterwards it was covered with farmyard manure; the Potato sets were laid on the manure and then covered. Ridge-planting was adopted. *Worthington G. Smith.*

A WEEK IN SUSSEX.

GLAD to flee from London, the uninhabitable in August, the chief alloy of my pleasures of anticipation in a week in Sussex was the necessity of travelling by the South-Eastern. The motto of this company is "Onward," but they have little competition to spur them on, and in consequence, there are very few less comfortable lines in England. Neither is the Sevenoaks and Tunbridge line a particularly interesting one, for so much of it is in cuttings and tunnels that there is but little to see. We caught a glimpse of the beautiful but rather over-be-villa'd Chislehurst, the familiar rockpit in Sundridge Park, well-known as a locality for fossil oysters, and the neighbouring heath, marking the outcrop of the Thanet Sands. From Orpington to Halstead we had ample opportunity of studying the "clay pipes" in the chalk, pockets of clay remaining when the carbonate of lime has been dissolved out of the chalk by the percolation of carbonated water from the overlying soil, and before reaching Sevenoaks we were able to look back at the grand escarpment of the North Downs, crowned with Knockholt Beeches, and cut through by the "trumpet-mouth" gorge of the River Darent.

HOP GROWING.

We now reached the Hop district, and were forcibly struck by the fact that this remunerative crop is virtually independent of geological position. True they cannot grow Goldings on the Hastings series of Sussex, nor any Hops of the quality of those grown on Upper Greensand, as at Farnham. This I am inclined to think is attributable in part to the excellent blending of calcareous, siliceous, and aluminous constituents obtained on the latter formation, and in part



FIG. 40.—POTATO STEMS AFFECTED WITH SCLEROTIUM.

threads the black and brown cells which form the bark of the Sclerotium, at the bottom of the simple, densely compacted cells which go to make up the body. In some Sclerotia the external cells of the bark are waved as in the cuticle of many Phanogams, but in the Potato Sclerotium they are perfectly simple.

Some of the younger readers of the *Gardeners' Chronicle* may naturally ask, "What is a Sclerotium?" The answer is: a Sclerotium is not a perfect fungus, but a densely compacted and compressed nodule of fungus-spawn in a resting or hibernating

which may be long or short, as in the hibernation of resting-spores in various fungi.

An equally important question is—What will become of these innumerable specimens of Sclerotia now formed, and being formed, on the Irish plants? The unpleasant answer is, they will undoubtedly fall to the ground with the decaying plants, where they will at length be ploughed in. This is a condition of things exactly suitable to Sclerotia; they will quietly repose in the ground till their period of rest has expired; they will then burst and produce mycelial threads, some perfect fungus, and countless spores.

to the large percentages of soluble silica, potash, and phosphoric acid contained in it. Yet Hops even of inferior quality are sufficiently remunerative to be worth growing on Lower Greensand, Weald-clay, or Hastings-beds, though the crop is uncertain and exhausting. Indeed, in this last fact lies the reason for their wide geological distribution. The soil of the Hop-field is almost entirely artificial. In an undulating country the requisite shelter is most readily obtained; but on the high ground in Sussex even this is attained artificially by "lees" (pronounced "loos"), or thick-set rows of hop-poles. Since the introduction of "dipping" or creosoting the poles it matters little what wood they are made of, and Alder is in favour from its rapid growth: but formerly Spanish Chestnut has been largely planted in north-east Sussex as being more durable than Larch. The latter species, moreover, does not flourish here, either from exposure to sea-breezes, or from the presence of iron "pans" at intervals in the soil, though there are some good plantations of Spruce, and fair individual specimens of Scotch Fir and Deodar. The wild Hop occurs in nearly every county south of York at elevations under 1000 feet; so there seems to be no reason save custom for the restriction of the cultivation of its domesticated form. Though it is now generally recognised that fertilisation is unnecessary, some farmers still plant the male plant or "seeder," and specimens are common in the gardens of the district. This year's crop I found had suffered considerably from vermin and mould, and sulphur and soap-and-water were being generally resorted to. Early Prolifics were nearly ready, but no picking had begun when I left (August 13). Well-built brick huts with louver windows were provided for the pickers on most farms, and one of the difficulties of house-keeping is that servants will give notice for the hopping season, though the clergy do their best to prevent the girls thus lowering themselves by associating with the riff-raff of London for the sake of the little easily earned cash. The Hop grounds are kept clean, but Groundsel and Chickweed are very prolific, rejoicing in the richly manured land. The pickers might well bring back a plentiful supply for our London bird-fanciers. Six feet is the distance allowed here between the centres of any two hills.

THE SUSSEX IRONWORKS.

Passing the little station of Wadhurst, well known to geologists as giving a name to a bed of clay in the Hastings series, and of Etchingham, where the fine old Norman church is in winter entirely surrounded by the flood waters of the Rother, we reached Robertsbridge, no doubt originally Rotherbridge, a large village, once the site of one of the principal iron and steel furnaces of Sussex. This was the termination of our railway journey; but we still had some seven miles to travel in a remarkably antique specimen of the genus Fly (*Musca tardivatica*), through the beautifully wooded and undulating country before reaching the comfortable old farm where we were to be the guests of a well-known author for the first week of our holiday. Our rate of progression gave us ample opportunity for observation, and I thoroughly enjoyed the coppices of Oak with its still ruddy shoots; Ash with grey stems, terminating in buds of greenish bronze; and Chestnut with serrated leaves of clearest green; among which glowed the Golden Ragwort, while Blechnum and Polypody clustered round the stumps. The banks were chiefly adorned with the crimson Knapweed (*Centaurea nigra*) and the creamy flowers of the Cow-wheat (*Melampyrum pratense*), which is unusually plentiful in this district, with numerous Ferns, and a little Heath (*Erica cinerea*). There are no heaths, commons, or waste lands in this district; but the great extent of woodland renders rabbits and small birds great nuisances to the gardener. It is well known to antiquaries, that in early times, when, perhaps, Romney Marsh was not in existence, the whole of Sussex, with the exception of the South Downs, was one dense forest (probably mainly of Oak) whence the name Weald, continuous with the New Forest, and reaching through Kent nearly to Canterbury. We can trace this wood, its elevations and clearings, by the hurls, dens, and fields (felled land) in the place-names of the district. It furnished fuel for the once numerous iron furnaces of Sussex. The origin of these works dates at least from Roman times, Sedlescombe, near my headquarters, being one of their forges. They were at one time very numerous, as witnessed by the

numerous "hammer-ponds," many of which now work mills, and the beds of "cinders," which afford one of the most valuable road-metals of the district. It is well known that the iron railings round St. Paul's were made at Lamberhurst; but cannon seem to have been from early times important articles of manufacture in the Weald, and especially at Robertsbridge. Guns were first cast in England at Buxted in 1543, and there are some of about that date at Pevensey Castle. One perhaps earlier, but only partly cast, for throwing a 15-inch stone shot, said to have been found in the moat of Bodiam Castle, and therefore perhaps from the neighbouring forge at Robertsbridge, is now preserved at Woolwich. Directly pit-coal was introduced for smelting purposes the Wealden furnaces began to decline; but ordnance continued to be cast till the last furnace, that at Ashburnham, was closed in 1828. The ore used was a limonite or clay ironstone, occurring in beds of nodules near the base of the Wadhurst Clay, which covers most of the high ground in the district I was visiting, *i.e.*, from Robertsbridge to Sedlescombe, Ewhurst Green, and Pease Marsh. The iron, being imperfectly extracted, the so-called "cinder" or slag no doubt still contains a good percentage of metal; but the pits seem never to have been very large—there are no large waste-heaps; and fuel, though more plentiful perhaps than it was, is not cheap enough to revive the trade. Oak charcoal seems to have been chiefly used, and we may have remnants of the trade in the facts that charcoal is still made and that iron is well worked in the district. The "oast-houses" are heated with charcoal made from old hop-poles, but Alder and Spindle-wood (*Euonymus europæus*, the local "Dog-wood") are also cut for the powder factories. I was much struck by the design and workmanship of a locally-made three-tined hop-fork, the points flattened and the shank strongly elbowed and continued a third of the length of the Ash handle to which it was neatly rivetted. Its construction gave great leverage, and it had been made for 7s. 6d. The pedunculate Oak (*Quercus pedunculata*) is almost exclusively found in the district.

BODIAM CASTLE.

On August 9 I walked over to Bodiam (pronounced Bodjam) which is on the north bank of the Rother, some 4 miles below Robertsbridge. The river channel has been cleared for navigation up to this point, and barges bring road-metal up from Rye to a small wharf. The metal consists of shingle or of large blocks of stone brought from Fairlight beach. Here by the ditches were large quantities of Tansy, Meadowsweet, purple Loosestrife, and the common Reed (*Phragmites communis*); whilst in the castle moat were yellow and white Water Lilies, the branched Bur-reed (*Sparganium ramosum*); and, near the bank, the yellow Loosestrife (*Lysimachia vulgaris*), the less common relative of the Creeping Jenny, so popular in our London window-gardens. Looking at the grand pile of masonry rising up sheer out of the water, one could not wonder that it should have inspired more than one poetic effusion. The moat is some 500 feet square, and is completely covered with Lilies, the effect of which is however rather marred by the floating rhizomes and torn-off leaves, the work of a touristic rowing boat. The fleshy rhizomes, some 3 inches through and 3 feet long, with spiral lines of cicatrices, reminded one of the stems of Cycad or Tree Fern. The castle or fortress is square, having round towers at its angles and in the middle of the east and west fronts. The entrance is by an embankment bearing remains of a barbican tower on the north side, the gateway being guarded by three portcullises, one of which remains in a very perfect state, and passing between two towers with handsome overhanging battlements. Alas! in Art as in Nature we find beauty seldom exists for its own sake; these overhanging battlements are "machicolations," or openings for pouring molten lead upon assailants. In the south front is the sally-port, also between two towers, having a double portcullis and apparently a drawbridge of wide span, the moat being here 90 feet across. The elevation resembles the more modern brick castle of Hurstmonceaux, which belongs to Henry VI.'s reign, whilst Bodiam was built in Richard II.'s by a knight who, after serving at Crecy and Poitiers, made a handsome fortune as a free-booter in the North of France. The building was dismantled by Parliamentary troops under Sir William Waller, and could not have offered much

resistance, since it is entirely commanded by high ground to the south, on which is an earthwork. The walls in some parts are 7 feet thick, but are only about 60 in height. They are of a greenish sandstone resembling firestone, carving on which remains very sharp. The outer shell is well preserved, though the Ivy has made several serious rents. Some years back the battlements and turrets were restored with stones obtained from the moat; but the eight nowell staircases are tolerably intact, though somewhat littered by jackdaws. One remarkable feature in the building was that in none of the various arches, windows, or fireplaces, otherwise beautifully finished, were there any keystones, the usual jamb consisting of two stones meeting in the middle. Yet this has stood for five centuries. The hearths and backs of the fireplaces, and the ovens, of which there are two, are built of tiles placed in horizontal layers, and the chimneys are most carefully finished. Some pointed arches and groined roof-work remain. Pellitory and yellow Toadflax were abundant on the walls, but none of the Wallflowers so abundant at Pevensey. G. S. Boulger.

(To be continued.)

MEALY-BUG AND GARDENIAS.

Of all the insects that prey upon plants indigenous to warm countries, and which consequently need to be cultivated under glass with artificial heat, this is the worst to contend with. Aphides and thrips can be got rid of by fumigating; red-spider by a continued application of water overhead and in the atmosphere, or by the aid of sulphur fumes; scale can be kept down by sponging, or removed altogether by a diligent application of insecticide; but mealy-bug, although individually so delicate as to be killed by the slightest touch, increases so fast under a high temperature, and has a natural habit of concealing itself in any crack or crevice, not alone in the plants it infests, but in the sticks and ties required to support them, and also the wood and brickwork of the structure in which the plants are grown, that it becomes an intolerable pest, most difficult to keep in check, and still more difficult to exterminate. As most people who have had this plague of gardeners to deal with know too well, plants affected with it are never equal in appearance to others of their kind that are free; the continued sponging and brushing, washing and scrubbing, leave their mark in a way that is seen by the absence of natural lustre on the leaves, and the diminished quantity of flowers.

This is the inevitable case with small or medium sized plants, and when they grow large the work becomes proportionately more difficult, even impossible. So far is this correct that some of the best and most desirable plants in cultivation are frequently given up through sheer inability to keep them in a presentable condition without an expenditure of labour above the value of the return, and very often beyond the supply available. It is no exaggeration to say that the labour needful to keep a good collection of plants clear of insects is more than that required by any other operation in the whole routine of their cultivation, and in the case of some species that are more than ordinarily difficult to deal with when affected with bug, the labour of keeping it down much exceeds the attention needful in all other matters put together, such, for instance, as with Gardenias. A single example that I can name will do something to bear out this. Some years since the late John Standish, of Ascot, showing me his stock of these plants, and expressing himself about them in his usual genial way, said:—"The bugs are a terrible drawback. It takes a man and a-half all the year round to keep them under, and the cost in labour is not half as much as the loss of flowers, through the effects of the cleaning operations. What am I to do?" I advised him to begin afresh, with cuttings from clean plants, confining them to a house that had never had buggy plants in it, or that had been thoroughly cleaned from them; and when he had got enough that were clean to destroy all the affected lot. This was not carried out at the time, but has been done since with an unsparing hand, every plant being made away with. Recently I saw the stock, which is now more than double what it originally was, filling three or four long houses; and from experience I can fully believe that which I was assured—that the whole labour in their cultivation is not more than half what it used to be with the old affected plants.

The rate at which Gardenias, when free from this

bug pest, can be grown would scarcely be credited by any one who has not had clean plants to deal with. The cuttings as put in to root at the Ascot Nursery are not the small bits many growers use, but are each a good sized piece of half-ripened branch, with four or six small side shoots just stuck in the moist cocconut fibre of a pit, kept close and warm, where they root in a few weeks, and are then potted off in nothing but fibrous peat and sand, used in a much more lumpy state than for most plants. The growth they make with the absence of brush, sponge, and insecticide dressings is like that of Willows. *G. intermedia* is the kind principally grown. I measured the leaves of some in 6-inch pots that were $6\frac{1}{2}$ inches long, nearly as broad as those of a common Laurel, and shining as if they had been oiled. Plants struck late last autumn, now in 9-inch pots, are from 18 inches to 2 feet through by as much in height; the largest plants are in 18-inch pots. Liquid manure is used made from guano and soot, the effect of it is visible on the leaves, which are almost black-green.

The quantity of flowers produced is equal to the growth made; a pit 75 feet long and 10 wide, with a path down the middle, having a bed on each side about 3 feet 6 inches wide, this spring at one crop gave 5000 blossoms. The size of the flowers is such as is seldom met with, more like full-sized double white Camellias than anything else: a flower which I saw shown at one of the Royal Horticultural Society's meetings was just upon 4½ inches in diameter. The plants at this time of the year are treated in various ways; a few of the large ones that have set bloom are out-of-doors in the full sun to check growth with a view to their being forced early in the autumn, others are in a cool-house to succeed the first, and others again in later stages, the flowers being required continuously every day in the year. When well grown and as large as produced by these plants, they are equal to Camellias for any purpose for which the latter favourite flower can be used, and in addition there is the perfume, for which many people consider Gardenias have no superior. *T. B.*

VEGETATION AND COUNTRY FROM NARKANDA TO PANGI.

THE scenery of this country is well known even to many persons who have never been in India, from the beautiful photographs of Messrs. Bourne & Shepherd, of Calcutta. It is the district drained by the Upper Sutlej River, and it has lately been traversed by Dr. Brandis, who has published some notes under the above title, and from which we make a few extracts. The forest which clothes the slopes of the valley between Narkanda and Kotgarh may be divided into two belts, an upper and a lower. In the upper the chief trees are two, a Fir and an Oak, *Abies Webbiana* and *Quercus semicarpifolia*. The latter forms vast forests, partly pure and partly mixed with the Fir, above all other trees, up to the top of Hattu. The lower zone is similarly characterised by a Spruce and an Oak, *Abies Smithiana* and *Quercus dilatata*. Fine specimens of the common Yew occur here, and *Corylus Columna* grows into a tree of considerable size. Several species of Maple are common, the largest is *Acer cæsum*. Near Narkanda extensive clearances have been made, and are annually made, in this forest. The trees are cut down and burnt, and in the ashes are sown Maize, several kinds of Millet, Amaranth, and, at higher elevations, Buckwheat. After one or two crops have been taken from the ground the fields are deserted and the forest grows up again; but in the first instance trees of different species from those which constituted the original forest come up. Conspicuous among this secondary growth are two kinds of Willow. From Thanadar, which is situated on the top of the Kotgarh ridge, the road descends rapidly into the valley of the Sutlej. Here the forest assumes more the character of that at Simla, forming a third zone. The grey Oak, *Quercus incana*, and the *Rhododendron*, presumably *R. arboreum*, are the common trees, and there is a little Deodar. Along the Sutlej valley, from Nirt to the bridge by which the Nogligad is crossed at the great bend at Rampur, the most remarkable feature consists in the large extent of terraced Rice fields, irrigated by numerous admirably planned channels which convey the water many miles, winding in and out along the numerous folds of the sides of these valleys. From Rampur a long and steep ascent leads to Gaura village, some way through

a forest of *Pinus longifolia*. This tree yields torches and resin. The torches are made of transparent splinters of the wood, of a rich yellowish brown colour, cut out from stems which have been tapped for resin, and the wood of which has become thoroughly impregnated with that substance. Near Gaura, at an elevation of about 6000 feet, there is a large extent of Rice fields on gentle slopes. This is one of the highest points where Rice is grown with irrigation in this part of the Sutlej valley.

In the Manglad valley the beautiful feathery foliage of *Albizia Julibrissin* will attract attention. In spring it is a great ornament in these hills, on account of the masses of silky flowers of a delicate rose-colour, whence the native name, Golab Resham (silken rose), which botanists have corrupted into Julibrissin. The slopes in the immediate vicinity of Serahn (the Rajah's summer residence) are well cultivated. Wheat and Barley are the principal winter crops, ripening in May and June, and the following are the chief summer crops:—1st, different kinds of Millet, of which Kodon, *Eleusine coracana*, is the most remarkable, having several thick twisted ears springing from one point like the fingers of the hand; 2d, Maize; 3d, *Chenopodium*, allied to *C. Quinoa*, one of the grains cultivated in the Andes of South America; 4th, Amaranth, or Love-lies-bleeding, of which there are several varieties. The fields of scarlet Amaranth are visible in autumn from a long distance. The new road from Serahn to Franda is at a high level, often trending along stupendous precipices, and entering into well-wooded shady ravines abounding in water, and fine Horse Chestnut trees. Several pleasantly aromatic members of the Laurel family grow in these woods, among them the famous Soom of Assam, *Machilus odoratissimus*, on which the Muga silkworm is raised in that province. Franda is situated on a projecting ridge, where are some large and curiously shaped Deodars, and large numbers of young trees of the same species. The Temple of Sungri is in a beautiful Deodar grove, some of the trees being upwards of 20 feet in girth.

In Kunawar, Apricot, Peach, Walnut and Mulberry trees are common, and the roofs of the houses are covered with layers of Apricots, and sometimes of Peaches, from which the stones have been removed, where they dry in the sun, forming in winter a necessary addition to the scanty food-supply of the valley. Between the village of Nachar and the large forests of Silver Fir which occupy the upper slopes, on the high range at the back of Nachar and Franda, are some small but valuable Deodar forests, where a good bit of timber was cut some ten to fifteen years ago. These forests had grown up in a depopulated country on the terraced fields, and the trees were from 150 to 350 years old. And there are many more instances of forests of apparently the same age, standing on fields deserted centuries ago. Among the tallest trees of the Nachar forest Dr. Brandis measured one 250 feet high, with a girth of 20 feet near the base. Dr. Brandis goes on to state, that the tallest tree he ever measured in the most luxuriant tropical forest in India was an Upas tree, *Antiaris toxicaria*, in the evergreen forests of the Thoungyen valley, below Meerawaddi, in Burma. The average height of the forest surrounding it was 200 feet, but the crown of the *Antiaris* towered over all the rest, and its total height was 250 feet, with a girth of 50 feet. Higher up the valley of the Sutlej the edible Pine, *Pinus Gerardiana*, and *Quercus Ilex* abound. The Pine seeds are a most valuable article of food. Its cones are large and round, sometimes nearly as large as a child's head. They ripen in September and October, and are plucked before they open. When heated on a fire the scales open, and the seeds drop out. The trees of this Pine are never felled, and although growing in the forest they are to some extent regarded as private property. With regard to the rate of growth of the Deodar, Dr. Brandis states that it attains a diameter of 2 feet in about eighty years at Simla, whilst at Pangi it requires 160, and higher up in the more arid country, 200 years, to attain the same dimensions.

PYRETHRUM GOLDEN GEM.—This double-flowered variegated-leaved variety was sent out a few years ago as a yellow-leaved bedding plant, but it appears to have belied the expectations formed of it. It is, however, by no means useless, as it makes an excellent edging to subtropical and other beds if allowed to flower. Well established plants will produce large heads of bloom, and the flowers being fully double, last a long time fresh and effective.

PROTECTION OF PLANTS USEFUL TO MAN.

PLANT life, like animal life, has to struggle for existence. The young plant may be choked by other species, or crowded out by rivals of its own kind, even though the atmosphere, soil and position are well suited to its growth.

Man sows the seeds and gathers the crops of such plants as he desires, yet he has hitherto failed to protect them adequately, especially in the pastures upon which he chiefly depends for the food of his domestic cattle, against rival aggressive species of plants. If, in this respect, he has not done all that he could do, he has still more signally failed to protect his crops against the attack of destructive animals, more especially of insects. Students of biology are laughed at as unpractical, yet they alone can point a remedy, and they alone are doing it. It is only by the study of the whole life history of the enemy, taken together with that of the friend it feeds upon, that we can ever hope to conquer the former and preserve the latter.

So thoughtless is man, proud creature of reason, "lord of creation," but emphatically "chief of sinners," that he takes no reasonable care to insure the health of his own progeny. Is it therefore wonderful that he takes little care for the preservation of the plants and animals that form his food? That he can do much toward this end, if he uses his intelligence intelligently, will, I think, be evident after a little consideration, which, with both plants and animals, may be divided into—

1. Protection against man's waste and wanton destruction.
2. Protection during the season of reproduction.
3. Protection against rival plants.
4. Protection against animal enemies.

First.—The forest areas are gradually diminishing throughout the world, and man is, in most cases, the direct cause of the diminution. A country without trees is arid, unfit for man's habitation. Man's own acts have thus rendered uninhabitable vast tracts that once were celebrated for their fertility.

In the words of F. L. Oswald, M.D. (*Popular Science Monthly*, August, 1877):—"Since the advent of the Christian religion, the physical history of our planet records the steady growth of a desert, which made its appearance on the dry tableland of southern Syria, and gradually spreading eastward down the Euphrates toward Afghanistan and westward along both shores of the Mediterranean, now extends from Eastern Persia to the western extremity of Portugal, and sends its harbingers into Southern France and the south-eastern provinces of European Russia. Like a virulent cancer, the azoic sand-drifts of the Moab desert have eaten their way into Southern Europe and Northern Africa, and dried up the life-springs of districts which, beyond all dispute, were once the garden regions of this earth.

"The Mediterranean Sea, once a forest lake of Paradise, is now a dead sea, surrounded by dusty and burning coasts, often for hundreds of miles without a vestige of organic life."

The highlands of Persia and Parthia, once the homes of conquering races who preceded Rome in empire, and successfully repelled her armies, are now the homes of famine and misery. The once fertile plains of Mesopotamia and Chaldæa are an alluvial desert; Asia Minor, itself once the seat of powerful empires, a treeless region of rocks and ruins; North Africa, the granary of Rome, a sterile desert; and even Southern Italy, Greece, and Spain only retain a shadow of their former beauty or of their former population. The preponderance of population of Italy and Spain has been transferred to the northern portion of those countries, and Greeks exist chiefly by virtue of their commercial and maritime tendencies.

Champollion, who traced the course of former river and brooks, and found tree-stumps upon the plateau of Sidi-Belbez, in the centre of the Sahara, exclaims: "This desert may once have been a region of groves and fountains, and the abode of happy millions. Is there any crime against Nature which draws down a more terrible curse than that of stripping our Mother Earth of her sylvan covering? . . . Earth was Eden once, and our misery is the punishment of our sins against the world of plants. The burning sun of the desert is the angel with the flaming sword who stands between us and paradise."

Even more northern countries are not innocent of tree-slaughter. "Cut down the trees; every tree shades enough ground to grow so much Wheat," was

the doctrine of agricultural writers in England a few years ago, and the pernicious advice was largely followed by the cutting down of hedges, hedge-row trees, and coppices. Southern England has long been denuded, but has now been partially replanted. The actual need of timber prompted action.

In many parts of the United States, recent as is its settlement, clearing has proceeded too far. The central portions of Ohio, parts of Kentucky and Michigan, and, to a still greater extent, the Cotton-growing States of Mississippi, Alabama, Georgia, and South Carolina, are becoming arid, and droughts are frequent.

Is it not time, then, to stay the destroying hand, and to foster what we have destroyed? How long will it be before the redwood forests of the coast range of California cease to exist, and the curse of drought fall on the fertile valleys of the coast range?

Let man, in all regions where the forest areas are not so large as to prevent settlement, leave all the trees above the cultivable line upon the hillsides, and patches in the valleys, besides those about watercourses, springs, and buildings. Let him plant the already denuded regions, and henceforth, before he cut down a tree, let him consider well whether it can be spared, remembering that what he can cut down in a few hours perhaps takes hundreds of years to grow.

While trees must be cut down for timber it is a shame to cut down for firewood any good tree that can be spared. Lopped off limbs, trees that are too crowded or are deformed, and the branches of trees cut down for other purposes, should be our sources of firewood.

As man increases in numbers, and as the higher races settle in the neighbourhood of the immense forest regions of Equatorial America, Asia and Africa, some tree-slaughter must take place to make room for agriculture. If this is done in the same indiscriminate way that has been followed in the earlier homes of these races, not only will many interesting species become extinct, but many trees which yield valuable gums, resins, fibres, timber, and nuts and fruit, will become scarce or even extinct before their cultivation has extended sufficiently to compensate for the absence of the uncultivated plants.

Unless some check is put by the growth of reason, enforced upon the unreasoning in the form of a law they must obey, the reign of sterility will ultimately be extended even over the wide-watered lowlands of the Amazons, and the whole earth will be by man's hands converted into a vast Sahara. Nor is waste confined to the "clearing" process. Trees are felled for timber that might with advantage be left to grow, and are killed to procure their resinous or other products, when tapping would answer the purpose as well. These are criminal acts; they are in direct contravention of Nature's laws, and should be equally so of human laws. In pursuance of their own selfish ends, individuals thus enrich themselves at the expense of a community which as yet is not sufficiently alive to its interests to visit the crime with fine or imprisonment.

Second.—Man protects the food-plants that are under his immediate care during the season in which they mature their seed; he gathers those seeds and preserves a portion for future crops. There are many cases in which he would do well to extend his care to useful plants and trees, which though, like fishes among animals, they are undomesticated, yet supply him with food or material of some kind. Many a valuable tree or plant, now comparatively scarce, might be rendered abundant by the careful preservation of the fruit whenever accessible to man; and by the transplantation of young trees and saplings from locations where they are certain to be crowded out by the older plants around, to places where they can be sure of air and light and space in which to grow. In this way, without actual cultivation within enclosed fields, man can bring his power to the assistance of Nature, to the end that he may still continue to maintain his place in Nature.

Third.—Man takes care of his cereals and root-plants, preserving their seed, preparing the ground for them, and to a great extent destroying the rival plants that encroach upon their domain. But in pasture lands, whether such are sown by man, or untouched by the plough, he to a great extent leaves the useful plants to struggle for existence as best they can.

In the meadows and uplands of such an old settled country as England some care is taken; but in newly-settled countries like ours the agricultural

population allows "weeds" of various kinds to extend themselves over the fields, and then wonders where they came from.

If the fight were fair and all things left as they were before the advent of civilised man, the useful species might, in many instances, prevail; but in fields cropped by sheep, cattle, or horses, the fight is not fair. The grasses and edible plants are eaten off close, and have no chance to mature their seed, while every Dock, Thistle, Nettle, Ranunculus, or other indelible or poisonous plant safely grows and, undisturbedly, ripens and sheds its seeds. Who, then, possessed of common sense, need wonder at the prevalence throughout this new country of such introduced weeds as the stinking Mayweed (*Maruta Cotula*), the Spurrey (*Spergula arvensis*), the Spanish Thistle (*Centaurea solstitialis*), the Blessed Thistle (*Silybum Marianum*), the Wild Mustard (*Brassica nigra*), or many others? Who, under such circumstance, need wonder that in autumn the fields of California are a mass of Composite, mostly untouched by animals—a mass among which the various species of "Tarweeds" (*Madia sativa* and others) are most conspicuous?

The myriad seeds of these weeds cannot be confined to the pastures. They invade grain fields and gardens, vineyards and orchards, and, backed by the vast reserve country over which their reign is established, often successfully bid defiance to the farmer by flourishing amid his most precious crops and under his windows.

The only remedy is intelligent industry, and the misfortune of man's social habits is, in this as in other matters, that any industrious man must suffer somewhat if his neighbours are idle. He may mow down his Thistles, Mayweed, Tarweed, Mallow, &c., before they can seed, but unless his neighbours do the like he must be on the watch against a perpetual invasion.

The disappearance of many native plants before the inroads of others brought by colonists, has been remarked wherever the European has settled. He brings his cereals, and with them cannot avoid bringing the seeds of the common wild plants of Europe.

These have already been through the ordeal of adaptation, and have conquered. They are the victors of a long strife, which has resulted in the total extinction of some wild species, and the banishment of others to out-of-the-way corners. They have held their own against man in his own domain, and some have even learned to grow on the paths he treads. *IV. N. Lockington, in San Francisco "Science Record."*

(To be continued.)

CATTLEYA GIGAS.

AMONG all the very fine *Cattleyas* and *Lælias* now known to cultivators *C. gigas* holds a very prominent position. It can be picked out even when out of flower from amongst any number of its own family by its strong, healthy-looking bulbs and leaves. No one that I am aware of has ever found any difficulty in growing it, but many complain of its shy-flowering habit. Those who have small plants should be content if such continue for a time to increase in size only. With large, healthy plants that have not flowered no time should be lost in putting them through a thorough ripening process. Let them at once be placed near to the roof-glass of some light, airy, warm house, and be kept for some weeks on the dry side, only giving water just often enough to prevent much shrivelling. The atmosphere also surrounding them must never be so damp as is required for the majority of *Cattleyas*. In such an atmosphere they will winter safely with a night temperature of 50°. When growth commences in the spring, increase the water at the roots and keep up a moist atmosphere. Avoid too much shading, but when it is seen that the young growths are pushing up flowers from their centre, place the plants among the other *Cattleyas*, as during the flowering period every assistance must be given to prevent exhaustion.

The plant here figured (fig. 50), when awarded the Gold Medal by the Royal Horticultural Society, was carrying forty fully expanded flowers, each of which was far larger and better in colour than the finest *C. Mossiæ*. The flowers were arranged from two to four on a spike. *J. C. Spyers, Burford Lodge, Dorking.* [The growers of Orchids will be glad to have this note of Mr. Spyers' experience in flowering this grand *Cattleya*, which is not surpassed, if indeed it is equalled, by any of those to be found in our Orchid-houses. *EDS.*]

Foreign Correspondence.

REMAGEN, ON THE RHINE.—Nothing in the gardening way comes amiss to me, and it is a pleasure to keep my eyes open to take in anything new; but I confess I did open my eyes rather wider than usual the other day when I saw a rather novel form of window gardening, if I may so call it. I have seen a flower-pot with a red "Geranium" on a barge on the Paddington Canal, but never any much stronger indications of a love for flowers among the bargees, but in Rotterdam the other day I not only saw benches stretched across the boat near the stern cabin with Fuchsias and Begonias, and other pot plants, but what struck me more, were the patches of Mustard and Cress all a-growing, and the little plots of green turf from amid the grass of which sprang Virginia Stocks in full blow. These seedlings were born probably somewhere between Mayence and Rotterdam—sprouted, grew up, flourished, and finally burst into bloom on a barge. For aught I know they may reproduce their kind on the same floating craft, and so illustrate a mode of species-dispersion not treated of by Lyell or Darwin.

"Nothing very new in this." Perhaps not; but now I have a little niche which at any rate is not quite common-place. Some of the big broad-ended barges have, outside, on either side of their huge rudders, little niches, or shrines, just such as one sees by the roadside in Catholic countries, gaily picked out with bright paint, and containing, not an image of the Madonna, or of some favourite saint, but a fine specimen plant! It is about the last place in the world one would expect to find a specimen plant in, but I must say it formed a very pleasant contrast to the hard, everyday, matter-of-fact, uncompromising look, which barges, even Dutch ones, which are "pinks" of cleanliness, have. I am not nautical, or given to making puns, but I rather fancy a "Dutch pink" is a barge, or similar vessel. I leave it to you to work out the coincidences.

Passing onwards through the green pastures of Holland, seamed with canals, straight as the bars of a gridiron, but floating pictures of beauty with their Water Lilies yellow and white, their Villarsias and Buckbeans, their flowering Rush and Arrowheads, bordered with noble Docks and Lythrums, we at length came to a country which is somewhat more earthy than watery. Here the soil was dry enough to grow Potatoes; but oh, poor tatoes! the wreck is complete. I don't think I should much err in saying that from Rotterdam to Remagen, all along the Rhine, up in the hills, among the Vines, or away back among the volcanic hills of the Eifel, high and low, in every description of soil, I have seen a single patch not completely devastated by the Potato fungus.

The sandy plains which the traveller passes after leaving Holland are dreary enough, except where Scotch Firs have been planted. These have braved the winter save in very exposed places and where isolated. Under such circumstances even this hardiest of hardy trees has succumbed, while the Broom is killed to the ground. Buckwheat, now in full bloom, enlivens the view, especially as it is freely mixed with Poppies. The fields of yellow Lupin, too, are very gaudy; the flowers are in whorls, separated one from the other by slight spaces, so that at a distance the effect is that of a huge ribbon with a yellow ground and narrow black stripes across it.

We are apt to place great stress on the rapid strides which Germany has made, and the position she holds in science, literature, and art, but her farming, so far as I have seen, is woefully behind ours. The roadsides are, it is true, bordered with fruit trees, and there are plenty of sour Apples for the boys—the boys (let them eat as only boys can do) would not make much impression on the crop. Still the fruit trees are ill-cared for, unpruned, full of misplaced shoots, canker, and dead wood. If we in England are ever sensible enough to plant fruit trees by the roadsides, let us do the thing well, prepare the soil before the planting, and give some little attention afterwards. In one place the railway banks were lined with Morello Cherry trees, which seemed to be thriving. The inn gardens hereabouts are often full of fruit trees—full of fruit, too. I thought of the "Fruit Crop Reports" for the last few years as I saw the trees here in places bending with their weight of Apples and Plums. Pears are not so abundant, but standard Apricots—I never saw such a sight—the trees

covered with bushels of fruits, the big branches propped up with crutches, but for all that the smaller ones bent to the ground with fruit! I may as well say that although there seems plenty of fruit, the flavour of it is very indifferent.

Where fruit trees do not line the road other trees do. Planes are the best for shade, but Sycamores and Norway Maples run them hard, and every here and there are rows of Mountain Ashes full of berry, and of an exquisite colour, such as they never attain even in Scotland.

The Vines in the Rhine district are worth a sepa-

said on the Vine-shelves; for hereabouts there are many places where the Vines are literally grown on shelves of rock, in baskets sunk in the rock like shelves on the stage of a greenhouse. Facing full south, on hard, basaltic, heat-retaining rock, they are exposed to a roasting such as Muscats don't get in a forcing-house at home.

As I have said, your reporter has not completed his inspection yet, so defers further comment on the Vines for another communication. Meantime, as it is his duty to chronicle novelties when he meets them, he may mention that his dinner yesterday was eaten in the crater of a volcano (extinct, happily), with

Natural History.

MANGEL WURZEL FLY (*ANTHOMYIA BETA*). — This year appears to have been remarkable hitherto for the attacks of the maggots of various kinds of two-winged flies (*Diptera*) on various kinds of field and garden crops. The grubs of the *Tipulæ*, commonly known as Daddy-longlegs, have ravaged various localities, even up to Caithness, to an extent from which we can only hope presently to benefit by the details from careful experiments on a large scale (presently to be given) of treatment which has partially



FIG. 50.—SIR TREVOR LAWRENCE'S SPECIMEN OF *CATTELYA GIGAS*. (SEE P. 268.)

rate letter; and as for their produce, only go out in this blazing hot weather for an hour or two, and then come back and bid the waiter bring you some "heimer" or other, with a bottle of ice-cold Seltzer or Apollinaris water, and if you don't go out and get hot again merely for the sake of quenching your thirst with such nectar, I am not a Rambler! But if I have to give a bad report of the Potatoes, I can't give a much better one of the Vines—the Grapes seem wofully few and far between. I believe many were killed by the winter, or the young growths ruined in the spring. In one vineyard I saw, I regret to say, unmistakable *Phylloxera* on the leaf. But I have not done my rambles in the vineyards yet—I should have

pumice-stone and lava beneath his feet, and that it consisted, *inter alia*, of Kohl Rabi, boiled as Turnips are at home, and Mangel Wurzel leaves as Spinach! There is no accounting for tastes; it is the business of your correspondent to see, taste, note, and comment, and in the execution of his duty he ventures to advise your readers, unless for the sake of justifying curiosity, not to partake of these delicacies—at least, they are not to the taste of *A Rambler*.

KNIPHOFIA (TRITOMA) CAULESCENS. — This is a remarkably distinct species, and a fine plant in Mr. Wilson's wild garden at Weybridge, which withstood the past winter, is growing most vigorously.

or wholly saved attacked crops, and also (which is, perhaps, hardly less important) of special applications commonly recommended but which have proved useless in meeting the heavy needs of this year.

Onion-fly has been very destructive in some localities; Celery-fly has appeared to some degree; and during the last few weeks the less known Mangel Wurzel fly (*Anthomyia beta*) has made its appearance in many places; and I am indebted to the courtesy of Mr. S. Harley Kough, of Church Stretton, for specimens of injured leaves, and also of the larvæ, and male and female flies.

I have not met with any specimens on growing plants in my own neighbourhood that I could watch

through their development, and my notes are therefore imperfect; but the Beet-fly not being a very common appearance amongst our injurious insects, a few words may be of some interest.

The maggot injures the leaf by mining between the upper and under side, so that the leaf looks blistered. These minings are not extensive relatively to the size of the leaves in the specimens sent. Most of them, when complete, are about $1\frac{1}{2}$ inch long by $\frac{1}{4}$ -inch to $\frac{1}{2}$ -inch wide; and though some are towards the centre of the leaf, most of them run down by a vein from the edge. They appear to be commenced at the edge, as the part towards the outside was dry and shrivelled, the rest moist and flexible, as if the pulp had only just been removed. Also it is noticeable that these grubs do not (as with some of our Turnip-leaf miners) specially work inside the upper or the under skin of the leaf; they appear to clear the pulp thoroughly out, so that the mining shows equally on both sides, unless it be when the grub has reached maturity, when the under skin is reduced to such a mere film that the creature may be seen clearly through it.

The notes of an observer in Curtis' *Farm Insects* mentions that the maggot goes into pupa in the leaf; and on receipt of the specimens I set the leaves in earth to watch progress; but next morning the few larvæ had disappeared; one of them had broken the skin of the leaf soon after arrival, and I therefore conjectured it had gone into the earth for pupation, but I give its appearance as seen. It was cylindrical and very fleshy, about $\frac{1}{4}$ -inch long, and white, prolonged at the head and cut short at the tail, and (as it appeared through a magnifying-glass in the leaf) there was no colour about it, excepting that there was a broad black streak running about a third of its length from the tail extremity. This is presumably merely the accumulation of food inside, but the mark was wider than the intestinal streak usually is. With regard to where the pupation takes place it would be desirable to know more. The fact of having been packed might disturb the natural economy of my specimens, but it would make all possible difference in the method of counteracting future attacks, as in one case destruction of the leaves would be enough, in the other treatment of soil would be needed; and therefore perhaps some observer who has noted this, or who has access to more extended description, might be good enough to mention it.

The perfect male fly corresponded with the description given by Curtis. It was rather smaller than the Onion-fly, ashy-grey, with bristly hairs, eyes large and nearly close together, and the satiny white of the face, with the bright chestnut line down the centre, was very conspicuous; the trunk had indistinct stripes, and the linear abdomen had a small black triangular spot on the base of the segments nearest the tail. The two wings were transparent, slightly rusty colour at the base. The female mainly differed in being a lighter grey, and in the shape of the abdomen, which was not at all linear, but wide immediately behind the trunk, and then rapidly narrowed so as to form a sharp cone acute at the tip of the tail, the segments also were very faintly marked with black patches at the base.

It is reported that the rains have done much to clear off the attack—or, rather, to throw the Mangel Wurzel into a state of good growth, which makes the amount of leaf injured by the maggot of no consequence; but as we have, as far as I am aware, few notes of the economy of this fly, it would be a help to us all if some observer would give it in detail, especially as to variability in colour of the maggot, the place of habitual pupation, and whether attacks have been noticed to coincide with, or follow, any particular weather (rainy seasons especially), or particular manures, &c.

A CARNIVOROUS HEDGEHOG.—Dr. Paterson's experience of the treatment of its young by the hedgehog coincides precisely with my own. As a boy at school I had all sorts of pets in my time. At three different times I had hedgehogs with young ones. In two cases the young were born after capture of the parent; in the other the parent and young were found in a hole at the root of a tree. They were well and carefully tended, and capitally housed, for the best accommodation at my disposal was placed at their service in the shape of my large book-box. They had as much to eat as they could need. But they were objects of great curiosity to my school-mates, and many a one besides myself looked in upon

them to see how they were getting on. In those that were born in captivity five days was the maximum period of survival. Those that were found, three in number, could just crawl, and they were killed on the second day after being found. The proof of how they were disposed of lay in the half-eaten body of one being found, the stomach and two hind-legs having been eaten. I imagine that, like many rabbits, hedgehogs resent any interference with their young, and prevent any further trouble by eating them. *F. A. C., Aug. 23.*

Florists' Flowers.

SEASONABLE NOTES.—AURICULAS.—The established plants ought all to be repotted now, indeed I do not know of any of the principal growers who have not finished repotting their plants. The smaller plants raised from offsets about this time last year are mostly in small 60's; these require to be repotted at this time, and when well managed these young plants often give very fine trusses. There are a few varieties indeed that always do best from such young plants; amongst them Alexander Meiklejohn, Pizarro, Charles J. Perry, Marquis of Lorne, Robert Trail, Maria, Lady Sophie Dumaesque, and probably a few more varieties. Attend to the offsets that were put in a few months ago; many of them damp off, because of the decaying leaves resting on the stems—these must be frequently removed. The handlights are kept rather close, and but little water will be required, but they must not be dried up. Seedlings raised from seeds sown last autumn should be potted on as they require it, even as late as the end of September. With the warm nights greenfly develops most rapidly, and causes sad injury to the plants if it is not destroyed either by dipping, brushing off, or fumigating with tobacco-smoke.

CARNATIONS AND PICOTEEES.

Many persons have not finished layering their plants yet, but it is quite time that it was done, according to the instructions given at p. 110. Some varieties of Carnations and Picotees succeed best from pipings, but they do not form roots very readily. The best plan is to plunge the pots containing the pipings under a close bell-glass, wiping the glasses occasionally to prevent them damping off. Seedlings may be planted out in permanent beds where they are to flower. If any layers were put down and are now fairly rooted, they may be taken off and planted out in beds of fine soil 3 or 4 inches apart, but it will be necessary to protect them with frame lights until they have drawn roots; this checks them and prevents over-luxuriant growth. Those that have been treated in this way will not require to be potted up until the end of October. Prepare compost in which to repot the general stock, this must be done about the last week in September if the layers are well rooted.

DAHLIAS.

The plants have made very rapid progress this season, at least during the last month. Continue to make the growths secure to sticks, but do not tie them in too closely; it is best to tie them so that the plants look natural. Those who do not grow blooms for exhibition will be careful to secure the best in positions that they may not be injured by friction. The amateur who admires the flowers for their gay colours and exquisite form does not care to have the garden disfigured by the various articles required to shade them; still, there are many who delight in exhibiting their flowers, and many such are passionately fond of them. The darkest flowers require the least shade. The flowers must all be protected in some way from earwigs, for these insects fancy the shades are placed there for their convenience, and they are mostly found lurking under them. If the shades do not admit air, they should be removed for an hour or two in the morning and evening. If this is not done the petals become rather flimsy, and do not bear long journeys by road or rail. The shades should not be placed over the flowers more than from five to six days before the date of the exhibition. The flowers are generally out of character if they are injudiciously shaded.

GLADIOLUS.

This fine autumn flower is now in full beauty, and the fine weather has caused them to open very freely, the flowers being of fine quality. It is very pleasant work to attend to tying the spikes to sticks as they

advance in growth, and to watch the flowers of new varieties as they open fully in the cool of the evening. If it is intended to save seeds, the best varieties must be selected for this purpose, and some judgment is necessary in selecting the different varieties to cross with. I do not care to mix the colours, scarlet with purple, or crimson with either of them. I am busy every day, and will be for two weeks longer, crossing the flowers. This is done by removing the anthers before the pollen is scattered from the seed bearer, and as soon as the pollen is ready it is conveyed to the stigmatic portion of this flower. The flowers are in a fit state for impregnation two days after they open. Amongst popular varieties I would cross M. Legouve with La Vésuve, De Mirbel with Ambroise Verschaffelt, Horace Vernet with Rossini, Christophe Colombe with Orphée, Ondine with Norma, &c. The operation of crossing should be seen to twice daily—in the morning about 10, and in the afternoon about 2 o'clock. If the spikes are intended for exhibition, water freely with manure-water.

HOLLYHOCKS.

The exhibitions for the Hollyhock are also near at hand, and constant care is necessary to bring the flowers up to the required standard. They are exhibited in two ways, the single flowers in stands, as Dahlias are shown, and the cut spikes, which latter is the right way. The plants must also be well supplied with manure-water. Cutting a large portion of the top of the spikes throws greater vigour into the flowers, increasing their size and substance. The experienced exhibitor has also sufficient knowledge of his flowers to know how much to cut off the spike. If this can be had with the flowers nearly closed over the top part, where it has been cut, and the bottom flowers fully expanded, it will be right. If several flowers have faded from the bottom of the spike its beauty has declined. Red-spider will be sure to increase at this time if it has not been kept off before the flowers open. It is astonishing how rapidly the pest sucks the substance from the leaves.

PANSIES.

Cuttings must now be put in for the general bloom. They ought to be ready for planting out early in October. The plants are still producing plenty of good flowers, and seem as if they would continue to make a good display for many weeks yet. Seeds may yet be sown in the open ground or in boxes. The ground should be prepared if possible for planting out the young plants as soon as they are ready. Deeply trenched soil and plenty of cow-manure suits the Pansy exactly; mix a little leaf-mould with the soil if it is of a clayey nature, but no peat, as the Pansy does not like it.

PINKS.

Stir the surface soil between the rows of young plants that were put out some time ago, and remove any weeds that may be amongst the plants. It is not too late to put in the small side-growths, but a little bottom-heat is necessary to hasten the formation of roots. If the large plants of the forcing section are becoming overcrowded it will be a good plan to pot them at once; the soil prepared for the Carnations and Picotees will answer best for this purpose. Use 6-inch pots for the largest plants; the smaller ones may be potted in pots proportioned to their size.

POLYANTHUSES.

Many persons are not in a hurry to repot their plants, leaving the operation as late as October. I find this is a mistake, as the plants do not become so well established before the frosts of winter. Ours have now been potted and placed in a shady position; during the hot weather red-spider attacked the plants in swarms, and if we had not taken them up and potted them, the leaves would have been destroyed with this pest. We have also been much troubled with slugs, and also with caterpillars and the leather-coated grubs. It has required constant watchfulness to keep the plants in good health this year. All the family of Primroses in warm positions are suffering much from the red-spider.

RANUNCULUSES.

The beds may now be prepared for these if the ground is vacant. The reason for doing it thus early is that the soil works so much better at this season when it is dry. During late autumn and winter the compost becomes saturated with wet, and it cannot be worked satisfactorily. The old system was to dig out the beds to a considerable depth; but 9 inches is quite sufficient. Seeds may be sown in boxes about $4\frac{1}{2}$ inches deep. The boxes may be placed in

frames, and squares of glass may be placed over them to keep the soil moist—this must not be too dry or too wet. In sowing just cover the seeds. The old growers used to say it ought to be covered one-sixteenth of an inch deep. *J. Douglas, Loxford Hall, Ilford, E.*

Garden Operations.

KITCHEN GARDEN.

The ordinary means which are employed for the extirpation of weeds from the surface-soil, and amidst growing crops of vegetable subjects, has until a recent period been much interrupted through a protracted period of unseasonable weather. This has been a source of much mischief, inasmuch as without extra efforts made in the process of weeding, many of them have seeded freely, and furnished a bountiful crop, which under any circumstances should speedily be extirpated. Hoeing and weeding are operations which as the autumn season advances become more tedious and difficult, by reason of the loss of the sun's power, in conjunction with the humidity and moisture which abounds at this period. Under these circumstances it is not amiss to point out here the advantage of prosecuting vigorously the clearing of weeds from off the whole available surface of the garden at the earliest moment.

The glorious weather which has lately prevailed has given a fresh impetus to vegetable life, which is scarcely credible except when seen, and its beneficial influence will be gladly witnessed by those who are interested in the prospect of securing good supplies of seed well ripened, of getting the luxuriant, soft, watery growths of plants hardened, and of seeing the virulence of the Potato malady somewhat arrested, besides the numerous other advantages which attend such a condition of the weather. Under such altered circumstances it will be needful to attend regularly to the watering of all surface-rooting plants, salading subjects, and other plants newly put out. Peas also and Beans, if not mulched, will require copious waterings in order to keep them in a bearing state, and from becoming hard prematurely. As the crops of these become exhausted, let them be cleared away and the ground appropriated to other subjects. Those, such as Lettuce, Endive, and the like, which will come in this autumn, will only need to have the ground forked over before planting them, but for others, as Cabbage and Lettuce, &c., which are to stand throughout the winter, the ground should, if needful, be well manured and be more carefully prepared. Put out the plants from the early sown beds of Cabbages immediately they are fit for it. These should be placed in small drills planted moderately firm, and at from 20 to 24 inches apart every way. See also to sowing more Cabbage, as the plants thus raised will form the general crop next year, and should therefore not be suffered to draw up weakly. Timely preparation should be made for the winter crop of Lettuce plants, which should be planted out about 15 inches apart each way as soon as they are fit. For the sake of planting them regularly lines should be made now, and be filled in again before much wet or frost prevails. All crops which are expected to come in at an early period of its season should be afforded places and positions in the garden which will accelerate the object in view. Where good south borders exist, a part of these should be devoted to Lettuce, amidst which, at regular distances, rows of Peas may in due course be sown. Another portion can be profitably employed with the Spanish section of Onions, also Spinach and early Cabbage, and a good reservation left after some summer crop, as French Beans, for an early plot of Potatoes. An occasional supervision will be necessary to crops of Tomatoes on walls and other places; these appear to be very fruitful this season, and in order to ripen as many as possible in a natural way on the plants the foliage overhanging the fruit should be removed, so that sun-heat can operate more freely upon it. Keep all side-growths pinched out as they appear, and water those plants which are situated in dry spots.

If not already done, a few bunches of each kind of herb should be cut and hung up in an airy shed to dry. Seedling plants of slow-growing kinds, as the Thymes, Savory, Sage, &c., which were pricked out into boxes in the spring, will now be fit to transfer to permanent places. This should be done at once, so that the plants may be established before the winter season comes. As before advised, carefully attend to the requirements in the way of blanching Celery, Endive, Lettuce, &c.

FRAME GROUND.—As boxes or pits become vacant, these should be cleaned and prepared for another season's use. About the beginning of September make a sowing of Radishes in one of these, and in the event of not having a Mushroom-house, another of these may be profitably devoted to the cultivation of Mushrooms; others will ere long be wanted for housing Cauliflowers, Lettuce, Endive, and Broccoli, and for Cauliflower and Lettuce plants. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

ORCHARD HOUSES.—If the trees in the early house were potted when the fruit was gathered they will now be well established, and the flower-buds prominent. It will be sufficient to see that they do not suffer for want of water at the roots, and they should be well syringed every day to keep the leaves clean. If there is time, the house should be thoroughly cleansed, the paint and glass washed, and, if it is intended to repaint, or do any work to the wood or glass, this should be attended to. In the late house the gathering of the fruit must be attended to daily. It has been previously stated how this must be done. Peaches and Nectarines, more than any other fruit, are injured by being handled, although no other fruit should be touched by the hand more than is actually necessary. Pears should be gathered at frequent intervals, so as to obtain a succession. The Williams' Bon Chrétien ought to be gathered in an earlier stage than some of the others. It may be interesting to note that a tree of this variety, and one of *Souvenir du Congrès*, are placed side by side in our orchard-house. The Williams has somewhat the advantage of position, but the fruit of *Souvenir du Congrès* is quite a week earlier, and is of excellent quality; the fruit being of the largest size, very sugary and rich. These two are succeeded by *Beurré d'Amanlis*, a very fine plant for the orchard-house. *Beurré Hardy* also bears very freely and grows to a large size. We get splendid fruits of the Early Strawberry Apple and also Kerry Pippin from pot trees. The Apple, Pear, and Plum trees may very well be placed out-of-doors after the fruit is gathered.

ORANGE TREES IN POTS.

The trees still require a high temperature, and more so at this season almost than any other, as the fruit of the Tangierine variety is fast approaching the ripening stage. See that the trees do not suffer for want of water; but if they are overdone with it at this time many of the fruits will burst their skins and be spoiled. The leaves become dirty during the summer, and should be cleansed with soapy water. Let them be well exposed to the sun, and shut up the house early in the afternoon to utilise the sun-heat. Leave a little air on all night; a surface dressing of the compost I have usually recommended for Orange trees should be placed on the surface of the pots: these are not plunged in any heating medium, but are simply placed on a stage in one of the Pine-houses. *J. Douglas, Loxford, Ilford.*

PEACHES AND NECTARINES.

The trees in the early house having completed their growth, the months of September and October may be considered the resting period, and in order to give them the full benefit of the eight or ten weeks that will intervene before they are again excited into growth steps should be taken for keeping them as cool as possible. If they are trained under fixed roofs all the ventilators and doors may be kept constantly open, and in the event of the blossom-buds becoming very prominent, the removal of a few squares from the centre will increase the current of air and greatly reduce the temperature of the house. When the roof is composed of portable sashes their entire removal for a time will arrest all doubts as to over-excitement, while exposure to dew and autumnal rains will benefit the roots and foliage until it falls from the trees, when the final pruning may be performed; but assuming that all weak and useless wood was cut out immediately after the fruit was gathered, the autumnal pruning will be a very light affair. Under the impression that dryness at the roots hastens the ripening of the wood many houses of fine trees are permanently injured by being starved for want of water, and it is to this cause that the annoyance of seeing the buds drop in the spring when they should be expanding into flowers may be traced. If properly made and drained, a Peach border should never be allowed to become dry, neither should the mulching be taken off until the time arrives for replacing it with the annual top-dressing of new compost. If imperfectly drained, the roots strike downwards in search of moisture, and persist in forcing up breast-wood and watery growths when the trees should be at rest. To correct this evil careful lifting and relaying of the roots in new soil resting on good drainage is the best and most profitable remedy, and, as I have before stated, the proper time for the performance of the work is when the foliage shows signs of ripening, but before it begins to fall from the trees. Should we have a continuance of dry weather the roots of trees in late houses having the run of external borders, and now swelling off heavy crops of fruit, may derive benefit from additional mulching and watering with diluted liquid. When all the fruit has been gathered, treatment the reverse of that recommended for the early house may be necessary to ensure the proper maturation of the wood. If the house is heated with hot-water, gentle fire-heat, with a free circulation of air, will be of great service to such late kinds as *Walburton Admirable*—at all times a shy bearer—*Barrington* and *Salwey*, where it is thought worthy of a place under glass; but mid-season kinds, under the influence of a favourable

autumn, will ripen their wood without it. *W. Colman, Eastnor.*

PLANT HOUSES.

ORCHIDS.—The month of September is without doubt the best month of the whole year, to perform any operation on cool Orchids, wherein their roots have to be disturbed. In the first place the external air is of so genial a nature that with but little trouble a very suitable atmosphere for these plants can be maintained in the cool-house, which, as every cultivator knows, is of the greatest assistance towards the plant quickly re-establishing itself. In the next place many of the young breaks now pushing will soon send out roots from their base, which, having new and sweet compost to run in, are well at home ere the winter sets in. Now, therefore, is the time to examine the inmates of the cool-house, and to give to those that require it fresh pots, baskets or blocks, as the case may be. A suitable compost for these *Odontoglossums*, *Masdevallias*, and *Oncidiums*, consists of two-thirds sphagnum moss to one-third of fibry peat, to which may be added a sprinkling of small broken crocks and charcoal. Too much trouble cannot be taken in preparing the moss, as on the freedom of this article from slugs depends almost solely the chance of a full harvest of flowers. It is true slugs may, and do, crawl into the houses through open ventilators or under doors, &c., but by far the greatest number are brought in among the sphagnum. So much have we suffered in this respect that we now examine every atom of sphagnum when picking it clear from leaves and rubbish, and afterwards wash it thoroughly. This of course takes time to do, but certainly not more than hunting among the plants for slugs, that are rarely ever caught until many spikes have been lost. The pots used for these plants must be clean, and should be two-thirds full of drainage secured with a layer of sphagnum. Pot moderately firm, keeping the base of the plant a trifle above the rim of the pot. Old plants of *Odontoglossum crispum*, *O. gloriosum*, *O. Andersonianum*, *O. triumphans*, &c., which have by any means got out of health should be carefully washed out from their old pots and, after being trimmed of dead roots and spent bulbs, be potted in pots just large enough to hold their roots. Such weak plants after potting must for a few weeks be kept, not necessarily warmer, but closer than the other plants; they, in fact, require to be handled and managed much in the same way as imported plants, keeping the atmosphere surrounding them as moist as possible, but not too much water at the roots. More shade is also required for such plants than for healthy established ones. Any old, overgrown masses of *Masdevallia Harryana* and its many varieties, or of *M. Veitchii* and *Lindeni*, that may have become bare in their centres, may now be safely broken up into small pieces and be potted separately, or be planted out into large pots a few inches apart. They do equally well either way. For nurserymen, no doubt, the single pot system is best; but few gentlemen care to see half a hundred or a hundred small 60-pots all filled with one variety of *Masdevallia*. The foliage of these *Masdevallias* being very heavy, it will be necessary to support each plant with one or more slender stakes. The winter flowering *M. tovarensis* and *M. ignea* should not be potted now, unless they are in a really bad state at the root. That charming dwarf-growing plant, *M. Estradae*, will only grow and flower thoroughly well when its leaves almost touch the roof glass; the same may be said of *M. coccinea* and its near kinsman *M. militaris*. The yellow-flowered *M. Davisii*, which will now be in perfection, is also one of the light-loving *Masdevallias*, whose foliage and flower are much improved by growing in a less shaded position than plants of the *Harryana* section. The potting of this plant must be left till the flowering season is over.

In going through these cool-house plants not a plant should be returned to its place unless thoroughly cleaned. At this time of year yellow and green fly are always troublesome to the young growths of *Masdevallias*, and yellow thrips are almost sure to be troublesome to the young growths of *Odontoglossums*. It is perhaps easiest to cleanse plants thus affected by dipping them into some insecticide. I have found nicotine soap, at the rate of 2 oz. to a gallon of soft water, safe and effectual. Care must be taken that no portion of the mixture finds its way to the roots, either in dipping or when draining. After dipping the mixture may remain on from five to ten minutes, during which time the plants should be so placed that the soap drains from the base of the plant to its tips, instead of into the roots. Wash the mixture off with abundance of soft water at a temperature between 80° and 90°. I feel certain it is for the want of giving a thorough cleansing bath that so many Orchids are injured by insecticides. As a rule, we dip our plants when dry at the roots, so that if by chance any of the mixture does get to the roots, the thorough watering given immediately afterwards washes it through, or weakens it so that its power for harm is gone. *J. C. Spyer, Burford Lodge, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Aug 30	{ Trade Sale of Dutch Bulbs at the Auction Mart, by Protheroe & Morris
THURSDAY, Sept. 2	{ Harpenden Horticultural Society's Show Autumn Exhibition of Royal Horticultural Society of Ireland
FRIDAY, Sept 3	{ Four days' Fruit Show at the Alexandra Palace commences

THE effects of the past few unpropitious seasons upon FRUIT TREES may be turned to profitable account in supplying hints and suggestions for the future. Local rather than general conditions may possibly in some instances have influenced the results, but probably not to an extent that would depreciate the value of the facts which may have been observed. We may, indeed, have passed through the cycle of wet sunless summers and cold destructive winters; and the hope that it may be so may well incite us to perseverance, but it is useless to fight against the elements, and far wiser to turn our efforts into what may promise to be a more profitable direction.

As a practical application of these remarks to the case of our hardy fruits, we may instance several kinds of Apples as bearing out the view we have taken. We have lately seen an illustration of the difference of constitution of some of the established favourites amongst Apples in an orchard by no means unfavourably placed—that of Mr. LANE, of Berkhamsted. The well known and much prized Dumelow's Seedling and the Golden Noble, for example, are at this moment so much crippled by the uncongenial nature of the summers and winters we have recently passed through, that unless there is a favourable turn in the seasons they will hardly recover, and even under the most favourable conditions it will take two or three years or more to enable them to reinstate themselves. This remark does not refer to a stray tree or two of these kinds, but to whole orchard rows all alike punished. Under the same conditions, however, the Ecklinville Seedling, Prince Albert, Keswick Codlin, and others, have continued to make healthy growth, and are now bearing fair crops considering the season. Similar facts have been observed in Mr. DANCER'S fruit garden at Turnham Green, and elsewhere. Some few sorts, including those named above as having sustained much serious damage, have in these cases also been hopelessly crippled, while the Ecklinville Seedling, Stirling Castle, and Keswick Codlin, amongst others, have continued in a healthy productive state. The favourite Lord Suffield appears to be of little use in Mr. LANE'S collection, for the trees make no progress, but the excellent variety known as Stone's Apple, or Loddington Seedling, is highly promising. The practical inference to be drawn from facts such as these is, that the sorts which are able to bear up against the unfavourable conditions of climate should in future be planted in preference to those which do not, provided they are, as in the instances above cited, themselves of good quality.

The growers of hardy fruits throughout the country would do well to note the facts in reference to this question, which the experience of the past year or two may have brought out—in the first place for their own use and advantage, and then for the benefit of others, by reporting their observations. Our columns will be always open to records of this kind, which have a value beyond the locality in which they may have been observed; but there should, in all cases, be sufficient materials brought under observation before any positive opinion is propounded, since the behaviour of a stray tree or two here and there is often misleading, and assuredly does not afford sufficient reliable evidence on which to arrive at a sound judgment in such a matter.

— A GROUP OF SUCCULENTS.—In our numbers for July 11 and 18, 1874, we had the pleasure of publishing some views in the gardens of the Palazzo Orongo, at La Mortola, near Mentone, the charming Italian residence of Mr. THOMAS HANBURY, to whose

kindness in sending a photograph we are indebted for being able to illustrate on the opposite page (fig. 51) a noble group of succulents growing in close proximity to his house. The specimen of *Agave Salmiana* on the left is of truly enormous dimensions, the extreme diameter of the plant, measured from the tip of one leaf to that of one opposite, being 17 feet 8 inches, and the length of the leaves 7 feet 6 inches. The specimen on the extreme right is *Agave picta*; the *Euphorbia* to the left is *E. abyssinica*, and the *Agave* in front *A. applanata*. Mr. HANBURY informs us that both this season and last have been characterised by the unusually free flowering of *Agaves* and other succulents in his garden; and remarks that although last winter 7° of frost were registered on more than one occasion, and the ice on the ornamental water bore the weight of a grown-up person, it is remarkable how well such plants stood the severe weather without any protection. The following is a list of the *Agaves* which have flowered with Mr. HANBURY this season:—*Agave americana*, *A. angustifolia*, *A. densiflora*, *A. laxa*, *A. mexicana picta*, *A. mitis*, *A. rigida*, *A. Rumphii*, *A. Verschaffeltii*, *A. vivipara*, *A. xalapensis*, *A. xylinaantha longifolia*, *A. yuccifolia*.

— *BOLBOPHYLLUM BECCARII*.—This extraordinary Orchid, which has already been fully described in this journal, has now produced flowers in this country, and its portrait has been drawn for the *Botanical Magazine*. The plant in question was flowered by Messrs. E. G. HENDERSON & SON, and exhibited by them, on Tuesday, at South Kensington. This Orchid not only surpasses all others in the size of its leaves, but also in its odour, which for intensity of fetor is only approached by that of *Amorphophallus*, and perhaps some species of *Aristolochia* and *Stapelia*.

— THE YORKSHIRE GALA.—The balance-sheet has just been issued, and we notice that the profits attending the exhibition in June last are £255, so that with about £1500 in the funds, the Gala Committee are in a safe position. £476 was paid in prizes for plants, &c., and £148 for music, which is always here of great excellence. The exhibition was altogether a great success. The charities of York are not forgotten, £157 10s. being distributed amongst them from the profits of the June exhibition.

— *MATRICARIA INODORA FLORE-PLENO*.—This subject grows in favour as gardeners have more experience of it. When planted out singly in the open border it grows in the form of a bush and blooms freely, yielding a good quantity of double white flowers, which are very useful for cutting from. They last a good time in flower, which is another advantage. Gardeners should make a note of this useful subject.

— CRYPTOGRAMIC SOCIETY OF SCOTLAND.—The Sixth Annual Conference will be held in Glasgow on September 27—30, and October 1 and 2, when all persons interested in cryptogamic botany are invited to attend. A detailed prospectus of the meetings, excursions, and show, may be had on application to the local secretaries, Mr. W. J. MILLIGAN, 180, West Regent Street, Glasgow, and Mr. A. TURNER, 122, Hospital Street, Glasgow, on and after September 6. Fellows are requested to bring or send specimens of interest in any branch of cryptogamic botany for exhibition at the meetings and show.

— ADDITIONS TO KEW HERBARIUM.—Through the liberality of Messrs. VEITCH, Kew Herbarium now possesses a fine set of dried plants collected by Mr. MARIES in Japan, North China, and Formosa. Altogether the collection is estimated to contain 1400 species, including many interesting novelties.

— A BEAUTIFUL PICTURE.—A correspondent writes:—"Some cottages in Mr. DICKSON'S nursery, Belmont, Belfast, present just now a lovely sight. They are covered with *Clematis*, *Gloire de Dijon* Roses, and *Tropæolum speciosum*. The purple of the former, the yellow of the Roses, and the bright scarlet of the *Tropæolum*, form a grand contrast, and quite a beautiful picture."

— GINKGO BILOBA (*SALISBURIA ADIANTIFOLIA*) AND ITS PREHISTORIC ALLIES.—The curious *Ginkgo biloba* is now an isolated type amongst conifers, but this, according to the researches and determinations of palæontologists, was not the case in

former ages. On the contrary, it is the sole surviving member of a very ancient type, dating back to the carboniferous period, and now represented by the remains of a considerable number of forms or species in the secondary and tertiary strata. Professor OSWALD has published, in ENGLER'S *Jahrbücher*, an historical sketch of what is known of what he terms the *Salisburieæ*. According to this learned palæontologist, there have existed at different periods eight genera of this tribe, comprising sixty-one species; and the tribe appears to have been generally dispersed in the temperate and arctic zones of the northern hemisphere. Even should future researches lead to a great reduction of the presumed number of species, the fact of the former wide distribution of this single tribe of *Conifereæ* will remain the same.

— *HYDRANGEA PANICULATA GRANDIFLORA*.—This is undoubtedly the finest of the family, and the best of the late summer flowering deciduous shrubs with which we can at present adorn our gardens, but like many other good plants it is seldom to be met with in anything like good condition. Some very fine examples in Mr. MCINTOSH'S garden, at Dunevan, near Weybridge, are flowering magnificently. The plants, of which there are some eight or ten fine specimens, are each producing from thirty to fifty very large panicles of white blossoms, their great weight literally bearing them down on to the *Rhododendrons* beneath. The plants are cut hard back every autumn, and some of the single trusses of bloom measure from 12 to 18 inches in length, and are very broadly shouldered.

— KIDNEY BEANS INFESTED WITH A FUNGUS.—We lately received from the neighbourhood of Bedford specimens of Kidney Beans infested with a fungus, producing in the pods conical spots, which ultimately turned black and completely destroyed the value of the crop. We referred the fungus somewhat doubtfully to *Ascochyta Pisi*, LIBERT. This morning we have more perfect specimens from Suffolk, full of fruit, which we have compared with *Mdme. LIBERT*'S specimens, and find as the only difference, depending probably on age, that, in the published specimen there is a single septum in each spore, while in those before us there is none. We should scarcely have thought this worth especial notice were there not another very curious matter in the same specimens. The subcutaneous tissues of the stems burst, and the cells in a state of hypertrophy protrude, forming a little snow-white mass, like beaten white of egg, consisting of cells not greatly altered, but in the centre of them is a bundle of wood cells in a diseased state, which seem to have stimulated the neighbouring cells into excessive development. The white mass soon becomes foxy in colour. We should strongly advise the affected plants being burnt, for the spores are multitudinous and might easily propagate the disease, which at present seems confined to the varieties which have smooth pods. *M. J. B.*

— VARIATIONS OF PLANTS ACCORDING TO THE PHYSICAL CONDITIONS OF THE LOCALITY.—Under the title *Nouvelles Observations sur les Modifications des Végétaux suivant les conditions physiques du milieu*, Mr. M. C. FLAHAULT contributes a second article to the *Annales des Sciences Naturelles* on the influence exercised by the physical conditions of a place on the variation of plants. It is based upon the results of a second journey to Sweden, undertaken with the object of testing the conclusions arrived at from a previous journey, when he was accompanied by Mr. G. BONNIER. With regard to the effects of light, he concludes that the vireescence of leaves is promoted by a medium intensity of light, and, consequently, he adds, we may admit that the growth of leaves in high latitudes is caused by the long duration of light, though feeble in intensity, to which they are uninterruptedly subjected. The second part of Mr. FLAHAULT'S essay is devoted to the consideration of the development of the colouring matter of flowers. Here again the longer duration of light—other things being equal—in high latitudes exercises a greater influence relatively than the more intense light of shorter duration in lower latitudes. From experiments with various plants it would seem that the colours of flowers of the same variety are deeper in northern localities. Mr. FLAHAULT gives a coloured illustration of the mean tints developed by various plants at Upsala and Paris. These tints were determined by CHEVREUIL'S

chromatic scale, and if the determinations are not absolutely reliable, they are sufficiently so to show that the tendency is in the direction indicated. Mr. FLAHAULT selects the six following cultivated plants to illustrate this phenomena, namely, *Tagetes erecta*, *T. lucida*, *Antirrhinum majus* (a red variety), *Phlox Drummondii* (two varieties), and *Lobelia Erinus*. The differences in intensity of coloration in the two localities as represented in the plate are quite appreciable at a glance. On the same plate the tints are given of the flowers of *Epilobium spicatum*, *Calluna vulgaris*, *Leontodon autumnalis*, and *Campanula rotundifolia*, in a wild state near Paris and in Sweden. In each case the tint in the northern locality is deeper than in the southern. The intensity of coloration depends upon nutrition. Some experiments were conducted

attacked first on the side facing the south; where a clump is the increase from one bulb all the stalks are attacked, but where two or three bulbs are planted together, one may be badly attacked and the others escape. Those most liable to attack are the well established clumps and in partially shaded borders, those recently planted and exposed to full sun for the most part escape." There does not appear to be any fungus, but the effect of the disease is much like that of the Potato, causing the leaves and stem to soften, and even to deliquesce. The above remarks confirm an opinion we have long formed, that too highly manured ground as also too much moisture are injurious, and that ordinary well drained soil and free exposure to air and sun are essential. We find that bulbs which are sent to us as diseased, when treated

Botanic Garden, as reported by Professor ENGLER, in his *Jahrbücher* (p. 189), observed that some fallen leaflets, which had not been removed at once, developed, in the course of a few days, a swelling at the basal end, which finally grew into a bulblet about half an inch in diameter. The thought naturally struck Mr. HILD to place them in the ground, where the bulblets soon formed two buds and around and beneath them rootlets. Whether the bulblets would have produced buds and roots if left lying on the surface of the ground is not certain, but it seems very probable. At the date of writing, Prof. ENGLER'S plants raised in this way were three months old. After placing the leaflets on which bulblets were formed in the ground, the bulblets increased to more than an inch in diameter, and evolved buds and rootlets.



FIG. 51.—A GROUP OF SUCCULENTS IN THE GARDENS OF THE PALAZZO ORENGO. (SEE P. 272.)

simultaneously in two localities in France and one in Sweden, to determine the relative storing of nutritive substances, but the experiments of one season prove nothing, and were by no means comparable last year on account of the very diverse meteorological conditions in the two countries.

— DISEASE IN LILIES.—Every cultivator of these beautiful plants complains of the loss every year of many of his best varieties, and at present no one seems to have discovered the cause. Our correspondent, the Rev. C. WOLLEY DOD, who forwards numerous specimens affected, more or less, by the malady, writes that they are from newly imported bulbs, probably gathered before ripe. The disease, however, is far from being confined to those which are imported. "The stalk is in nearly every case

less tenderly become healthy. Where there is no apparent cause, as fungous growth, it is almost certain that the fault exists in the mode of culture. As in the Cucumber disease, even the best cultivators frequently fail, but the experience of our correspondent is well worthy of attention. M. J. B.

— REPRODUCTION OF *ZAMIOCULCAS LODDIGESII* FROM ITS LEAFLETS.—*Zamioculcas Loddigesii* is remarkable among Araceæ in having a genuine pinnate leaf with articulated, deciduous leaflets. These leaflets exhibit, after falling, a singular amount of vital energy—a kind of energy common, it is true, to many other plants in some form or other, but displayed by this plant in a noteworthy manner. The leaflets are thick in texture, and fall away separately from the rachis. Mr. HILD, of the Kiel University

The buds first develop some scaly leaves which are succeeded by a pinnate leaf bearing one pair of leaflets. Apart from its physiological bearings, this is an interesting phenomenon, a knowledge of which may be useful to the practical gardener.

— *ARISTOTELIA MACQUI VARIEGATA*.—This very interesting and handsome ornamental evergreen shrub can now be seen in good character at the Chiswick Gardens of the Royal Horticultural Society. It is not unlike a *Cornus* in its growth and general character, the leaves being handsomely blotched with yellow. It is believed that the variegated form is of Continental origin, and in the South of France and such other favoured localities is quite hardy. A. Macqui has been tried in this country, but failed in not a few instances, our winters proving too severe

for it. It is stated this plant was named after the great ARISTOTLE. It is a native of Chili, the berries are perfectly black when ripe, agreeably acid and eatable; the Chilians make a wine from them, which they administer in malignant fevers.

— **NEW DWARF GOLDEN FEATHER.**—Under the name of *Pyrethrum aureum compactum* var. *selaginoides*, Mr. B. S. WILLIAMS has secured a very handsome dwarf form of this popular bedding plant that is likely to supersede the varieties now in cultivation. It is quite dwarf, with a singularly handsome and compact habit, while the elegant cut leaves are much like those of a *Selaginella*, hence its name. We have seen two or three dwarf forms, but the one now under notice beats them all.

— **LEOPOLD RUSTIC VASES.**—Mr. MATTHEWS, of the Royal Potteries, Weston-super-Mare, has this summer exhibited at several of the horticultural shows some handsome rustic vases for garden decoration that bear the above name. They are of red terra-cotta, made to imitate the rugged bark of a tree in the form of medium-sized pots fixed together in one, two, or three tiers, standing on a sufficiently broad base, which is also constructed to hold plants. They are of different sizes. The design, workmanship, and material are all good, much in advance of what we generally see in the way of garden furniture of this description. Independent of their pretty appearance, they are so arranged as to admit of the diversity in form and colour of the plants employed to fill them being seen to advantage, not possible in the ordinary vases where the different subjects used all grow into each other in a confused mass.

— **TACSONIA EXONIENSIS.**—This handsome half-hardy climber is well adapted for cool conservatory decoration, both for its brilliancy of colour and great profusion of flowers. Trained to the roof of the conservatory in Mr. WILSON's garden at Heatherbank, it is making a grand display just now, its richly coloured flowers hanging in festoons above one's head. Not being satisfied with the place allotted to it inside the house, it has managed to find its way through the ventilators to the outside, where it seems equally at home for the summer months, but is naturally repelled by the first winter's frost, again to resume its journey in each succeeding spring.

— **BASKET FERNS.**—The rare and very distinct *Aglaomorpha Meyenianum* is used as a basket plant at the Botanic Garden, Birmingham, suspended in the stove over the central tank; it occupies a large square basket made of wood, such as used for Orchids. Its singular fronds, the upper half of which are fertile, hang gracefully over the edges of the basket, out of the sides of which is growing *Epiphyllum truncatum*, which so situated is evidently at home. In a couple of similar baskets are grown the semi-transparent fronded *Drynaria muscfolia*, and *Goniophlebium subauriculatum*, the latter with fronds 6 or 7 feet in length. Where there is enough room these are handsome objects for a warm house.

— **THE HARDY LYGODIUM.**—*Lygodium palmatum* which is sometimes seen in a sickly state in warm greenhouses, has withstood the severity of the past two winters in Mr. WILSON's wild garden at Weybridge, and is now 3 feet high, in a fine healthy condition, forming a complete pyramid.

— **PHLOX COUNTESS OF SEFTON.**—Herbaceous Phloxes are fine things, and very telling where the situation suits them, but most of the varieties grow too tall, especially if old plants are retained. There is a charming bed in the Birmingham Botanic Garden of the above variety. It is white all but a small pink eye, has large compact heads of flower, and grows to a height of from 12 to 15 inches; it is an excellent variety for bedding, and when massed, as it is here, by itself, it has a beautiful appearance.

— **PAPAYER UMBROSUM.**—Scarcely anything can be more brilliant in hue than this very rich annual Poppy. The colour is a rich and glowing vermilion, the rounded petals having a deep shining black spot in each. The colouring of the petals is truly magnificent; pity it is the flowers are of such an evanescent character, as they open of a morning and have fallen to pieces almost before afternoon changes to evening. It is a Continental novelty, sent out about 1876-77, and will grow as freely in the open ground as the commonest annual. The effect

of the plant is marred to some extent by the number of seed-vessels they produce. Mr. BARRON has the above in fine condition at Chiswick, and with it *P. alpinum*, which has rich yellow coloured flowers. The type appears to vary somewhat in colour, as the flowers in not a few cases are nearly white, and in others they deepen to orange. *P. alpinum* is thought by some to be the true *P. nudicaule*. It is a very useful subject on the rockwork at Chiswick.

— **TROPEOLUM BEDFORD RIVAL.**—At the Lower Grounds, Aston, Birmingham, this is much the best of the dwarf bedding kinds, a compact grower and profuse bloomer, very bright in colour, and as the flowers expand wide they show a greater amount of surface than most others. A bed of it mixed with *Cliveden Purple Pansy* was very fine. There is also here a very fine *Lobelia* named *Doncaster*—it is a good-sized flower, with a large pure white, well-defined blotch, surrounded by a deep blue margin as even and regular as the belt of a good *Pansy*. The habit is good, and the growth sufficient without being so large as to get straggling.

— **NOBLE'S QUEEN OF BEDDERS ROSE.**—Roses have a greater objection to smoke than most hardy plants, and with the exception of a few of the freest growing kinds do not even thrive moderately, let alone flower, when the atmosphere is tainted with smoke. Few places are better calculated to test the ability of Roses to grow and bloom under adverse conditions of this nature than Birmingham. At the Lower Grounds, which are as near the town as they could be without being in it, two good sized beds were planted with the above named variety in close proximity to, and under like conditions with a number of other strong-growing kinds. About the middle of the present month (August) this excellent bedding sort was as full of flowers and buds as most of the freest blooming kinds are at their first flowering in the summer, some of the shoots had as many as a score of buds on them, whilst, with only one or two exceptions, the other varieties, although growing freely, were destitute of either flowers or buds. Its dwarf habit is another advantage both when grown in masses or as single plants.

— **ANNUAL CHRYSANTHEMUMS.**—The beautiful single-flowered annual varieties of *Chrysanthemum* are not so well known as they deserve to be, or they would doubtless be much more generally cultivated than they are. There are few flowers wherein the colours or the markings are so clearly defined, or present such remarkable contrasts in the individual blooms. A long bed of CARTER's best strain at the Durdham Downs Nursery was one of the prettiest objects we have seen for some time. They are amongst the best things that can be grown for cutting, especially now when the simple elegance of single flowers is appreciated as it deserves.

— **ROSA RUGOSA.**—This is undoubtedly one of the finest of the Japanese Roses, and deserves a place in every garden. It forms a very attractive plant as a standard, and budded on the common Brier it seems to thrive admirably. A fine example of it is being grown in this way in Mr. G. F. WILSON's garden at Weybridge. Being a gross-feeding plant, care should be taken to select stocks of good size, the stouter the better. Like many other species, *R. rugosa* is rather impatient of the use of the knife, which should only be used to take out small, weakened wood. The flowers are large and of a bright rose colour, and deliciously fragrant, especially in the early morn.

— **AMPELOPSIS VEITCHII.**—There is evidently more than one form of this fine climber, one being much more straggling in habit than the other, not branching so freely, and consequently not covering the space so effectually as the closer-growing kind; but the thinner grower seems to attain the bright red colouring in its leaves earlier in the season than the closer-habited kind, and is besides considerably deeper in colour. The two forms are growing side by side on the front of Mr. GARAWAY's house at the Durdham Downs Nursery, where the difference is clearly perceptible. It is a pity this *Ampelopsis* is not more generally known and planted than it is, if only for the little trouble it gives when once planted in soil that gives it a fair chance, for as it is of a clinging nature, attaching itself tightly to the wall, it saves all the trouble of nailing or securing it in any way. On a north wall, where it gets little sun, the

leaves are later in getting coloured, and are correspondingly later in falling off. On such an aspect the soft tints it gets are indescribably beautiful. One of the most effectually clothed walls we have met with is just beside these *Ampelopsis*, where a very strong plant of the common white *Jasmine* that comes with something like half its shoots variegated of a pale creamy-yellow, is hanging closely out of a deep green background of Ivy, and is very beautiful. If the variegation could be fixed it would be a desirable plant.

— **CLEMATIS ÆTHUSÆFOLIA VAR. LATISECTA.**—This elegant *Clematis* is now flowering at Kew. It is, perhaps, the most attractive of all the small-flowered species, the foliage being exceedingly light and graceful, and the small yellowish-white cylindrical pendulous flowers are numerous, and about three-quarters of an inch in length. Although the branches and branchlets are very slender, it is a tall climbing shrub in its native country. MAACK and MAXIMOWICZ collected the present variety on the Amur and Ussuri Rivers, and the former traveller sent seeds of it to St. Petersburg, where it was raised in 1861. Since that date it has become generally dispersed in the Botanic Gardens of Europe. We understand a figure of this variety will shortly appear in the *Botanical Magazine*. The typical *C. æthusefolia* of TURCZANINOW is a native of North China, and differs in having even much more finely-divided leaves; but the two extremes are connected by intermediate conditions.

— **DIANTHUS HEDDEWIGHI LACINIATUS.**—How beautiful are these jagged-edged single-flowered *Dianthus*, with their large, undescrivable-coloured blossoms, devoid of all the formality present in flowers of more regular outline. A good sized bed of them, in the Botanic Garden, Birmingham, is one of the most delightful associations of colour we have seen for a long time. They embrace every shade, from pure white up to the deepest crimson and maroon, some of them veined, marbled and mottled like nothing but themselves. They keep on blooming for a long time, and last well in a cut state. It seems strange that they are not much more generally grown.

— **GLEICHENIAS GROWN COOL.**—Few greater mistakes can be committed in the cultivation of Ferns than growing them too hot, yet this is frequently done, the result being a twofold mischief—insects increase on them apace, and the tender condition which the over-warmth brings about causes them to be susceptible of injury from the means necessary to destroy the insects; in addition to which, if the plants are required for standing in any place drier and cooler than where they have been grown, or the fronds are wanted for cutting, they flag so soon as to render them of little use. Above all it is a mistake to keep those species too hot that are indigenous to parts of the world that enables them to thrive with little artificial heat, such for instance as the *Gleichenias*, which will grow well in a lower temperature and with a drier atmosphere than is often supposed. At the Birmingham Botanic Garden Mr. LATHAM has a long span-roofed pit, three-fourths of which was filled with *Epacris* and similar hard-wooded stock with the lights completely off them; the remainder of the pit was occupied by *Gleichenias*, nice thriving plants, about 12 or 18 inches across. They were thus exposed to the full air that came upon them from the end with the lights removed. They were stood with their heads within a few inches of the glass, and except in the middle of the day in the brightest weather were not shaded in the least, yet not a frond was perceptible that was any way affected with the sun. These handsome Ferns do a deal better when not kept over-warm, and with much less shade than many growers subject them to.

— **NEPENTHES, SARRACENIAS, DIONEAS, AND CEPHALOTUS.**—These plants are often considered difficult to manage; so much so indeed that many who would like to grow them are deterred from attempting their cultivation. Neither is this to be wondered at, for failures with them have been many. Yet where they do not succeed it can generally be traced to a mistake arising from insufficient knowledge of their wants. In the case of *Nepenthes* they are often subjected to either the extreme of an over-darkened, over-saturated atmosphere, or the opposite of being kept too cool, with over-much air given. Under neither of these courses can success be attained.

Sarracénias, Dionæas and Cephalotus, on the other hand, are frequently kept too hot, from which cause they gradually languish. As an evidence that even those who have not been trained to gardening can, by studying their nature, and giving a fair amount of attention, succeed with them it is only necessary to point to the very complete collection grown by A. E. RATCLIFF, Esq., Calthorp Road, Edgbaston, that has before been noticed in the *Gardeners' Chronicle*. Mr. RATCLIFF is a lover of singular vegetable forms, and thought he would try his hand at cultivating these plants, no one interfering with them in any way but himself, except so far as shading or giving a little air. The *Nepenthes* occupy a small house almost to themselves, hung up with their heads near the glass; on the stages underneath are grown such things as *Bertolonias* and other small heat-requiring plants. The collection comprises most of the kinds in cultivation, including the rare *N. bicalcarata*, which was flourishing nicely, the remarkable horn-like appendages to the pitchers being about half an inch long. The scarce and distinct *N. lanata* was bearing several of its singular woolly-clothed pitchers. Commoner kinds, such as *N. Hookeriana*, *N. Rafflesiana*, and most of the hybrid varieties were growing well. With them was also a variegated sport from *N. Phyllanthora*, or some other nearly allied sort, showing that under cultivation even these plants will produce variegated sports. Near the roof as these *Nepenthes* are kept, they make close, compact growth, the purple tinge on the leaves showing the effects of enough light; they form pitchers freely, but not so large as in a larger house, where the temperature could be kept more equable, but they prove that even an amateur who will bestow on them the needful thought and care has no need to fear of succeeding in their cultivation. The *Sarracénias*, *Dionæas*, and *Cephalotus* are grown in a much lower temperature, the two latter covered with bell-glasses, in a house to which air is freely admitted.

— MR. C. WINN'S ORCHIDS, AT UPLANDS, BIRMINGHAM.—Orchids are grown here in lighter houses, and with movable shading of a thinner description than in many places, and the advantages are seen in the stout, robust condition of the plants generally. The collection has been formed much more recently than many of those in the country, yet it contains numbers of exceptional varieties. In a span-roofed house, some 90 feet in length, filled with cool species. There are 1400 plants of *Odontoglossum crispum* in excellent condition. Amongst the *O. cirrosus*, one plant that bore 108 flowers on one spike in 1878 has now a couple coming on that are 4 feet long, yet not so far advanced as to show the flowers. *Masdevallias* are beautifully grown, an example of *M. Chimæra* has seventy leaves and bore twenty blooms; another has leaves 2 inches wide; *M. bella*, a strong plant in flower; *M. tovarensis*, so stout that the flower-spikes often bear three blooms each; *M. Trochilus*, with leaves 10 inches long by 1½ inch broad. Amongst a very complete collection of these favourite plants I noticed *M. Estradæ*, *M. Houtteana*, with some splendid varieties of *M. Harryana*, *M. Veitchii*, and many others. Also a very fine plant of the rare *Lycaste Skinneri* alba, with a dozen bulbs, and three breaks showing flower; and a nice specimen of *Restrepia antennifera*. In another division occupied by fine plants of many species there are some 200 examples of *O. vexillarium*, thriving well, and annually making strong growths; twenty-eight flowers were produced from a single bulb this spring. Along with a host of thriving plants in another house was the scarce *Zygopetalum rostratum*, *Cypripedium Spicerianum*, with four growths; *Dendrobium Griffithianum*, bearing fourteen spikes, some of them a foot long, the blooms just over; *Bollea celestis magnifica*, the deepest coloured variety of the family, and *Pescatorea Klabochorum*. The way Mr. Shields lets the morning sun shine on his plants before the blinds are run down, would alarm many growers who keep their Orchids continuously shaded, neither would it be safe to allow it even in the early part of the day to come so freely on plants that had been in any way treated so as to make soft flabby growth; but the stout thick leaves and bulbs tinged with purple, and the manner in which the bulb-forming kinds make double breaks, show that the treatment is right. A great portion of the collection consists of imported plants that have made their first growth here under conditions such as to give the strength and substance which enables them to stand a volume of light that would shrivel

softer grown examples. The houses in which are located the warmer kinds are somewhat wider than often met with, and the flat centre stages stand on piers, the whole space underneath them being occupied by a shallow watertight trough, about 3 inches deep, kept filled through the growing season, with means to let off and renew the water as often as necessary to have it clear. The evaporation from this keeps the atmosphere regularly supplied with moisture, dispensing with the necessity for slopping water about the floors, or the injurious course of throwing it on the pipes when hot.

— PUBLICATIONS RECEIVED. — *British Bee Farming, its Propects and Pleasures*, by JAMES F. ROBINSON (CHAPMAN & HALL, Limited). — *Curiosities of the Thirty-four Puzzle* (JOHN HEYWOOD, Manchester). — *Patton's Flower Garden*, Part I. of new edition (CASSELL & Co.).

— SALE OF THE LOWVILLE COLLECTION OF PLANTS.—The *Gardeners' Record* is informed that the grand collection of Ferns and stove and greenhouse plants, formed at so much expense and trouble by Dr. HUDSON, is to be distributed by auction early next month. It is rarely, indeed, such an opportunity occurs for purchasing large, healthy, well-grown plants (particularly Tree and Filmy Ferns) as this sale will present, some of the finest plants in the country being at present in Lowville.

— PERRY'S GOLDEN WEEPING HOLLY. — This is evidently a fine evergreen weeping shrub, a good grower, stout and robust in habit, with handsome coloured foliage, and a decided drooping habit. We lately saw some fine plants of it at the Durdham Downs Nursery, which fully bear out its character.

— A SECOND GROWTH ON FOREST TREES. — Mr. JAMES WILSON, Charlecote Park, Warwickshire, writes:—This season a curious phenomenon is observable in this and other parts of the country, viz., a second growth on many of our deciduous forest trees. In this neighbourhood it is most pronounced on the Elm and Oak. Many of these are profusely covered with fresh, light green shoots, which contrast pleasantly with the darker and more sombre tint of the older leaves. Some of the new growths on the Elms measure from 9 inches to 1 foot in length, those on the Oak being shorter. Will this circumstance be an outcome of the heavy rains and cloudy skies of last year, or of the warm and humid atmosphere of the months of June and July in this?

— THE WEATHER.—General remarks on the weather during the week ending Aug. 23, issued by the Meteorological Office, London:—The weather during the week has again been very dry in nearly all parts of the United Kingdom. The sky, however, has been densely overcast, except at some of the south-western stations, and a thunderstorm occurred at Valencia on the 22d. The temperature was a little below the mean over most of the eastern districts, but slightly above in the west and south. The readings were never very high, the maximum reported being 78° at Barnstaple and in London. At Durham the thermometer went down to 42° on the 20th, but elsewhere the lowest of the minimum readings was 47° or 48°. The rainfall was very slight in all districts. Bright sunshine, excepting in the south-western parts of the kingdom, has been exceedingly deficient, and in some places almost entirely absent. The total number of hours registered during the week at several of our inland stations was only eleven or twelve, and at Churchstoke there were only two hours during which the sun shone brightly. The wind was generally north-easterly over the whole country, and light or moderate in force. At the extreme northern stations, however, it was rather more variable, and on the 20th blew lightly from the south-west and west.

— GARDENING APPOINTMENTS.—Mr. CHAS. TYLER, late Gardener to R. JOSLING, Esq., Hassobury, Bishop's Stortford, has been appointed Gardener to the Earl of WICKLOW, at Shelton Abbey, Co. Wicklow.—Mr. ALFRED HOLLOWAY, late Gardener to L. F. RICHARDSON, Esq., Hilders Court, Chiddingley, Sussex, has, in succession to Mr. BOND, been appointed Gardener to J. McHENRY, Esq., Oak Lodge, Kensington.—Mr. A. READ, late Foreman to Mr. AUSTEN, at Ashton Court, Bristol, has been appointed Gardener to Sir JOHN NEELD, Grittleton, Chippenham, Wilts.

NOTES FROM LAMBTON CASTLE.

A GOOD garden, well managed, such as this is, always affords something worth noticing, even independent of the Vines, which, as well known, have now for a good many years attracted more than ordinary attention amongst Grape growers, many of whom have often discussed the subject of how the Vines that have borne such unusually big bunches were likely to behave themselves when past the extraordinary condition which enabled them to produce the large individual bunches, and immense weight collectively, that for several successive years they bore. Many people who only heard of these Vines at the time the big bunches were produced, were under the impression that, as a whole, not more than a usual weight of crop for young Vines was taken off them; and even those who saw them in bearing at the time I speak of were liable to under-calculate the crop; for when whole houses of fruit exist, with most of the bunches running to 5 lb. or 6 lb. each, a cursory view is much more likely to lead to under-calculation of the entire weight than where there is a great number of small bunches.

As might be supposed, the Vines have ceased to produce anything like the size of bunches they did for the first few years of bearing. For two years they have been very much affected with mildew, last summer especially, so much so that the greatest difficulty was found in coping with the parasite; this, as a matter of course, reduced their strength. This season it again made its appearance, but the attack has been very much slighter.

Mr. Hunter is fertile in experiments in his Vine treatment. Last winter but one, in most of the houses, something like two-thirds of the spurs were cut clean out close up to the rods, few more spurs being retained than were intended to carry fruit. As a matter of course, if the shoots made from the remaining spurs had been stopped in the usual way, unless several from each spur had been allowed to grow, there would have been a deficiency of leaves on the Vines to keep them in a healthy thriving condition, and as Mr. Hunter's object was to throw all the strength possible into the single shoot allowed to remain to each spur, most of them have been permitted to grow unstopped right a-head across the house as far as they would: I measured many in July that had grown to a length of 8 or 9 yards each; the result is that these unstopped shoots are double the strength and thickness they would have been if so numerous and stopped in the manner generally followed. The spurs being so few naturally admits of the shoots being permitted to grow and overlap each other without undue crowding in a way not possible if the shoots were as numerous as under the usual course of treatment.

The next question that would naturally occur is, How will the bunch fare that is produced within a few joints of the bottom of each of these unstopped shoots? On comparing those on shoots suffered to run in the way described, with others on the same Vines that have been stopped to see what effect the treatment would have, I could not see the least perceptible difference, or that the bunch suffered at all by the unchecked flow of sap rushing past it. This, no doubt, is similar to what takes place with a young Vine first allowed to bear a few bunches when cut down within a short distance of the bottom of the rafter, and the leading shoot afterwards made above the bunches allowed to grow to the top of the house, or further; but there is a difference between a young cane bearing in this way and the shoots made from the side-spurs of an established Vine, which might be supposed to place the latter in a less favourable position; yet such is evidently not the case, as clearly shown by these Lambton Vines.

The experiment is a very interesting one, and can be carried out exhaustively in the roomy vineries at Lambton much better than in smaller houses. Mr. Hunter's object is to treat his Vines now, when they have arrived at the state that results in the production of smaller bunches, which always follows the first flush of vigour, so as to still enable them to make bigger bunches than they would if managed in the usual way; and, from appearances so far, there is every reason to expect that he will succeed. With the exception of one viney, that has suffered more than the rest from the mildew, the Vines—both those that had ripened their fruit and others coming on—were bearing very good crops, the bunches in most

cases large, with even big berries. The principal Muscat-house was near finishing a grand crop. Golden Champion was also very fine.

There has been a good deal said about an imaginary recent discovery in Peach cultivation on the extension system—a meaningless term as applied to this fruit. If there is anything new in covering a large space in a very short time, I think Mr. Hunter may claim to have equalled all that has yet been accomplished in this way. A Victoria Nectarine—an ordinary small plant from the nursery five years since, which was then planted in one of the houses—now completely fills an extent of trellis 36 feet in length by 14 feet in height, as good an example of quick growth as could well be imagined.

Mr. Hunter's seedling Pine, Lady Beatrice Lambton, is a variety that will produce large fruit from a very small pot; a plant I saw grown in a 9-inch pot bore a fruit 6 lb. 2 oz. Whilst I was there the foreman weighed the plant after the fruit was cut; it was just 8 lb., the soil and crocks 9 lb. 8½ oz. Comparatively large Pines are often grown in little pots, but I have not heard of anything to equal this.

The conservatory at Lambton differs considerably in form, and also in its internal arrangement, from any I have seen elsewhere. Some account of it has before been given in the pages of the *Gardeners' Chronicle*, but it is so different in its arrangement, and the plants grown in it are in such unusually beautiful condition—which state, next to skilful cultivation, is attributable to the construction of the house—that a few additional details may be of interest. In fact, I never enter any of the numerous living tombs for plants so often met with, miscalled conservatories, wherein everything has a struggle for life, but I think what a pity it was that the owners had not an opportunity of seeing and studying the appearance of a structure of a description like this, where everything grows in a way that it is a pleasure to look upon. No doubt the position in which a conservatory is frequently of necessity placed prevents its being so well suited to the growth of the occupants as could be desired, but the form and construction are often quite as much at fault. It is divided—one part kept at a greenhouse temperature, the other stove; the latter portion has the floor on a higher level than the cool end, from which it is reached by a wide ornamental iron stair; there is no centre stage in any part, but a low, moderately wide side stage runs round next the upright glass, which comes down low all round, sides and ends alike. It stands in the centre of, but high above, the principal range of fruit houses, and is completely away from everything that could keep out a ray of light. This admits of a much higher order of cultivation being reached with the plants grown than is possible in a house where there is less light.

Over the paths that surround the centre beds and separate them in the usual way from the side stages there are at intervals stout ornamental iron arches strong enough to carry on their tops large spreading plants, such as specimens of *Cibotium Schiedei*, *Cycas revoluta*, *Pandanus Veitchii*, or anything of a similar habit of growth. Plants like these require very large pots, but they are completely hid by the *Lycopodium*, *Ferns*, or other trailing subjects which are so managed that the big pots are hid by them. Large baskets suspended from the roof are freely used; these are filled with plants not usually grown in this way, amongst which may be named examples of *Eucharis amazonica*, 5 feet through, their thick broad foliage hanging down so as to cover the baskets; *Adiantum farleyense* and *A. gracillimum*, from 4 to 4½ feet in diameter. Medium-sized Palms, coloured-leaved *Dracenas*, and other variegated plants occupy the centre beds in the warm department, with flowering plants intermixed.

On the side stages the arrangement is similar; the whole of the centre beds, and the side stages as well, are covered with *Fittonia argyreaurea*, which grows to a height of about 12 inches. In this the other plants are plunged, so that their pots are all but hid. Climbers are sparingly employed, yet with the wide-spreading plants on the arches, and the numerous baskets in addition, an impression is given that there is almost as much growth going on overhead as there is on the level at your feet. An arrangement of this description is only possible where there is a full complement of light, as otherwise the lower plants would fail. The whole of the occupants present an appearance of healthy vigour such as is rarely seen in a structure where the general effect becomes a matter of more importance than the welfare of the plants in-

dividually. This applies equally to the soft, quicker-growing things that will not do if too much darkened by the growth overhead, as it does to the Palms and similar subjects that will thrive with less light.

I was under the impression that the injury done to outdoor vegetation in the Midland Counties last winter was greater than anywhere else, but this is not so. Several things have been destroyed or killed down at Lambton that I have not heard of being affected elsewhere. Common Yews, for instance, large and small, are either killed outright or cut down to within about 2 feet of the ground, where the snow, lying thickly on their bottom branches, seems to have so far saved them; hundreds of these that were 20 feet high are now sawn off at the height I speak of. *Cupressus Lawsoniana*, untouched in most places, are here many of them killed. Of *Pinus Laricio* some are half killed; *Wellingtonias* are so much injured as to be useless. Quantities of big old Thorns have great limbs destroyed, with the haws yet sticking thickly to the dead branches, just as they were when the frost set in. Apples and Pears in the kitchen garden are in some cases killed, and some have their heads destroyed half way down. It is singular to note the exceptional way, without any apparent cause, in which the plants have been affected, some killed, and others standing near them, under precisely the same conditions, little the worse. Apricots and Peaches on the walls are almost destroyed outright.

The many creepers trained to the lower part of the Castle walls, on the south side, and which added so materially to its appearance, are completely cut off, as also the whole of the long row of *Clematis Jackmanni*, that covered the palisading on the long walk dividing the flower garden, in front of the principal range of houses, from the fruit garden below it. In all, I understand, something like 300 cartloads of dead shrubs, of one sort or other, have been cut out, and yet with the thick clothing of Ferns that have sprung up, and the fine growth which the moist summer has enabled the trees and the uninjured shrubs to make, the gaps are scarcely seen. The frost has effected a thinning out, not done with that discrimination which could have been desired had it been possible to have had a choice in the matter. T. B.

FRUITS AND FRUIT TREES.

HOWEVER much people's tastes may differ as to the relative value of different fruits, giving the preference to some for their delicious sweetness and discarding others for their acidity, which to many palates is unbearable, it must be allowed by all that fruits, taken in the wide and popular sense, and preparations from fruits, as wines, cider, and the like, are very important articles in every climate on the earth, whether that climate be inhabited by savages or civilised men. But as a detailed account of all edible fruits known would be far beyond the limits of this paper and infinitely beyond my knowledge, I will speak here only of facts, principally from my own experience with trees and plants that produce valuable fruits within the limits of the land in which we live. In treating of these I shall, no doubt, touch upon the taste of almost all classes, for I can scarcely imagine any one so void of taste as not to be fond of some one or other of the various fruits, native and exotic, that British wealth and British industry have produced upon that small speck of earth marked upon the terrestrial globe as the British Isles. The immense variety in fruit must be borne in mind, for some are sweet, as the Grape and the Pine-apple; others are cooling, as the Peach and the Melon; whilst others have qualities more or less sweet, tart, or bitter, as the delicious Strawberry, the tart Gooseberry, the bitter Morello Cherry, and the various-flavoured Plum—for in this one genus, the Plum, there is a vast variety of flavour, from that of the Golden Drop down to the dark wilding that sets the teeth on edge, produced by the "Mother of Sloe" of feigning notoriety.

Before I enter upon the particular culture of any one fruit-bearing plant or tree, I must mention a few circumstances peculiar to all. First, then, it will be readily granted that fruits of all kinds are produced only in that part of the year when we have fine weather, and they never can be produced but when the atmosphere is serene, therefore anything that shelters or wards off the inclement blast must be highly beneficial in the culture of fruits. Thus the sunny side of a sloping bank sheltered by woods or by walls or any

other elevated structure, is well known to produce fine crops of fruit for years, whilst gardens exposed to storms, saturated with wet, and flat or, worse, sloping to the north, always have late and uncertain crops, the fruit never so highly flavoured as those on which the sunbeams fall with their treasures of light and heat. It is therefore evident that we must first select a suitable locality, and mend or patch it as much as we are able, for the climate wherein we expect fine fruits to ripen is got by husbanding the sunshine, and barring out the storm and pinching cold. Shelter is the very soul of the culture of hardy fruit. Sun and rain and fruitful seasons are kindly sent us by the Giver of All Good, and there is but little left for us to do, but that little must not be neglected, and shelter is certainly one of the items which it falls to our lot to supply.

At the ground level the collar of the plant is fixed by Nature, so that all fruit-bearing plants must have a medium or bed or border wherein the roots may actively extend and feed, and this earthy bed is no less necessary than the fine-weather medium, for the tree requires the combined efforts of earth and air to develop itself. The earth must be trenched and otherwise improved before we can reasonably expect to succeed with the fruits of a rich land and a southern clime. Deepness of earth seems essential to many fruit trees and fruit-bearing plants, provided always that the mass of earth can be warmed to the bottom. On the other hand a deep bed of cold undrained clay is the bane of all fruit culture, yet when clay or common brick earth has been laid in high ridges as if hung up to dry, thereby obtaining a larger share of the influences of sun and wind and a less amount of water, it gets changed into the new character of maiden loam, for it has never borne any crop, therefore we must not condemn clay until we see what it can do for us. In the drought of summer the roots pry deep into the subsoil in search of food and moisture, for, like frogs, they are as fond of water as of dry land, and when the elements of growth are forthcoming we see the effects in foliage and in short-jointed wood, and in plump buds faithfully promising a future reward.

Where the soil is too shallow for the growth of fine fruit trees let one space of 12 feet wide be marked out, and let 6 feet on each side be laid on the 12 feet; this gives the ridge, that perhaps was only 1 foot deep, a depth in the middle of nearly 3 feet, for the ridge must be like a span-roof or the roof of a haystack. It will be evident that land for an orchard thus treated will be, in the first place, thoroughly drained, for the water cannot lodge on sloping ridges, and the earth being laid so as to face the sun at a better angle, makes the best use of the sunshine for the benefit of the crop.

Now we are well aware that when cuttings are to be struck, they require more or less of bottom-heat, and that Pine-apples, and what are termed bark-stove plants, cannot be grown to perfection without warming the soil in which their roots are placed. Superior culture, therefore, demands that not only should the air be warm, but likewise the earth, whence the feeders draw their supplies; and thermometers placed at different depths tell clearly where the warm healthy medium is to be found, for the earth varies very little in its wintry time from what it did in the long summer days at a depth of only 1 foot. Few persons take into account the life underground of trees and plants, and how the delicate white spongioses extend their sphere of action, and that against fearful odds, not only to cater for the fruit, but also to extend the tree; for, as it grows upward, it has to send its roots abroad for support against the leverage that would otherwise pluck it up by the roots. Even common crops in the ordinary routine require good earth and good air to develop their character, and our climate is often pinched for sunshine, and rather too plentifully supplied with rain in the growing season. Now, although we cannot control the sun, nor lessen the rainy cloud, we can certainly open a sluice for the rain, and thus hurry it off into the sea. I know soils or rather clays that were only brick-earth a few years ago, and when I last saw them the crops were thriving on their sides, and they had been cast in high ridges with a row of Apple-trees along the centre of each.

A few practical points being attended to, fruit trees will flourish in almost any soil in the southern counties of England, and even in Scotland the Carse of Gowrie was famous for its Apple-trees many years ago. The common Scotch Fir and the Spruce Fir skim the hill side for the thin layer of sandy peat, thereby

showing us what we have to do with fruit trees and fruit-bearing shrubs; if we cannot give them the long range of the Fir tribe, we can give them depth nearer home. I know not who told the Vine at Lady Clarke's that there was an Asparagus-bed across the walk from the Vine border, but it found the hidden treasure, and used it to advantage. Wonderful tales are told of the Hampton Court Vine and others, that are said to refresh themselves in the fat earth of a common sewer, but these imaginary Vine borders are getting out of date, and practical gardeners deal in sweeter materials than sewage, and show at exhibitions what they can do with bone manure and turfy loam well managed.

The Vine being a native of a warmer clime than ours, must have a warm earthy bed, at least as good if not better than that which it enjoys under its native skies. Here, I would beg leave to state, that although the Grape Vine is generally considered an indoors plant in this country, I have seen it bearing heavy crops of well ripened Grapes—Black Esperione—against the gable of a dwelling-house in the kitchen garden at Kensington, without any other assistance than good shelter, dry rich soil, and the warmth from the fireplaces in the dwelling-house against which it grew. A baker at East Barnet had a Vine planted against the wall where his oven was placed, and this Vine bore good fruit every year. As the Vine is propagated easier than most plants, by cuttings, and even by buds or eyes, persons similarly situated may put in a rod or cutting against a south wall, and especially where artificial heat can be got; and as the experiment costs little, there need be no hesitation about giving it a trial.

Before I enter upon the particular details of fruit trees, I must mention another circumstance connected with their health and well being; and that is, manuring where the roots are confined, or the ground impoverished, to enable them to mature their fruits. The London nurserymen used rotten dung freely with their young Peach and Nectarine trees, although the soil of Brompton and Kensington were excellent for fruit trees of all kinds, but it is well known now that for Vine borders bones are more to be relied upon than vegetable manures. Forty years ago we were told of isolated cases where a dead horse or ox had been buried near some Apple and Pear trees, and the fruit was abundant and fine, for the agricultural interest has scarcely realised the fact of the immense value of bone manure and other offal. The theory was correct, but the application was wasteful—to bury a whole carcase in a pit, instead of cutting it up and dispersing it over an orchard. A cubic foot of earth in a flower-pot I reckon will yield nourishment to a Grape Vine in an orchard-house or vinery if aided by the addition of concentrated manure. This artificial aid gives us the means of covering fruit-borders as well, and that in a way hitherto impossible, for although it may be easy enough to roof over a narrow fruit border, it becomes unreasonable when tried on a large scale. The young rooks may be rocked on the tree tops, and feel at home, not so the Peach tree in bloom, for it is with it like the motto on the monk's dial: "I only count the hours that are serene." The impregnation of fruit trees requires halcyon days, for their blossoms are as fragile as the butterfly, and more ill-fated, for they cannot flee away from the tempest, but only fold their rosy petals over their tender brood, and suffer.

The little that we are left to do in the production of fruit, therefore, is to husband the sunshine, to hold up the face of the earth to the influence of the sun, and spread out the branches of the trees for the same purpose; and with these precautions fruit growing becomes less precarious, for, as Dryden has it, when we do our part, "the Bank above must fail before the venture miss."

The Apple is truly an English fruit tree, and when we look at the sour Crab in the hedgerow, and see what a polish it has taken to arrive at a Ribston Pippin, we may well feel proud of our success in improving our native fruits. Apple trees do not descend by seeds from sire to son, but in this way produce a motley group of varieties "crying back" even to the original Crab. The best Apple trees are usually grafted on the Paradise stock, or, better still, on the Crab stock, which endures the longest. In a garden Apple trees should never exceed 9 feet in height, and they should be planted along both sides of the principal walks, and trained so as to form an arch overhead, thereby utilising the walks that would otherwise produce only weeds and mud. I need scarcely remark that Pear trees, Plum trees, and

Cherry trees may be grown in the same way, and soon become strong enough to support themselves. The divisions between one man's garden and another's might be a fruitful hedge of Gooseberries, Raspberries, even Barberries—such might be made a source of income to both; even Rosemary and Lavender would be preferable to the common Whitethorn, which has little to recommend it besides its prickles. A glance at the market gardens of Middlesex would undo many a crotchety about cropping a fruit garden. Look at the Lancashire Gooseberry growers; they are no gardeners, but yet they excel in a few things, although their ordinary avocations give no clue to their fancy, for they are tailors, coopers, millers, shopkeepers, shavers, and the like, who study the nature of the fruit or flower they wish to grow, and treat it kindly by giving it food and shelter, and watching its progress, its health, and its wants; and this after all is fruit-growing, although on a limited scale. Even failures teach by experience as much as the sight of success.

For example, pruning is of no use unless there be excess of wood, and whittling at a fruit tree to make it fruitful is but a sorry cure for a deeply seated malady. The more good leaves that mantle the tree, the more good fruit will follow, for in the axil of the leaf the future bud is nestled, and the fine plump blossom-bud could never be produced but for the healthy action of the leaf in whose bosom it lay. In order to show the importance of a leaf, I have taken a Cucumber leaf and grown it into a perfect plant, thereby showing the power of the leaf; yet the tree crowded with leaves is grievously at fault. A fruit tree, therefore, should never have a leaf for which some good reason cannot be given. Prune the roots as well as the tops, and unless wanted cut them off, that they may not rob the system. Much has been said about spurs or short twigs of the previous summer's growth; now I never met with a two-year-old bud alive, for the fruits of one year are the savings from the labour of the last, and when the bud is sealed up in autumn the leaf, having no further duty to perform, disjoins itself at the footstalk, and falls to the earth from whence it rose. The Cherry and Plum having gummy sap should have very little cutting done about them in any way, and the buds that are misplaced should be broken off early with the finger and thumb, thus saving them from gumming and bleeding to death. The common Raspberry cane is not to be despised, for it does its work right well, and dies, leaving us to bury the dead and to support the living. There is no science needed with Raspberries.

The Fig tree bears fruit and does well in the southern counties, but it is generally barren from bad management, but let it get a place under glass, and then it tells what it can do. The Walnut is really a fruit tree, although not a garden tree; and some say that it is best to beat it well with sticks to make it bear fruit, but every bud thus broken counts one less in the next year's chance of Walnuts. The Filbert in Kent is an important bush, and delights in the chalky soil there; it is usually pruned to look like a large Gooseberry bush. The Medlar and the Quince are only grown in large collections; and as for the Mulberry its time seems only coming yet, for it is a sure cropper and is usually productive, requiring grass or straw to keep its falling fruit clean for the table. *A. Forsyth.*

WOOD PAVING AND SCAVENGERING. — Mr. Weaver, the surveyor of the parish of Kensington, says, in a report on wood paving:—"The advantages of wood paving—its appearance, cleanliness, comfort, quietness, &c.—need not be dilated on, but I would direct attention to one point—viz., scavengering. Proper attention to this one work is of the utmost importance to a wood-paved road in order to insure cleanliness and safety in travelling; but whilst this work involves a greater outlay for labour than a macadamised road, the refuse swept off is very much less, and easier to get rid of. The committee are well aware of the increasing difficulty of getting rid of the road slop, especially in the south district of the parish; while, on the other hand, there will, I believe, be but little difficulty in disposing of the sweepings off wood-paving. The refuse from Brompton Road now fetches £5 per barge-load, or a net profit of £3 per barge, after deducting expense of loading same. It will not, however, be fair to assume that in the future such a price would always be obtainable, but there can be no doubt that the refuse from wood-paved roads will always be more readily disposed of than macadam slop. At the present time, while the former commands £5 a freight, the vestry has to pay £5 a freight to get rid of the latter, and this proportionate cost of disposal will, I have no doubt, hold good in the future."

Home Correspondence.

Early Louise Peach.—The Early Louise was one of the first early seedlings raised here, and a great advance in early maturity was marked by its advent; it has not been claimed as a plant of the first water, and it does not rival the Noblesse in flavour, but half a Peach is better than none, and if in a cool orchard-house the season of ripening can be extended by a month then there is something gained. I have the Early Louise growing as an untrained standard, as a trellis tree, and as a pot tree; in each and all these conditions the fruit is fair-sized, very juicy and good. If allowed to remain on the tree too long, the fruit, like that of other Peaches, will become woolly; owing to the great tenacity with which the fruit-stalk adheres to the branch, it is very possible that in some instances it has not been gathered early enough. Prince of Wales is a large and high-coloured Peach, but the standard of flavour is not good enough. Princess of Wales is worth planting in any house; it is more productive than Walburton Admirable, and in size and flavour leaves nothing to be desired. *T. F. Rivers, Sawbridgeworth.*

—Mr. Bréhaut's remarks anent this subject in your last issue I have read with interest. Four or five years ago I remember writing a notice in the "Home Correspondence" disparaging Early Louise and lauding Hale's Early. The only reasons I can imagine for our difference of opinion and experience are the Guernsey sun and climate or peculiar treatment. What do English growers think about Early Louise? What does Mr. Coleman think? What Mr. Bréhaut says anent Early Rivers Peach I reiterate. Early Beatrice verily is only medium size, but, as Mr. Gilbert says, we cannot do without it for the very first crop, unless the Alexander, which I have never grown, is earlier and better and as good a cropper. *W. Carmichael, Bury St. Edmunds.*

The Plague of Wasps.—The severe winter, while it killed most of our green stuff, seems to have fostered and multiplied in an extraordinary manner all sorts of garden pests. Slugs have flourished, caterpillars abounded, and now the air seems literally filled with the presence and buzz of wasps. Our Gooseberries are more like bee, or rather wasp, hives than aught else, and it is trying to see the fruit saved for late dessert shelled clean out by thousands of hungry wasps. We are hunting for and tarring the nests daily, but it seems to make but little impression, and to-day we were told of fifty nests within a radius of a few acres. Last summer the wasps were few and weakly; the winter, it was hoped, would have made an end of them almost, but instead of that here we are in the thick of the worst plague of wasps I have ever seen or heard of. *D. T. Fish.*

Dahlia coccinea.—This superb little Dahlia is now in full flower with us, and will continue to be so for some time to come. It is a single flower, of rich dark crimson, with a deep yellow centre, which renders it a singularly attractive plant for beds or borders. Small plants of it propagated in the spring are now nearly 3 feet through and nearly as much high. With us it is a free grower, but the soil is both rich and deep, resting on a gravel bottom. I am disposed to think the variety requires extra generous cultivation in order to have it at its best. *W. Hinds.* [A figure of a fine variety of this Dahlia is published in the *Florist* of last month. *EDS.*]

The Pea Thrips.—I am surprised to find that this pest, described and figured at p. 206, by "I. O. W.," is supposed to be a new species [new to science], as I have been quite familiar with it for the last ten or twelve years. Some seasons, more particularly the summer (so called!) of 1879, it did a great amount of mischief, completely stopping the development of the pods, and causing the tops of the shoots to grow into a confused mass of contorted foliage. Its economy, as described by "I. O. W.," agrees in every respect with my own observations. I have always seen the "few, black, fully-winged specimens" present, and have little doubt that they will prove to be the males. Last year its ravages continued until the middle of September. I have heard of a solution of Gishurst Compound proving effective in destroying it. *Robert Service, Carberry Nurseries, Maxwellton, Dumfries.*

Ouvirandra fenestralis at Purdysburn.—Having heard that the accuracy of my description of the *Ouvirandra fenestralis*, published some time ago, has been questioned, I by same post enclose you a leaf from the plant described. I may state that the leaves this year are considerably less than they were when I wrote about this plant before. There are now at the same place—Purdysburn, Belfast, the seat of R. H. Batt, Esq. (gr., Mr. Young)—two plants with several leaves larger than the one sent you. These plants are grown in tubs, under the stage at one end of the Orchard-house, where the light is subdued.

Rain-water only is used, and the only thing Mr. Young does is simply to overflow the water every day. I think you will agree with me that they are grand examples of cultivation. [The leaf received is 14 inches long, club-shaped, and $6\frac{1}{2}$ inches in width at the widest part.] On the same estate are some splendid beds of Clematis Jackmanni over 16 feet in diameter. These plants are allowed to ramble at will, and grand they look. Tuberous-rooted Begonias are also used extensively for bedding, and I am pleased to say I was most agreeably surprised to see such a fine result, the flowering qualities being everything that could be desired. Lilium auratum is to be seen here planted in several exposed situations, and some single bulbs have upwards of sixty flowers. A grand effect is produced by the mixing of Lilium auratum with L. tigrinum, both flowering very freely. In the Orchid-house are some grand plants of Disa grandiflora superba. It succeeds marvellously well under the skilful management of Mr. Young. Cœlogyne corrugata was also flowering very freely, and as seen here is worthy of a place in the most select collection of Orchids, being a charming flower for bouquets and buttonholes. Cattleya Leopoldii is also finely in flower in the same house, and is a fine showy Orchid. *A. Outram.*

Crawford's Early Peach.—From what I have seen of this fine Peach in the garden of the Rev. L. D. Damer, the vicar of this parish, I am inclined to think it is one of the finest Peaches in cultivation. It is a handsome fruit, with a tinge of orange in the flesh, very sweet, and altogether a most desirable variety for open walls where the Peach will at all succeed out-of-doors. The conditions under which the tree in question is growing in the Vicar's garden is worthy of comment. It occupies a south aspect, and is planted in a narrow border not over 18 inches wide, and barely as much deep; the soil is light and gravelly, and there is no further scope for the trees' roots to travel in unless they penetrate a gravel walk which margins the border. Another peculiarity in the system of cultivating the Peach in this garden is that no breastwood is laid in before the middle or end of September. When it was laid in earlier in the season, and according to orthodox principles, no Peaches were forthcoming; but as soon as the young shoots were allowed unbridled liberty until late in the autumn, they bore fruit the following year. Such examples of fruit as I saw upon this tree but a few days ago are not to be met with every day in gardens of greater pretensions; each fruit I am sure would weigh $\frac{1}{2}$ lb., and was well proportioned and coloured. *W. Hinds.*

Potatos.—We have just passed through a week of glorious weather that has been productive of enormous good to the Potato crops, swelling up the tubers at a great rate where the foliage is yet vigorous. This is the case here with nearly all the later kinds, although there are few that do not show the fungus spot in the leaf more or less. To be enabled thus fully to utilise all the benefits accruing to the crops proceeding from such weather represents far more value than can result from any hasty pulling of the haulm and thus depriving the tuber of further possible help. I thought this sort of thing was run mad when I saw the other day a man cutting the haulm from off a patch of Champions that were green and full of growth. This is indeed cutting off one's nose to spite one's face. Determined thoroughly to test the value or otherwise of this practice of pulling or cutting off the haulm, I had, just as the spot appeared in a large piece of International Kidney, the tops pulled from several rows of 50 feet each, and cut from several other rows. As the piece will not be lifted for a couple of weeks it will allow a month for the experiment fully to operate. It is but fair to say that here disease is little found, probably not 2 per cent., the worst being where some Potatos were grown in a piece of stiff clay land deeply trenched last winter, and here the soil is so adhesive that every tuber has to be rubbed through the hands to free the clay from it, and yet though the sorts are Woodstock Kidney and Lapstone the diseased are but very few indeed. In this locality, curiously enough, I hear of disease only in the Early Rose where grown in moist land, but not a mention has been made of disease amongst the Regents, and large breaths of these, Victorias, and Magnum Bonums, look as green as grass. With respect to this latter kind, would it not be well, before exclaiming "Magnum Bonum is already gone," to wait and see whether the tubers are, as well as the foliage? That the leaves will decay with the fungus there is no doubt, but the stems resist for a long time, and as long as they remain green the tubers are safe. The attack this and other kinds had to contend with last year was far more destructive than in the present one. The feature to which Mr. Rust refers in connection with the old sets is nothing remarkable; it is, indeed, very common this year with all kinds. I have dug up plenty of old sets quite hard, but of course divested of fertility. Since I last wrote we have been further engaged in lifting from the trial rows, and find the crop still a

splendid one, many sorts showing unusual excellence. Thus the American Purple Kidney has come out wonderfully good, showing great beauty, and an immense crop. This kidney quite excels all purple kidneys as a cropper or for beauty. Woodstock Kidney gives a good even sample, but not large; it has fruited enormously this season, and the apples lie in the ground literally in bushels. If the bloom had all been gathered no doubt the root-crop would have greatly benefited. Blanchard throws out a very handsome clean crop, and Bedford Prolific a very fine one, many samples remarkably clean and good. King of Potatos is a splendid crop. I had sent me a few

beyond all precedent, and the crop of tubers is very fine, though not so pretty as in some past seasons. Early Purple is a pretty pebble-shaped, pale-coloured kind that turns out a wonderful root-produce and some handsome samples. Scammell's Glory is also very good indeed. This is a record of the results of the past week's liftings, and may be read by other growers with some interest. About a dozen later kinds have yet to be got up, several of which, I trust, will see daylight during the coming week. *A. D., Aug. 15.*

—Referring to the note of your correspondent, Mr. Sumner, on the subject of Potato disease, and the propriety of cutting away the haulm



FIG. 52.—NEW VARIETIES OF COLEUS. (SEE P. 279.)

years since a Potato under the name of Advance. It was claimed to be a seedling from Victoria. I have conclusively proved that it is King of Potatos only, but a fine stock. Bountiful gave a beautiful produce; of course not large, but a wonderful quantity. Covent Garden Perfection gives this year good-sized handsome samples, and a capital crop, better than Ice Cream, a dwarf kind, having long white tubers, but a moderate cropper. Cosmopolitan, one of the seedlings out of Success x Woodstock Kidney, has not discredited its fine name. It is a grand kidney, having in combination all the properties of International and Woodstock Kidneys. Trophy was this year, as a rule, ungainly, big handsome tubers the exception. The crop was enormous. Rector of Woodstock has given a capital clean crop. Scotch Blue made growth

on the first appearance of disease, I beg to say that I have advocated this practice over and over again since the second year from the appearance of this strange scourge. I hardly agree with Mr. Sumner as to the indications of the disease manifesting themselves by the leaves turning yellow on the lower branches of haulm. I never saw any such signs, but I fully explained my views, as resulting from deep study of the subject, and the experience of years devoted to it, in a letter you were good enough to publish, addressed to you by me four or five years ago. I cannot remember the exact date, but doubtless one of your officials can turn to it, and you will find that it so fully embraces the whole question, that I trust that you will reprint it. We shall never be able to prevent the disease, but we way do

much to save the loss of crop; and now that there seems to be an increasing prevalence of faith in the cutting down of the haulm, it is most important that all who have influence should exert themselves to spread this gospel for the salvation of millions sterling. I have my own disciples scattered over the land, but it is painfully disheartening to find how even the educated in a few months forget the preaching and teaching they have received, and scarcely ever do they cut off the tops early enough. They say they could not spare men to raise the tubers, when in truth the tubers need not be raised at all. By far the best course is to reap the tops off and leave the stumps to bleed away the sap and ripen the tubers, which may with advantage be left as long as convenient. I have preached all this for years, and few there be to heed, until at last a Frenchman suddenly puts forward the same views as his discovery, and fortunately he has arrested attention. My dear sir, do you, I pray you, strive to keep the stone rolling. *Arthur Sarjeant, The Ferns, Weybridge.*

— In your issue of the 21st you state, upon the authority of Mr. W. G. Smith, that a new form of disease has broken out on the Champion Potato [see p. 264. Eds.] This Potato has been spoken of in such glowing terms as a disease-resisting sort, and such quantities have been sent to Ireland to plant upon that assumption, that I expected upon digging mine to find the crop sound, but, to my great surprise, upon taking them up on Saturday last (the 21st inst.), I found nearly the whole of the largest tubers very badly infected, so much so in fact that I sent in the whole of them to be used up at once. Lest it should be thought that mine was not the true Scotch Champion, I may state that the seed was purchased from Sutton & Sons—a guarantee, to my mind, as to its being the correct sort. They were planted on high and dry ground, which is here very light and sandy in places, being on the Bagshot Sand formation. The growth was very vigorous, each top being a faggot in itself. They were planted 3 feet 6 inches apart between the rows, and 18 inches between the sets. They had no manure at planting time, only a little soot and fine ashes drilled in with them. This was to my mind a fair trial, and I have concluded to plant no more Champions. Yesterday (the 23d inst.) I commenced to dig Sutton's Magnum Bonum. The crop is splendid, and we have not found one diseased one among them. This is the sort that should have been sent to the Emerald Isle. *Robert Lloyd, Gr., Brookwood Asylum, Woking.*

— The day after I wrote you last the disease showed itself on the Champions in my garden, and it is now, alas! fully established. On the 21st I saw it for the first time on the Champions in my field. The Skerry Blues alongside are as yet unaffected. *J. A. C., Northfield, Annan, Aug. 23.*

Salvia patens and Victoria Aster.—Perhaps no piece of summer bedding in our flower garden is more effective than a composite bed of *Salvia patens* and *Victoria Asters*. I do not know whether the experiment has been tried before; it happened almost accidentally that we planted them together. The bed was originally intended to be *Salvia patens* alone, but fearing, from the appearance presented in early spring, they would fail to fill the bed up by the time summer came, we planted *Asters*. The bed is now well filled up; *Asters* raising their heads amongst the spikes of *Salvia* produce a distinct and pleasing effect. *D. C.*

Cucumber Paragon.—I cannot but answer Mr. Gibbons' inquiry, for I am sure if he has got the true *Paragon Cucumber* (Kelway's) he would not condemn it. I have since May been cutting very fine fruits of *Paragon*, and am sure at the present time it is a remarkably productive, handsome, and distinct *Cucumber*, with scarcely any neck, and averaging from 18 to 24 inches in length, slightly spined, with very good bloom; and, I may add, I do not know of a more handsome *Cucumber*. *J. Vert, The Gardens, Audley End, Saffron Walden.*

Grape Alnwick Seedling.—I bought this Grape of Mr. Williams, and planted it in a late house. This season it showed four bunches, but guess my disappointment when I say that not one berry has set. The fault cannot be mine, for there are some eight or ten different kinds of Grapes in the same house, and not one has failed. Let us have no more new Grapes till Mr. Barron has them first to prove at Chiswick—there they can be seen and fairly proved. *J. Rust, Eridge Castle.*

Peaches.—I overlooked "J. C. F.'s" enquiry about Prince of Wales Peach at p. 180, but noticed Mr. Carmichael's remarks at p. 215. I have not experienced the peculiarity about it Mr. Carmichael speaks of, viz., dropping three-fourths of its fruit whilst stoning. I have a tree here on the back wall of a lean-to cold house, S.S.W. aspect, which covers an area of 200 square feet, and is now ripening off 175 average good fruit. It carried a corresponding crop last year. In three Peach-houses here, inter-

mixed with Nectarines, we grow Acton Scott, Early Crawford, Royal George, Barrington, Walbourn and Late Admirable, and Lord Palmerston (a coarse fruit), and I place as much reliance on His Royal Highness for a crop as on any of the set. It is not as handsome as some other Peaches, neither is it so well flavoured, but with me it is a thorough good mid-season fruit. If "J. C. F." will send me his address I will send him a sample of fruit of Prince of Wales, then he can judge for himself. *James Fitzpatrick, Treborth Park, Bangor, North Wales.*

Moisture-Loving Hardy Plants.—The undulating character of our bog affords varying conditions of moisture, and gives means for meeting the requirements of a correspondingly greater variety of plants than if it were on the general level. It is dug out to the depth of 3 feet and filled in with leafy peat soil, river sand, and road scrapings. The following is a list of plants which are doing remarkably well in it:—

In the Wetter Places Grow—

<i>Hieracium aurantiacum</i>	<i>Xerophyllum aspidodeloides</i>
<i>Centiana bavarica</i>	<i>Pinguicula grandiflora</i>
<i>Gentiana zosteria</i>	<i>Lobelia fulgens</i>
<i>Hibiscus palustris</i>	" <i>igneae</i>
<i>Comarum palustre</i>	" <i>cardinalis</i>
<i>Athyrium filix-femina</i>	" <i>syphilitica</i>
<i>Helonias bullata</i>	<i>Epilobium hirsutum variegatum</i>
<i>Lythrum virgatum</i>	" <i>diocia</i>
" <i>Salicaria</i>	<i>Valeriana Phu aurea</i>
" <i>diffusum</i>	<i>Primula involucrata</i>
<i>Parnassia palustris</i>	" <i>farinosa</i>
" <i>fimbriata</i>	

In Drier Parts Grow—

<i>Antirrhinum asarina</i>	<i>Lepigonum rupestre</i>
<i>Androsace lactea</i>	<i>Mazus Pumilio</i>
" <i>Lagerei</i>	<i>Marshallia cuspidata</i>
" <i>carnea</i>	<i>Mimulus cardinalis</i>
" <i>Vitaliana</i>	<i>Mitchella repens</i>
<i>Arnica montana</i>	<i>Monarda fistulosa</i>
<i>Bryanthus erectus</i>	<i>Pachysandra procumbens</i>
<i>Callixene marginata</i>	<i>Pratia liliifolia</i>
<i>Calopogon pulchella</i>	<i>Pulmonaria mollis</i>
<i>Camassia esculenta</i>	" <i>rosea</i>
<i>Chelone obliqua</i>	" <i>azurea</i>
<i>Chrysobactron Hookeri</i>	<i>Rudbeckia californica</i>
<i>Claytonia sibirica</i>	<i>Salix herbacea</i>
<i>Cypripedium spectabile</i>	" <i>lanata</i>
<i>Leptocilla intricata</i>	" <i>reticulata</i>
" <i>diocia</i>	" <i>serpyllifolia</i>
<i>Lisimachia verticillata</i>	<i>Saussurea alpina</i>
" <i>clathroides</i>	<i>Saxifraga peltata</i>
" <i>punctata</i>	<i>Smilacina racemosa</i>
<i>Nierembergia rivularis</i>	<i>Soldanella Wheeleri</i>
<i>Phyteuma Sieberi</i>	" <i>Clusii</i>
<i>Primula Munroi</i>	" <i>minima</i>
" <i>sikkimensis</i>	" <i>alpina</i>
" <i>japonica</i>	<i>Sibthorpia europaea variegata</i>
<i>Rhexia virginica</i>	<i>Svertia perennis</i>
<i>Spigelia marilandica</i>	<i>Symplocarpus foetidus</i>
<i>Sanguinaria canadensis</i>	<i>Thalictrum adiantifolium</i>
<i>Salvia Heeri</i>	<i>Thymus patavisus</i>
" <i>gesneriflora</i>	<i>Trientalis americana</i>
" <i>coccinea</i>	" <i>europaea</i>
" <i>Grahami</i>	<i>Trillium erectum</i>
<i>Senecio artemisiifolia</i>	" <i>sessile</i>
" <i>Kempferi</i>	" <i>grandiflorum</i>
<i>Spiraea venusta</i>	" <i>erythrocarpum</i>
" <i>palmaria</i>	" <i>cernuum</i>
" <i>Filipendula</i> , fl. pl.	<i>Uvularia amplexicaulis</i>
<i>Dodecatheon Jefferyi</i> var.	" <i>flava</i>
" <i>Meadia</i>	" <i>perfoliata</i>
<i>Dichondra sericea</i>	" <i>puberula</i>
<i>Gentiana affinis</i>	" <i>sessiliflora</i>
" <i>lutea</i>	<i>Veronica gentianoides</i>
" <i>verna</i>	" <i>repens</i>
" <i>Frœlichii</i>	<i>Vernonia praealta</i>
<i>Globularia nudicaulis</i>	" <i>noveboracensis</i>
" <i>trichosanthes</i>	<i>Wullenia carinthiaca</i>
<i>Gaultheria procumbens</i>	<i>Zygadenus chloranthus</i>
<i>Houstonia cœrulea</i>	

T. D. H.

Hardy Flowers.—Those who desire to be in the fashion and have a show of hardy flowers next year, cannot do better than take note of such things as please the eye of fancy, now that there is an opportunity of inspecting gardens in full flower. I am not reputed in certain quarters for a very deep knowledge of hardy flowers, but the following simple list may be relied upon as proving satisfactory in most cases:—First upon my list (which includes no weeds) must be *East Lothian Stocks* in purple, scarlet, and white. The seeds should be procured early in the season, and raised upon a slight hotbed, and from thence transferred by stages to the open garden, where they will make a grand show from July and onwards. They are generally appreciated as cut flowers, and universally so as border decorative subjects. Their somewhat stiff erect habit renders them rather difficult to deal with in a cut state, but they may be made to answer certain purposes by using the small pieces with good spikes of *Mignonette*, &c. (*Enotheras* are also lovely border plants, grown exactly in the same way as the foregoing. We have rather a pleasing show of them at present, with two colours of flower growing upon the same plant, viz., pure white and creamy-lilac. I wonder if the change of colour is brought about by age, which appears likely, as all the plants in different parts of the garden are behaving the same. The next plants upon my list must be the charming varieties of named *Pentstemons*, which are certainly the most showy and attractive class of hardy plants that any one can grow. *Lustre* is an exceedingly pretty variety, and a few others are *Delicata minor*, *Princess Louise*, *Dr.*

Hogg, and *Mrs. Wheeler*. There is yet another plant which I think a great acquisition for front lines of borders, namely, *Gladiolus insignis*, and it is also a charming thing to cut from, and to my mind quite eclipses in beauty many, if not all, of the large show varieties. During the month of July we had two varieties of hardy annuals in flower which deserve especial commendation. These were *Collinsia bicolor* and *Browallia elata*. The former was sown in dots in the hardy garden, and produced a display of the most *richeste* description. Of herbaceous plants the white *Everlasting Pea* (*Lathyrus latifolius albus*), *Lobelia syphilitica*, *Alstrœmeria brasiliensis*, *Monarda didyma*, *Tritomas*, and *Anemone japonica alba* are in flower just now, and are showy plants for groups, or for the mixed border. *W. Hinds.*

Castle Kennedy Fig.—It is now some twenty years since Mr. Rivers, of Sawbridgeworth, and Mr. Thomas Osborn, of Fulham, gave this Fig a certificate at the Pomological Society's meeting, they two being the only members present, the one acting as chairman, and the other as secretary. Although they have both passed from amongst us one is thankful that amongst other good works they passed this Fig, for it is a noble fruit and useful. Like your correspondent, Mr. Ward (p. 246), I have had some fine fruit all through the month of August half as large as my fist (not a small one), and very excellent they have been. This is clearly an August Fig, while many of the other kinds fruit in September. Although I strongly recommend this Fig out-of-doors, if any one were to ask my advice about planting it indoors I should say Don't, for it would soon fill a barn. In nine cases out of ten our fruit tree borders are too rich for Figs, thus inducing them to make strong wood, and, what is worse, late growth and badly ripened wood. Then when followed by such a terrible winter as the past the result is faggots of dead wood in the spring. I saw what most clearly exemplified this in July last at Frant, a neighbouring village, some 600 feet above sea level. There is a Fig tree in a very exposed place (a standard) with not a single branch injured by frost, and literally covered with fruit; while gardeners around, myself amongst the rest, were cutting out dead branches from our wall trees. *J. Rust, Eridge Castle.*

New Coleuses.—Their name is legion, and while many are dull-looking and uninteresting, and there is a tendency towards sameness in many of the named varieties, there are others which are really distinct and beautiful. Those represented in the annexed woodcut (fig. 52, p. 278) are of this better character, and are a second selection sent out during the present season by Mr. Bull, of Chelsea. One called *Amazement*, a curiously laciniated form, chocolate and maroon-crimson, is shown at the upper left-hand corner. Brilliant stands opposite, and is crimson-lake shaded with maroon, the edges being deeply toothed. Captivation occupies the lower right hand corner, and has a sulphur-yellow centre with bright green markings, the sulphur just flushed with rose, and the green slightly reticulated. Above it is *Cherub*, with small pectinately toothed leaves of a pale reddish-maroon, the ribs darker maroon, and the toothing yellow. The handsomest of all, and a very charmingly coloured sort, is shown in the lower left-hand figure; it is named *Chelsea Beauty*, and has deeply and broadly toothed leaves, the midrib and principal veins of which are bright crimson-lake, between which lie blocks of rich velvety-maroon extending half-way up the teeth, which along this part are bordered with white, the tips being green and forming a pretty outer fringe. It is by no means a rank growing variety, and therefore all the more desirable. *M.*

Brompton Stocks, &c.—The past two winters, which have been so destructive to the *Scarlet Brompton Stocks*, have largely spared the *Giant White Brompton*, which seems to be hardier, although of precisely the same habit. One peculiarity, however, marked a quantity that bloomed early in the summer. It was that whilst not a plant gave double flowers quite 80 per cent. had semi-double blooms, or those which had from six to eight petals—in fact, so double that for some time I had grave doubts whether they would seed at all. Now, however, they are laden with quite monster pods, and I have no doubt the produce will be a very large proportion of fine double flowers. This feature was found only where a portion of plants were most exposed to the weather during the winter. Many persons lament the gradual disappearance of the *Scarlet Brompton Stocks* from our gardens, the best reason for this is found in successive hard winters. This Stock is such a grand fellow and such a beautiful border flower, that a little special protection in winter is well bestowed upon the plants. That the present is a good season for annual Stocks there can be little doubt. I have never had the beautiful *Mauve Beauty* in finer form than this year, every double plant throwing up a splendid pyramid about a foot in height, and grandly massive; and, indeed, this remark applies to all tender annuals, such as *Marigolds* and *Asters*, &c.;

also to *Antirrhinums*, which from seed sown in February without heat, are now in most beautiful bloom, the colours wondrously varied and pleasing; indeed, it would be difficult to find any mass of flowers more pleasing to look upon than is a large bed of these *Antirrhinums*. Balsams are glorious in the open ground, and I have had to go through the plants and thin out all young side shoots, so abundant has been the growth. The Balsam is a beautiful bedding or border plant, and to produce a good effect should be planted in clumps of several plants of a colour. *A. D.*

Cockroaches in Pine Stoves.—Of all the plagues that ever infested a Pine-stove the cockroach is the most formidable. None but those who have had them to contend with can form any idea of the amount of mischief they will do among the fruit during the ripening period. As soon as the fruit begins to change colour they commence their work of demolition by eating a small hole through the rind, and generally at the base of the fruit. Having worked their way through the wall, they then eat away the inside, and, if unmolested, so thoroughly will they accomplish this, that when you go to cut the fruit you will find only an empty shell, void of any fleshy substance whatever; or if only slightly eaten it makes the fruit unsaleable, and not very creditable to place upon your employer's table. I am sorry to say we have been plagued with these pests for the past twelve months, and I am at my wits' end to know how to get rid of them. I have tried treacle in glass jars, likewise beer and sugar, but have failed to trap them in that way. Chase's beetle poison is the best thing I have tried, but they were too numerous to be got rid of in that way. I therefore determined to try a more speedy way of destroying them. The Pine stove here is a span-roofed house, 32 feet by 28 feet, with a bed of tan 4 feet wide round the outside, a path 4 feet wide, and a tan bed in the middle. These beds of tan rest upon a floor of perforated quarries and T iron, with a chamber underneath, and the necessary hot-water pipes for bottom-heat. It is in this tan and under these floors that the cockroaches breed by the thousand; however, I commenced operations by removing the tan from the centre bed, took out the quarries, and scalded every inch of the walls and floor with boiling water. I then had a water trough made, 9 inches wide by 3 inches deep, and fixed on the 9-inch wall round the centre bed. This trough is a continuous one without any ties or anything whatever that is likely to form a passage for the cockroaches; it is kept full of water, the object of which is to prevent them crawling over into the centre bed from other parts of the house. We then filled in with fresh tan, and plunged only fruiting plants in this bed, previous to which every plant is turned out of the pot, the drainage examined, and everything done to prevent them being introduced into this bed again. The outside beds are kept for the successional plants, to which they do little or no damage, and from these we did not remove the tan, but thoroughly soaked it with boiling water, of which we used about 900 gallons. This destroyed them by thousands, still I find a few running about at night, of which I kill as many as I can; and now, having reduced them so far, I shall feel grateful if some of your numerous readers who may have been plagued with these horrible pests, and succeeded in destroying them altogether, would explain the way in which they attained so desirable an end: by so doing they would bestow a favour and ease the mind of *One in Distress*.

Nycterinia Lychnidea.—In your notice of Messrs. J. Carter, Dunnett, & Beale's seed grounds, St. Osyth, reference is made to the above annual as having been seen by the writer. I venture to hazard the guess that the plant seen by him was the *N. selaginoides*, an entirely different species, of which, as stated, there are two varieties with white and lilac flowers respectively. *N. Lychnidea* (the *Erinus Lychnidea* of old authors) expands only at dusk, and has white, Vanilla-scented flowers, the reverse of the flower-lobes being of a dull vinous-purple. *East Anglian*. [The plant was *Nycterinia selaginoides*, the name *N. Lychnidea* being an inadvertent slip of the pen. *Eds.*]

Gardening in London Squares.—The fact that a fair and even beautiful show of flowering annuals and hardy perennials may be raised from seed in the open ground in central London is evidenced by the last three seasons' experience in the garden management of Endsleigh Gardens. The inexpensiveness of this mode of cultivation, as compared with the purchase of bedding plants, is of itself a great recommendation. The main elements of success are the thorough digging up of the flower-beds during the winter, so that the ground may break up into good finely pulverised seed beds for the spring, and the careful sowing of the seed. The best results seem to have been secured from sowing variegated Corn-flowers, varieties of the *Clarkias*, Malope, Nastur-

tium, *Convolvulus minor*, *Delphinium*, *Antirrhinum*, *Viscaria*, *Godetia*, *Eschscholtzia*, *Calliopis*, *Candytuft*, *Silene pendula*, &c., in small patches over the flower borders, and repeating the sowing at intervals of two or three weeks during the spring and early summer months. The system of management adopted by the gentlemen forming the garden committee includes the inspection of the garden once a week by a skilled and independent gardener (Mr. John Kirk), and a report by him to the committee in the following form:—"Endsleigh Gardens Garden Report for Week ending —, 18—: 1. Work during past week. 2. Suggestions for ensuing week. 3. Condition of lawns, paths, trees and shrubs, tools. 4. Seeds, bulbs, and plants sown or planted during past week. 5. Flowers in bloom. 6. General remarks. I inspected the garden on —, and respectfully report as above." *X.*

Michauxia campanuloides.—This is certainly a distinct and handsome plant. I saw recently in the College Botanic Gardens, Dublin, a specimen which had attained the extraordinary height of 9 feet, well branched and leafy. Mr. Burbidge tried to picture the consternation of, say, some lady gardener, who had been induced by the pretty description in some trade list or other to purchase, and had planted it in her little bed, and who watching its upward daily growth, had ultimately to examine and admire the flowers from a ladder or the upstairs window. *T. Smith, Newry.*

Recipe for Horse-Radish Sauce.—Four table-spoonfuls of grated Horse-Radish, one tea-spoonful of salt, two tea-spoonfuls of made mustard, a little pepper, one tea-spoonful of sugar (this we omit). These ingredients to be well mixed together and moistened with vinegar to the taste. Add half a tea-cupful of good cream, and serve in a sauce-tureen. If it be wished to serve the sauce hot it must be placed in a *bain-marie*, that is, it must be put into a jar and placed in a saucepan of boiling water till hot. If allowed to boil it would curdle. *Z.*

Apera arundinacea.—I send you an inflorescence of this most graceful grass; it comes from New Zealand, and is quite hardy here. The extreme elegance of the panicles is not its only charm, as in the autumn the foliage changes to a very distinct bronzy red. It is a rather low-growing grass, only attaining the height of about 2 feet. It has not yet been distributed. *T. Smith, Newry.*

Calendula officinalis, flore-pleno, "Meteor" (Haage & Schmidt).—This really beautiful variety of the old pot Marigold, seed of which I received from Mr. Ernest Benary, of Erfurt, is now in full bloom with me, and is greatly admired. The flowers are very double, beautifully formed, of a pale yellow ground colour, each petal being margined with orange. It varies in the colouring, but is a handsome decorative plant and worthy of general notice. I also received from Mr. Benary seed of *Phlox Drummondii grandiflora splendens*, which excels in form and beauty all other types of the annual *Phlox*. *D. W.*

Bougainvillea glabra for the Cool Conservatory.—This lovely creeper is now in full beauty with us in a cool conservatory, where fire-heat is never used except to keep out frost. The plant is growing in a box, and is trained up the back wall of the conservatory. The flowers, as is well known, are produced upon long wreath-like shoots, and are very handsome. Under cool treatment, however, the individual florets are more compactly arranged upon the shoot, and are not so long drawn, and the colour is much deeper than when the plant is grown in a warm, moist temperature. *W. Hinds.*

Reports of Societies.

Royal Horticultural: Aug. 24.

FLORAL COMMITTEE.—Dr. Denny in the chair. The most remarkable plant shown on this occasion was a flowering specimen of that most remarkable of Orchids, the gigantic-leaved *Bolbophyllum Beccarii*, which was exhibited by Messrs. E. G. Henderson & Son, and bore a short, dense spike of small pale rosy flowers, which gave off an odour of a most offensive character. A Botanical Commendation was awarded to it. From Messrs. Kelway & Son, of Langport, came one of those grand collections of *Gladioli* that this well-known firm of raisers and growers have made us so familiar with, and which was honoured with the award of a Silver-gilt Flora Medal. Six of the finest new varieties were also selected for the distinction of First-class Certificates—viz., *Opiter*, pink feathered with crimson, and puce-pencilled throat; *Aquinum*, very deep rose-pink, also feathered with crimson, a bold and distinct flower; *Anthony Waterer*, clear crimson-scarlet, with a white bar down each

petal; *Pilumnus*, white with rosy-lilac pencilled throat, a flower of fine size and form; *Calliphon*, rose-pink, heavily feathered with rose, and lemon-coloured centre; and *Phormis*, pink, heavily feathered (or rather shaded) with rosy-crimson, fine in size and of grand quality. New Dahlias were exhibited by Mr. Turner, Messrs. John Keynes & Co., and Messrs. Rawlings Bros., of Romford. Mr. Turner received First-class Certificates for Goldfinder, a well-built clear yellow flower, with the petals tipped at the back with crimson; Queen of Spain, also a flower of good properties, buff in colour, with the back of the petals shaded with rosy-purple; and Revival, a very fine, deep flower, of a dark shade of maroon, tinting off to crimson at the points of the petals. These were all raised by Mr. Fellowes. Messrs. Keynes & Co. received First-class Certificates for James Vick, a large, deep, and full-centred flower, dark maroon with a violet centre; Lady Wimborne, scarcely so deep a flower as the last, but possessing larger and more open petals, deep pink, heavily shaded with rose, nice in form, and very pleasing; and Mrs. Compton, a deeper and more globular-shaped flower than James Vick, and of a deeper shade of colour both in body and centre. A distinct and fine border flower, dark scarlet in colour, and named Walter N. Williams, was also shown, amongst others, by the same firm. Several fine new varieties of the very pretty and useful type of bouquet Dahlias were also shown by Mr. Turner, and First-class Certificates were awarded to Frau Prof. Klug, rose-pink; and Dr. Ranch, salmon-red—both of German origin. A very interesting series of cut blooms of bouquet and single Dahlias came from Chiswick, where there is a good collection now in flower; and a very pleasing group of cut blooms of single varieties, grown in Kensington, came from Mr. Cullingford; while still further interest was created in this grand autumn flower by the presence of a single bloom of the Cactus Dahlia, shown by Mr. Cannell. Mr. Anthony Waterer, of Knap Hill, showed for the first time a bloom of the magnificent *Lilium Parkmanni*, which readily gained a First-class Certificate. Mr. Waterer also exhibited a cut bloom of the fine pure white hybrid from *L. speciosum*, named Mrs. A. Waterer, as well as cut blooms of that fine shrub, *Andromeda floribunda*. Messrs. James Veitch & Sons sent a small but nice group of Orchids, and about four dozen cut panicles of flowers of that splendid autumn-flowering deciduous shrub, *Hydrangea paniculata floribunda*, for which they received a vote of thanks. A small group of Orchids and new plants also came from Mr. B. S. Williams, who received a First-class Certificate for a large-flowered and highly-coloured variety of *Laelia elegans* named *prasiata*. Amongst the other Orchids was *Odontoglossum vexillum*, a species resembling *O. nebulosum* in its habit of growth, and the flowers like a white form of *O. maculatum*. Mr. Lee, gr.* to Mrs. Lyne Stephens, Lynford Hall, Brandon, showed *Croton Cloth of Gold*, a variety with long lanceolate leaves, clear canary-yellow, marked with green. Messrs. James Carter & Co. received a vote of thanks for half-a-dozen very finely developed Cockscombs grown by Mr. Bridgman, gr. to Somers Cocks, Esq., and now shown as "Carter's New Empress Cockscomb." Mr. Goodacre, gr., Elvaston Castle, sent a splendidly bloomed plant of the Elvaston variety of *Stephanotis floribunda*, and the committee commended the strain. Messrs. Sutton & Sons, of Reading, staged a large number of small flowering plants of the creamy-yellow flowered *Begonia Reading Beauty*, also a few plants of the more valuable *Begonia Reading Snowflake*, a pure white-flowered variety in the way of *B. semperflorens*, but a stronger grower, and larger in the flowers.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. At this meeting Messrs. Freeman, of Norwich, offered special prizes for the best brace of their "Yard-long Cucumber" and the best fruit of their new "Luscious and Melting" Melon, but in neither case was the competition worthy of the prize offered. In the Cucumber class, Mr. C. Rowe, gr., Benham Park, Newbury, staged a handsome brace of young fruits about 25 inches long, which easily secured him the 1st position. The Luscious and Melting Melons were all bad but one, and to that—a fruit of fair quality, shown by Mr. Coomber, gr. to J. A. Rolfe, Esq., Hendre Park, Monmouth—the 1st prize was awarded. Mr. G. Williams, gr. to C. Liddell, Esq., Pease Marsh, Sussex, received a Cultural Commendation for half a dozen pot Vines, grown for table decoration, by laying a cane along the tops of some pots filled with compost, and pegging the same down, thereby causing the production of roots at the base of the fruit-bearing side shoots. The variety so treated was the Black Hamburg, and the bunches were of good quality, but not so neat a table specimen as those grown by Mr. Sage and others, which have been illustrated in our columns. A couple of good bunches of Pearson's Golden Queen Grape, selected from three which weighed in the aggregate 12 lb., came from Mr. Elphinstone, gr. to E. M. Mundy, Esq., Shipley Hall, Derby; and very much improved types of the

Trophy Tomato came from Mr. Hinds and Mr. Iggulden. Messrs. Rivers & Son exhibited specimens of the Dryden Nectarine, large in size and well coloured, but poor in flavour. From Chiswick Mr. Barron sent up fruits of about a dozen distinct sorts of Egg plants, and also of the Bergamotte Auguste June Pear, which was awarded a First-class Certificate as an early variety. It comes into use about three weeks earlier than Williams' Bon Chretien, is a certain and heavy cropper, and larger in size than any other variety ripe at the same time.

Crystal Palace Exhibition of Fruit and Cut Flowers: Aug. 25, 26, and 27.—Flowers always look well at the Palace; the soft subdued light diffused upon them through the thin awning of canvas suspended overhead admits of their being seen to advantage. Then there is no uncertainty as to weather; when once inside the building, however threatening it may be, there are no misgivings as to the pending discomfort of dripping canvas overhead and spongy grass under foot, such as is inevitable during rains with an exhibition under ordinary tents, the anticipation of which to many is almost as bad as the actual infliction when it does occur. Coming to what more particularly concerns exhibitors everything generally works smoothly here; the staging is completed without hurry or bustle, and, what is of still greater importance, the judging, through having a sufficient number engaged in the work, is done leisurely—very different from the hurried superficial glance that has to suffice where there is a deal more to be got through in a given time than will permit of the close scrutiny necessary where the competition is near. Taking the exhibition as a whole, it was of a mixed character, some very good, and others of a medium description. In Grapes, which are always the most important feature at any fruit show, and more particularly an autumn one, there was more difference in condition than usually seen, the black varieties being good generally, the white kinds, with few exceptions, much deficient in colour. Much of this is no doubt attributable to the exhibition being held ten days or a fortnight earlier than permits of the majority of Grape growers having their fruit quite up to the mark in the matter of colour. Peaches and Plums were well shown; Pines, though not present in such numbers as we have seen, were very good.

Collection of fruit, twelve dishes.—In this class there were only two competitors, Mr. Coleman, gr. to Earl Somers, Eastnor Castle, Ledbury, and Mr. Sage, gr. to Earl Brownlow, Ashridge Park, Berkhamstead, who took the prizes in the order of their names. Mr. Coleman had very good Black Hamburg Grapes, fine in bunch and berry; Muscat of Alexandria, large bunches and good berries, but wanting a little more time to colour them up fully; Bellegarde Peaches, very fine; Lord Napier Nectarines, Golden Gem and Eastnor Castle Melons, Brown Turkey Figs, Peach Apricots, Jefferson Plums, Morello Cherries, and a couple of nice Pines, Queen and Black Jamaica. Mr. Sage's best dishes were Royal George Peaches, very good; a Smooth Cayenne Pine, Elruge Nectarines, very highly coloured; Black Hamburg and Foster's Seedling Grapes.

Eight dishes, Pines excluded.—Here there were six exhibitors, Mr. Allan, gr. to Lord Suffield, Gunton Park, taking the lead with good Muscat Grapes, Pitmaston Orange Nectarines, Diamond Peaches, fine; Benham Park Seedling Melon, Brown Turkey Figs, Moor Park Apricots, Kirke's Plums, and Morello Cherries—a very nice collection; Mr. C. Haycock, gr. to R. Leigh, Esq., Barham Court, Maidstone, a good 2d with, amongst others, Alicante Grapes, fine, very large Barrington Peaches, Pine-apple Nectarines, and Moor Park Apricots; Mr. Jones (gr. to Lord Calthorpe, Winchfield), 3d.

Ten varieties of Grapes, six black and four white kinds, two bunches of each.—Here Mr. Elphinstone, gr. to A. M. Mundy, Esq., Shipley Hall, Derby, was 1st with a good even collection, consisting of Gros Colmar, very fine; Alicante, Lady Downe's, Muscat Hamburg, Madresfield Court, Mrs. Pince, Muscat of Alexandria, Golden Queen, Foster's Seedling, and Duke of Buccleuch, very large in berry. 2d, Mr. H. Apted, Broadwater, Worthing, showing compact bunches, but mostly deficient in colour.

Five varieties of Grapes, two bunches of each.—In this class the post of honour was occupied by Mr. Allen, who staged Muscat of Alexandria, Black Alicante, Raisin de Calabre, Madresfield Court, and Chatsworth Seedling, a long-berried sort, not unlike Madresfield Court in appearance, but longer in the berry—good bunches, but, as shown on this occasion, deficient in colour. It is said to be a good keeper. Mr. Tucker, gr. to J. L. Lovibond, Esq., Starts Hill, Farnborough, was 2d, with small bunches, the best of which were Black Hamburg and Gros Colmar; Mr. Jones 3d. Black Hamburgs, three bunches.—These were better shown. Mr. Coleman had 1st for good bunches, even in berry and well coloured; Mr. Roberts, gr. to the Baroness L. D. Rothschild, Gunnersbury Park, was 2d; also good examples. Muscats were wanting in colour. In the class for three bunches the 1st prize went to Mr. Coleman for good bunches and fine berries; Mr. Allan, who was 2d, likewise had good bunches. Gros Colmar, three bunches.

With these Mr. Elphinstone took the lead easily, having splendidly finished fruit, good sized bunches, large in berry, black as jet, and well covered with bloom; Mr. Tucker was 2d. Madresfield Court, three bunches.—Here Mr. Roberts was a long way in advance, with good-sized bunches, the berries very large; 2d, Mr. Elphinstone. Black Alicante, three bunches, were well shown, six exhibitors competing. The 1st prize went to Mr. Goldsmith, gr. to Mrs. Lambart, Sandhills, Bletch-

ingley, who had fine examples, well finished; Mr. Crump, gr. to H. Harris, Esq., Steventon Manor, was 2d—fine bunches, not equal in colour to the 1st. Any other black variety, three bunches.—1st, Mr. F. Jardan, gr. to Birket Foster, Esq., The Hill, Witley, Surrey, with very fine, well filled bunches of Muscat Hamburg, a shade short in colour; 2d, Mr. Coleman, for Venn's Seedling, wanting a little more time. Any other white kind, three bunches.—Here Mr. Folkes, gr. to T. F. Halsey, Esq., Gaddesden Park, Hemel Hempstead, was to the fore, showing Buckland Sweetwater, highly coloured, nice bunches; 2d, Mr. Elphinstone, for Golden Queen, full in bunch, but as it generally is—the golden colour wanting. Heaviest bunch of Grapes.—This competition is usually the least satisfactory of any in a fruit show, and never less so than at this exhibition, where Trebbiano, 5 lb. 7 oz., with small green berries, was shown against Black Hamburg, 5 lb. 6 oz., one of the best finished examples of such weight we have seen—the former necessarily taking the lead for the single ounce it was heavier. 1st, Mr. Folkes; 2d, Mr. Coleman.

Queen Pine.—1st, Mr. Fry, gr. to L. J. Baker, Esq., Haydon Hall, Pinner, with a handsome fruit; 2d, Mr. Muir, gr. to C. R. M. Talbot, Esq., M.P., Margam Park, Taibach, South Wales. Smooth Cayenne.—1st, Mr. Wilson, gr. to Earl Fortescue, Castle Hill, South Molton, Devon, a very handsome fruit, weighing 7 lb.; 2d, Mr. Muir. Any other kind of Pine.—1st, Mr. Wilson, showing a good example of Charlotte Rothschild. Mr. Wilson also exhibited in the miscellaneous class eight Smooth Cayennes, splendid evenly-grown fruit, that would average near upon 6 lb. each. They were such an exhibit as seldom seen from one garden altogether. Peaches and Nectarines were shown in very good condition. With three dishes of Peaches Mr. Roberts was 1st, having fine fruit, well coloured, of Barrington, Violette Hâtive, and Diamond, all in beautiful order; Mr. Coleman was 2d, with Grosse Mignonne, Alexandra, Noblesse, and Bellegarde, the last the finest dish in the show. Nectarines, three dishes.—Mr. Coleman had 1st with Stanwick Elruge, Violette Hâtive, and Lord Napier, all very fine, and finely coloured. Peaches, single dish.—1st, Mr. Coleman, with Bellegarde, very fine; 2d, Mr. Sage, Royal George, in faultless condition. Nectarines, single dish.—1st, Mr. Coleman, with Lord Napier, large and fine; 2d, Mr. Allan, showing a good dish of Pitmaston Orange, Melon, green-flesh.—1st, Mr. Roberts, with William Tillery; 2d, Mr. Bolton, gr. to W. Spottiswoode, Esq., Coombe Bank, Sevenoaks. Melon, scarlet-flesh.—1st, Mr. O. Goldsmith, gr. to Sir W. Farquhar, near Dorking, Surrey; Mr. Bailey, gr. to T. T. Drake, Esq., Amersham, 2d. Figs, three dishes.—1st, Mr. Allan. Single dish of Figs.—1st, Mr. Sage, with Brown Turkey; 2d, Mr. Coleman. Plums, three dishes.—1st, Mr. Bailey, showing Washington, Violet, and Prince of Wales; 2d, Mr. Fry. Single dish of Plums.—1st, Mr. Fry; 2d, Mr. Sage.

Dahlias.—These were well shown. With forty-eight Messrs. Keynes, of Salisbury, had 1st, putting up a very fine stand, in which Joseph Ashby, John Bennett, W. P. Laird, The Rev. J. Goodday, Ethel Britten, Mrs. Percy Wyndham, and Herbert Turner were remarkably good; Mr. Cannell, Swanley, was 2d, with a nice lot of flowers. Twenty-four dishes.—Messrs. Keynes, who were 1st, had beautiful blooms, the best of which were Mrs. Saunders, Jessie McIntosh, Octoroon, Lady Antrobus, and Prospero; 2d, Mr. Cannell. Twelve Dahlias (amateurs).—1st, Mr. Glasscock, Bishop's Stortford, showing a good box; Chris Ridley, Lady Golightly, Black Knight and Prince Bismarck, being the most meritorious; 2d, Mr. W. Stur. Twelve Fancies (amateurs).—1st, Mr. Glasscock.

Of twenty-four Gladioli, Messrs. Kelway & Son, Langport, were the only exhibitors, taking 1st with a fine lot, and amongst them being very good spikes of Dr. Woodman, Anthony Waterer, and Pilumnus. The Rev. H. H. D'Ombain, Westwell Vicarage, Ashford, Kent, was likewise the only exhibitor in the class for twelve Gladioli, and took 1st with a handsome stand in which Meyerbeer, Baroness Burdett Coutts, and Madame Desportes, were fine. Phloxes.—Mr. Cannell's 1st prize collection of eighteen spikes was very well done.

Pentstemons, eighteen spikes.—1st, Messrs. Laing & Co., Stanstead Park, with a distinct lot of these handsome flowers; 2d, Mr. Cannell. Antirrhinums, twelve spikes.—1st, Mr. Buster, St. Mary Cray, showing distinctly marked varieties; Mr. Cannell 2d.

Table decorations were much as usual; the 1st prize was awarded to Messrs. Radcliffe & Co., for three centre-pieces, and small specimen glasses nicely arranged; 2d, Mrs. T. Butcher, florist, South Norwood.

There was a good display of bride's bouquets; for a single example Mr. J. Prewett, Swiss Nursery, Hammer-smith, had 1st with a handsomely arranged exhibit; 2d, Mr. Chater, Camberwell Road, also very well made.

Ball Bouquet.—1st, Mr. C. Hepburne, florist, Crystal Palace; 2d, Mr. Prewett. Six button-hole flowers.—1st, Mr. Saltmarsh, Chelmsford; 2d, Mr. Prewett. Messrs. Lane & Sons, Berkhamstead, exhibited pot Vines, bearing a number of fine bunches such as this firm are celebrated for. In addition to the Gladioli already named, Messrs. Kelway had a very extensive collection of some thirteen dozen spikes, which were quite a feature in themselves. Messrs. Kelway likewise contributed a beautiful stand of Phloxes and one of Asters, of which latter they grow about 2 acres for seed. Verbenas in all the best varieties were shown by Mr. Cannell in splendid condition. From Messrs. Carter, of Holborn, came a large group of Lilies, with Cockscobs, Asters, and French and African Marigolds, exemplifying the merits of their strain of these flowers.

Sevenoaks Horticultural: Aug. 19.—This is another of the Kent societies that annually succeed in bringing together an exhibition of plants, flowers, fruits, and vegetables, all of a character such as reflects most favourably the gardening in the district; for it is well to observe, that although the competition in the principal classes is open to all comers, the exhibits collectively are the produce of gardens at no considerable distance from this part of the country. Those are never wanting who insinuate that in exhibiting gardeners are actuated by sordid motives. In its general application the charge is as unjust as it well could be, and if those who entertain such ideas could see the collections of large, well-grown plants, fruits, and vegetables that are shown at Sevenoaks, and a good many other places we could name, it would do something to dispel such ideas. Not but that the committee would, no doubt, be glad to offer higher prizes if it were in their power to do so, but in a locality like this, where there is no means of securing a large attendance of paying visitors, there is little to fall back upon but local subscriptions. The uniform meritorious character of the exhibits, with such a very small percentage below par, was a remarkable feature of the show.

In the open class for six distinct varieties of stove and greenhouse flowering plants the competition between the 1st and 2d prize groups was very close. Mr. Gibson, gr. to T. F. Burnaby Atkins, Esq., who was 1st, had a splendid plant of Dipladenia amabilis, D. Brearleyana, and vigorous, free grown examples of Ixora Prince of Orange and I. Williamsii, bearing large heads of very bright, fresh flowers. Mr. Burt, gr. to H. B. Midway, Esq., was 2d, his best plants being Lapageria alba, nicely bloomed; a good Allamanda Hendersoni, and the red-flowered Erica cerinthoides, in very good condition; 3d, Mr. Bolton, gr. to W. Spottiswoode, Esq. With a single specimen flowering plant Mr. Gibson was also 1st, staging another Dipladenia amabilis, well bloomed, the flowers large and magnificently coloured. The beauty of Dipladenias and their general usefulness as decorative subjects, with the adaptability of their flowers for cutting, and blooming as they do continuously for six months, makes it all the greater pity that so few seem able to manage them well. Mr. Burt was 2d, with a very well flowered Allamanda Hendersoni.

Six fine-foliage plants.—With these Mr. Gibson took 1st for a fine group including a grand Alocasia Lowii, with leaves 24 inches long, and A. metallica, equally good; Mr. Burt was 2d: in his half-dozen, all well grown, were Croton Weismanni, C. majesticus, and C. variegatus, fully furnished with handsomely coloured foliage. Ferns were very well shown, Mr. Bolton being 1st for six exotic species, the most remarkable of which were a beautiful Goniophlebium subauriculatum, Davallia Mooreana, equally well done, and Dicksonia antarctica. Mr. Bligh, gr. to A. Swamy, Esq., was 2d. Begonias were also large and finely flowered. With six Mr. Bartholomew took the lead, putting up a well managed lot; 2d, Mr. Bligh.

Fuchsias were likewise well done. Mr. Meakin, gr. to C. R. C. Petley, Esq., had 1st for six. The Zonal Pelargoniums had enough healthy foliage, plenty of bloom, and no more ties than necessary to admit of the plants being moved about: with six Mr. Bligh was 1st. Four Achimenes.—1st, Mr. Huntley, gr. to the Rev. J. S. Curteis, with the best plants we have seen for many a day, very large and completely clothed with a profusion of bloom. The sorts were Edmund Boissier, longiflora, Ambroise Verschaffelt, and Dentoniana. Mr. Gillett, gr. to N. M. Hennel, Esq., 2d. Four Caladiums.—1st, Mr. Meakin; 2d, Mr. Burt. Groups of plants arranged for effect are always well done here. Mr. Bolton had 1st honours with a nicely arranged lot, well chosen for the purpose; the old white Campanula pyramidalis, grown to single stems from 5 to 6 feet in height, were the most telling things in the group. Mr. Burt was a close 2d. 3d, Mr. Hubbard, gr. to Colonel Warde.

In the second division of the schedule the 1st prize for a similarly arranged group went to Mr. Meakin; 2d, Mr. Vallins, gr. to J. L. Worship, Esq. Four stove and greenhouse plants.—1st, Mr. Vallins, with, amongst others, a good example of the old Oncidium flexuosum, one of the most useful of Orchids for cutting, especially now when yellow flowers are so fashionable.

Cut flowers were in great force, Roses being still good for so late. With twenty-four Messrs. Bunyard & Son, Maidstone, took 1st, showing a nice stand, the best blooms, in which were Madame Pauline Labonte, Françoise Michelon, Alfred Colomb, Duke of Wellington, Camille Bernardin, and Star of Waltham. Mr. Rumsey, of Waltham Cross, who was 2d, had very good flowers of Lord Macaulay, Fisher Holmes, and Mabel Morrison, the latter, so far, seldom seen on the exhibition stage, but is beautifully pure in colour although, like Baroness Rothschild, the variety from which it is a sport, a little deficient in fulness. Twelve Roses.—1st, Mr. Blundell, gr. to Captain Christy; 2d, Mr. R. Gray. Dahlias were the best we have yet seen this season. In the open class, Mr. Seale, Vine Nursery, Sevenoaks, was easily 1st for twenty-four, the best of which were the President, Hon. S. Herbert, Royal Queen, and Maggie Smith; Mr. Cannell, Swanley, was 2d, with a handsome lot of flowers. Twelve fancies.—Mr. Seale was again 1st, having amongst others, beautiful blooms of Monarch, Peacock, Dick Turpin, and Lady Allington; 2d, Mr. Cannell. Mr. Seale took 1st with eighteen spikes of Gladioli.

Twelve varieties of stove or greenhouse cut flowers.—1st, Mr. Burt, with a very fine box, in which were splendid bunches of Vanda suavis, Rondeletia speciosa, and Stephanotis; Mr. Bolton 2d. Table decorations were nicely shown. For three pieces Miss Dudman was 1st, with three March stands; 2d, Mr. J. Beech, showing a stand for centre and a couple of Cocos Weddelliana, right and left. With a single piece Mr. Bolton took 1st, and Miss E. Staples 2d. Bouquet.—1st, Mr. Phillips, gr.

to Captain Jackson; 2d, Mr. Bolton: both very well done.

Fruit was plentiful, and most of it in good condition. Six dishes.—1st, Mr. Staples, gr. to H. Oppenheim, Esq., with a good lot, consisting of Muscat of Alexandria and Black Hamburg Grapes, Barrington Peaches, Violette Hâtive Nectarines, Jefferson Plums, and Cox's Golden Gem Melon; 2d, Mr. Bolton: his best dishes were Black Hamburg Grapes, and Royal George Peaches. Black Grapes, three bunches. With three Mr. Goldsmith, gr. to P. C. Hardwicke, Esq., was 1st, with Black Hamburg, nicely finished; Mr. Heffenden, gr. to W. Young, Esq., was 2d, with bigger bunches, but not so well coloured. Mr. Henderson had 3d in this class, with very fine bunches of Muscat Hamburg, short of being ripe. White Grapes, three bunches.—Mr. Goldsmith was also 1st, with Muscat of Alexandria; Mr. Staples 2d, showing much larger bunches, but requiring more time to colour them up right. Three varieties of Grapes, one bunch of each: here again Mr. Goldsmith was to the fore, staging Madresfield Court, Black Alicante, and Muscat of Alexandria; 2d, Mr. Staples: in this class likewise his bunches were larger, but wanted more time to finish them off. Dish of Peaches.—1st, Mr. Staples, with Barrington, large and finely coloured; 2d, Mr. Henderson, with Royal George. Dish of Nectarines.—1st, Mr. Staples, with Violette Hâtive, well coloured.

Mr. Cannell had a telling collection of plants, occupying one end of the principal tent; they consisted of an extensive selection of all the most distinct forms of *Coleus* grouped with *Delphiniums* in pots, Cockscombs, and a quantity of the yellow variegated *Dactylis elegantissima aurea*. Mr. Cannell also contributed, not for competition, a stand of single Dahlias, including the beautiful kind Paragon, and several flowers of the singular Juezeei. It would be difficult to point to anything in the form of a Dahlia more effective in the way of a decorative plant than this. Its sharply-pointed petals no doubt are a horror to such of the florists as cannot appreciate any but flowers of the florists' standard; but it is just on account of being devoid of the formality in shape which is the florists' standard of beauty, that flowers of the Juezeei character will be welcomed. From Mr. Seale, likewise not for competition, came a very fine lot of Dahlias, consisting of some ten dozen, comprising most of the best show and fancy varieties.

Trowbridge Horticultural: Aug. 19.—Last year this popular West of England Society, in common with many others, had to sustain a heavy loss through the wet weather; this materially reduced the reserve fund, and the committee wisely determined to cut down the necessary expenses to the lowest level until such times as fortune again smiled upon them. A change of site was also resolved upon, and the *locale* of the show was removed from the field near the railway station, where it was held for many years, to some ground at the back of the Post-office buildings, and quite in the heart of the town. This change enabled the committee to utilise the market-house close by, and here the vegetables and the cottagers' plants made a nice display. The new site necessitated a scattering of the tents, but the company found pleasure in walking beneath the shade of the trees in search of the various products. The prime feature was a tent nearly 300 feet in length and correspondingly broad, and in this was grouped the leading subjects staged in competition, with the exception of fruit and vegetables.

As usual, Fuchsias were the leading feature, and in no other locality are they better grown. Mr. Lye, who had the misfortune to lose the largest of his plants by frost last winter, scarcely appeared in the competition this year. In the amateurs' classes for six and four varieties Mr. Matthews, gr. to W. B. Brown, Esq., Trowbridge, was far a-head, having in the smaller class splendid specimens of Lustre, Pauline, Arabella, and Doel's Favourite; and in the larger class Rose of Castile, Souvenir de Chiswick, Marchioness of Bath, Doel's Favourite, The Hon. Mrs. Hay, and the pretty abo cocinea. These splendid specimens were simply perfect. The 2d prize was not awarded, the 3d going to plants shown by Mr. G. Tucker, gr. to Captain Clarke, Trowbridge; but these were considerably ahead of anything we had before seen at a provincial show. They did not, however, come up to the Trowbridge standard, and were therefore assigned the 3d place. The varieties were Queen Victoria, Load-me-well, Rose of Castile, Doel's Favourite, Bountiful, and Beauty of Trowbridge. Mr. Tucker was 2d with four plants—Royal Standard, Marginalata, Arabella, and Charming; Mr. Lye, gr. to the Hon. Mrs. Hay, being 3d.

In the nurserymen's class for six Fuchsias, Mr. W. C. Drummond, Bath, was 1st, and Mr. J. Hudd, Hilperton, 2d.

The Petunias staged by Mr. J. Lege, and to which the 1st prize was awarded, were marvellous specimens of successful culture. As usual they were trained to sloping shield-like frames, 3 feet across each way; the foliage was rich and luxuriant, and the face of each was thickly covered with flowers. Mr. Lege's varieties were—Beauty of the West, Queen of Queens, Queen Victoria, The Bride, Wiltshire Lass, and Zebra: all probably local varieties, but excellent for the purpose. The others fell much short of these. In the nurserymen's class Mr. Hudd was 1st with six varieties.

Mr. Tucker staged some very fine and well-grown plants of Zonal Pelargoniums, consisting of Le Grand, President, Mrs. Keeler, Madame Werle, Rose of Allendale, Circulator, Pollie King, and Mons. de Lesseps; Mr. Lege was 2d. In the nurserymen's class Mr. W. C. Drummond was 1st, and Mr. A. T. Hall 2d. Verbenas, Balsams, and Achimenes were decidedly below their usual level of excellence: let us hope it is the

accident of the moment and not a decline of public spirit. Cockscombs were very fine from Mr. Geo. Garraway, of Bath.

Stove and greenhouse plants, in nine distinct varieties, made a good display. Mr. Matthews was well ahead with *Ixora aurantiaca*, *Bougainvillea glabra*, *Allamanda Hendersoni*, *Dipladenia amabilis*, *Erica Austriana*, *E. Marnockiana*, *E. retorta major*, &c. 2d, Mr. G. Tucker, with smaller but fresh and nice plants of *Dipladenia Brearleyana*, *D. amabilis*, *Allamanda Schottii*, *Bougainvillea glabra*, &c. 3d, Mr. J. Mould, Pewsey. Mr. Tucker had the best six plants, staging good examples of *Statice profusa*, *Cassia corymbosa*, *Stephanotis floribunda*, *Croton undulatus*, *C. interruptus*, and *Pandanus Vetchii*. 2d, Mr. Matthews with *Allamanda Hendersoni*, *Dipladenia amabilis*, *Clerodendron Balfourianum*, *Rondeletia speciosa major*, *Erica Westphalingia*, and *E. Aitoniana turgida*. The best six *Ericas* came from Mr. W. C. Drummond, not large, but even sized and in good condition; they consisted of *ampullacea*, *ampullacea alba*, *Tricolor Wilsoni*, *Juliana rubra*, *Tricolor dumosa*, and *Aitoniana Turnbullii*. 2d, Mr. Matthews.

In the case of a show which comprehends some 150 classes, we can only point out a few of the leading features. We were glad to see the old *Beaufortia purpurea* shown in fine condition; and at Trowbridge it is possible to see more old favourites than one is apt to meet with elsewhere. *Coleus* were shown in fair condition: one of the newer varieties, named Ball of Fire, was conspicuous for the beautiful markings on its leaves. The best came from Mr. J. Pocock, gr. to J. P. Clark, Esq.; the next best from W. Sharp, gr. to C. N. May, Esq., Devizes.

The best group of fine-foliaged plants came from W. Miller, gr. to W. H. Long, Esq., Rood Ashton; Mr. W. C. Drummond, Bath, being 2d. Stove and greenhouse Ferns were shown in groups of twenty.—The best collection came from Mr. J. Coke, gr. to W. A. P. Stancourt, Esq.; Mr. G. Tucker being 2d.

The best new plant was *Nerium Oleander rosea grandiflora*, from Mr. W. C. Drummond, Bath, who had two or three others of the new varieties that were much admired. *Gloxinias* were finely shown by C. N. May, Esq., of Devizes.

The leading feature in the cut flower classes was that for twenty-four Dahlias, open to all-England.—The 1st prize was, as usual, won by Messrs. Keynes & Co., Salisbury, who had fine blooms of W. N. Williams, a superb scarlet self, and the nearest approach to a red Dahlia we have yet seen; James Cocker, Mrs. Seaman, Ethel Britton, Burgundy, Fred Smith, J. C. Read, Joseph Ashby, Thomas Goodwin, Charles Lidgard, C. Leicester, and James Service, being very fine. With twelve varieties Mr. H. Bush, Bath, was 1st, and Mr. G. Garraway, Bath, 2d. Messrs. Keynes & Co. were also 1st with twelve fancy Dahlias, staging highly finished flowers of Gaiety, Madame Chauvine, Mrs. Saunders, Charles Wyatt, John Saunders, Professor Fawcett, Rev. J. B. M. Camm, John Lamont, and Jean McIntosh. The best seedling Dahlia of 1879, shown in six blooms, was Mr. Dodds, beautiful light rosy-peach with a pale centre, extra fine petal and outline, a novel and pleasing flower. In this class Messrs. Keynes & Co. also staged James Vick, claret or wine crimson flushed with purple on the edge, fine petal and outline. The following seedling Dahlias of 1880, single blooms, received First-class Certificates of Merit:—Edward Pick, Lady Wimborne, J. C. Ward, Professor Fawcett, and the Hon. Mr. Wyndham.

Gladioli in stands of twelve were well shown by Mr. J. Wheeler, of Warminster, and boxes of cut flowers were in good condition from Mr. J. F. Mould and Mr. G. Garraway. Asters, Roses, and some other things were numerous, but not up to the usual mark, owing to the season. Mr. J. H. James and Mr. J. Virgo put up pretty stands for table decoration, and we must compliment the Trowbridge exhibitors on the great improvement which has taken place in these of late. Zonal Pelargoniums were shown in fine condition by Captain Holden and Mr. Garraway, and included some of the best varieties in cultivation.

Fruit was not so extensive as usual, but much of it was of excellent quality. Mr. T. King, gr. to R. V. Leach, Esq., Devizes Castle, was 1st in the collection for ten dishes, staging very fine Alicante, Black Hamburg, and Muscat of Alexandria Grapes; Barrington, Bellegarde, and Grosse Mignonne Peaches; Downton and Pitmanston Orange Nectarines; Melon, and Golden Gage Plums—a very excellent lot, good all round. 2d, Mr. A. Miller, The Gardens, Rood Ashton, with Black Prince, Black Hamburg, and Muscat of Alexandria Grapes; Barrington, Galande, and another Peach; Stanwick, Elruge, and Hunt's Tawny Nectarines; Washington Plum, &c. The best Pine-apple was a good Queen, from Mr. Miller; the same variety being placed 2d. Mr. King had the two best bunches of black Grapes, staging very good Black Hamburg; 2d, Mr. Miller, with Black Hamburg; the same variety being 3d. Mr. G. Tratenan, gr. to H. O. Wills, Esq., Bristol, had the best two bunches of white Grapes, excluding Muscats, staging excellent Buckland Sweetwater; Mr. King coming 2d with the same. In the class for Black Muscats Mr. King was well a-head with Madresfield Court. The best white Muscats were furnished by Mr. King, having good Muscat of Alexandria; Mr. J. Gay, gr. to M. Palmer, Esq., Bradford, being 2d with the same. Other fruit comprised Apricots, Green Gages, Plums, Cherries, Peaches, very fine; Nectarines, &c.

Vegetables were numerous and finely shown, and the competition was very keen in many of the classes. This was the thirty-first exhibition of the Society, and so well was it supported that the sum of over £280 was taken at the gates. It enables the committee to repay to the reserve fund the sum lost owing to the unfavourable weather of last year.

Reading Horticultural: Aug. 20.—This was what is termed the summer show, and the managers stated it was the best that had been held for nearly ten years. The laid-out show-ground within the Abbey ruins was filled to overflowing, and a good deal of the space usually reserved for the perambulation of visitors was occupied by exhibits. The weather was gloriously fine, and the attendance of visitors extremely large, and a good round sum will be certain to accrue to the funds of the Society. The Furbury Gardens were very gay, and here the band was stationed as usual, and the scene was a very animated one during the afternoon.

The show had a new interest in that Mr. C. Turner, of Slough, sent down a very fine collection of cut Roses, Dahlias, bouquet Dahlias, yellow ground Picotees, Zonal Pelargoniums, &c., all of which were much admired; and Mr. Cannell sent from Swanley a fine collection of cut Verbenas, and also one of Zonal Pelargoniums, in variety. All these were very highly commended, as they richly deserved to be.

One great charm of the show was the rich glow of colour seen on every hand. Stove and greenhouse plants contributed largely to this end, the best collection coming from Mr. Marsland, The Wilderness, Reading (Mr. W. Lees, gr.), who had very good examples of *Allamanda Schottii*, *Plumbago capensis*, *Lantana Le Grenadier*, *Vinca alba*, *Eucharis amazonica*, *Erica Lindleyana*, *Ixora javanica*, &c.—a good, fresh, and attractive lot; 2d, Mr. J. F. Mould, Pewsey, with plants somewhat faded, the best being *Allamanda Schottii*, *Clerodendron Balfourianum*, *Gloriosa superba*, *Erica Austriana*, &c. The best four plants came from Major Storer, Purley (Mr. Mortimer, gr.), who had *Bougainvillea glabra*, *Allamanda Hendersoni*, *A. Chelsoni*, and the pretty pale blue *Plumbago capensis*; 2d, C. Eyre, Esq., Welford Park (Mr. C. Ross, gr.), with *Justicia carnea*, *Vinca alba*, *Rondeletia speciosa major*, and *Allamanda grandiflora*. The best specimen flowering plant was an excellent *Allamanda nobilis*, from Mr. J. F. Mould; a good specimen of *Eucharis amazonica*, from R. Floyd, Esq., Reading (Mr. D. Armstrong, gr.), being placed 2d.

Fuchsias were not worthy of Reading, and if the judges had withheld the whole of the prizes in the several classes there would have been little cause for complaint. Achimenes made a pretty display, Messrs. Lee and Mortimer taking the prizes in the order of their names: longiflora major and longiflora alba were very good. Some truly wonderful Cockscombs were shown by T. Somers Cocks, Esq., Great Marlow (Mr. A. Bridgman, gr.), with very large and symmetrical combs of a rich, deep purple-crimson colour; Lord Otto Fitzgerald, Windsor (Mr. T. Lockie, gr.), being 2d with a very fine dwarf scarlet strain. F. Hall, Esq., Erleigh Court (Mr. J. Bridge, gr.), sent six pots of Lilies, mainly of the L. speciosum type, that were well grown and flowered. Bedding Pelargoniums were good, especially those from Mr. Mortimer, to whom the 1st prize was awarded; Mr. E. Jones, nurseryman, Henley-on-Thames, being 2d. W. Fanning, Esq., Bozewood, Whitechurch, had the best nine new bedding Pelargoniums in 6-inch pots; the Hon. R. Boyle, Purley, and Mr. S. Mortimer being placed equal 2d. These were a pleasing feature, and the plants were generally nicely grown and bloomed. Mr. Ashby had the best six variegated Pelargoniums—some of the best we have seen this year; Mr. Lees 2d.

The groups of nine variegated or handsome foliage-plants brought an excellent competition, Mr. C. Ross coming in 1st with a very even group comprising *Croton Weismanni*, *C. Johannis*, *Latania borbonica*, *Alcaesia metallica*, *A. macrorhiza variegata*, *Alcaesia Lowii*, *Buonaparte gracilis*, *Maranta zebrina*, &c. 2d, Mr. Mortimer, with a good lot, the leading plants being *Latania borbonica*, *Croton Weismanni*, *Maranta Veitchii*, &c. 3d, Mr. W. Lees, with some nice fresh plants, but mostly under-sized. The best four foliage-plants came from Mr. T. Hope, and consisted of *Croton Weismanni*, *Maranta roseo-picta*, *Anthurium crystallinum*, and *Pandanus Veitchii*. 2d, H. J. Simonds, Esq., Reading (Mr. T. Bezant, gr.), with *Croton variegatus*, *Alcaesia metallica*, *Maranta zebrina*, and *Pandanus Veitchii*. The best specimen foliage plant was a very fine *Cycas revoluta* from Mr. W. Lees, Mr. Mortimer coming 2d with a fine *Encephalartos villosus*.

Some remarkably good groups of Ferns were staged, the plants from Mr. Mortimer being very good. The collection comprised *Adiantum concinnum latum*, *A. cardiochæna*, *Phlebodium aureum*, *P. sporadocarpum*, *Gymnogramma chrysophylla*, *Adiantum gracillimum*, *Davallia Mooreana*, &c. Mr. Lees was a good 2d. In the class for four Ferns Mr. Hope had very good specimens, remarkable for their vigorous growth and healthy appearance; the plants were *Dicksonia antarctica*, *Gymnogramma chrysophylla*, *Adiantum cuneatum*, and *A. formosum*. Mr. Bezant came in 2d, also with rare plants, having *Cibotium spectabile*, *Adiantum tinctorum*, *Gymnogramma Lauchiana*, and *Phlebodium aureum*.

Very nice *Coleus* were shown by Messrs. Burgess, E. Jones, and others; those from Mr. Burgess were of pyramidal shape, and excellently grown and coloured. The best new or rare plant was a nice specimen of *Maranta Van den Hecke*, from Mr. C. Ross; Mr. Bezant coming next with *Dioscorea illustris*, at best a somewhat weedy looking subject.

Groups of plants arranged for effect made, as usual, a good feature, and brought a capital competition. Mr. Lees was well in 1st with a nicely arranged group of good useful things, set out to the best advantage; Mr. G. Phippen, nurseryman, Oxford Road, was 2d; B. Simonds, Esq., Reading (Mr. Burbidge, gr.), being 3d; and extra prizes were awarded to Messrs. Powell and Mayne. In Mr. Phippen's group were some plants of the fragrant white-flowered *Nicotiana longiflora*, which attracted much attention.

Cut flowers were represented by Dahlias, the best

coming from Mr. T. Austiss, of Brill; Phloxes—some fine spikes of excellent varieties being shown by Mr. Phippen; Asters of various kinds, Roses, &c. In the class for twenty-four bunches of cut flowers Mr. Phippen staged large bunches of hardy flowers generally, all highly valuable things of a showy character, the bunches being nicely set off with the foliage of *Acer Negundo* variegatum. These were in marked contrast to the flat, monotonous arrangement of *Allamanda*, *Stephanotis*, *Gardenia*, *Anthurium*, &c., put into boxes with little skill and less taste, but which their exhibitors expect will win simply because they are stove and greenhouse plants. Mr. Mortimer had the best twelve bunches, Mr. J. F. Mould being 2d.

First-class Certificates of Merit were awarded to Mr. C. Turner for Dahlias Sunbeam, Revival, Queen of Spain, and Modesty, all fine show varieties; bouquet Dahlia, Carl Mendel; yellow Picotees, Ne Plus Ultra, Alice Turner, and Princess Alice; and Zonal Pelargoniums Golden Glory and Future Fame, both very fine; also to Mr. J. F. Mould for Verbenas Mrs. Harrison, Admiration, and Earl of Beaconsfield.

Dinner-table decorations and the arrangements in wild flowers especially made a most interesting feature. The best of the former were shown by Miss K. L. Phippen, Miss Warre, of Camshaw, being 2d. Miss Adnams, Wilberforce Place, Reading, a very successful exhibitor of wild flowers, was again 1st with a superior arrangement; Miss Silver being 2d, and Miss Nellie Cole 3d. Extra prizes were awarded to three other exhibitors, and the productions of two others were Highly Commended. Baskets of sweet-scented flowers made an interesting class, Mr. Wells, of Reading, being 1st, and Mr. Phippen 2d. Mr. G. Phippen had the best bridal bouquet, as also the best three button-holes.

For the handsome Silver Cup, given by Messrs. Sutton & Sons, for the best collection of fruit, there was an excellent competition. It was won by Mr. C. Howe, gr. to Sir R. Sutton, Blart, Newbury, with a very excellent lot, consisting of Black Hamburg and Muscat of Alexandria Grapes, Royal George Peaches, Pitmaston Orange Nectarines, Queen Pine, Brown Turkey Figs, Read's Scarlet-flesh Melons and Morello Cherries; 2d, Mr. T. Austen, gr. to Sir G. Smythe, Ashton Court, Bristol, who had Bowood Muscat and Black Hamburg Grapes, Smooth Cayenne Pine, Pine-apple Nectarine, Barrington Peach, Easton Castle Melon, Bananas, and Brown Turkey Fig; 3d, Mr. J. Atkins, Lockinge Park. Mr. Mortimer had the best six dishes of fruit, staging a good lot; Mr. B. Osborn, of Sonning, being 2d. In the class for four dishes Mr. J. Wells, Fernhill, Windsor, was 1st, and Mr. A. Bridgman 2d.

Splendid Black Hamburg Grapes were shown by Mr. J. Ashby, Mr. Howe coming in a good 2d. In the class for three bunches of black Grapes Mr. Crump, gr. to H. Harris, Esq., Micheldever, was 1st, with extra fine Alicante; Mr. Ashby being 2d, with good Madresfield Court. Mr. Mortimer had the best three bunches of White Muscats, Mr. Ashby being 2d here also. In the class for three bunches of white Grapes Mr. J. Wells, Windsor, was 1st, with excellent Buckland Sweetwater; Mr. J. Atkins being 2d, with Foster's Seedling.

Other fruits, such as Peaches, Nectarines, Apricots, Melons, Figs, Plums, &c., were very good, and we regret that time did not admit of taking notes of them. The vegetables also were numerous and remarkably good.

Hertfordshire County Flower Show: Aug. 20 and 21.—On Friday and Saturday of last week a flower, fruit, and vegetable show was held, under the auspices of the Hertfordshire Beekeepers' Association, and in connection with the annual display organised by that Society, in a field at Gorbamby Lodge, within a mile of the Cathedral Church of St. Albans. So far as we know this was the first exhibition of the kind that has been held at St. Albans, but is not likely to be the last, inasmuch, as the promoters hope, by the success of their first venture, to firmly establish a show to be held in turn in various parts of the county. We wish them every success. The schedule of prizes comprised eighty classes, but the competition was by no means so good as we had anticipated, except in the vegetable classes, where the competitors were numerous and their products first-rate. Indeed, of the two large tents which were employed the one containing the vegetables, a few florists' flowers, and the most interesting display of honey and bee furniture, &c., made by the local apirians, was by far the most attractive. In the plant classes the best competition took place with plants suitable for table decoration, of which twenty were required in each collection; and the 1st prize was won by Col. Sim, Sparrow Herne, Bushey (Mr. J. Wilcocks, gr.); Sir Andrew Lusk, M.P. (Mr. Sibley), gr., being 2d. The best six stove and greenhouse plants came from Mr. G. Underwood, gr. to C. R. Fenwick, Esq., High Firs, Harpenden—a very neat lot; and the 1st prize for a group arranged for effect was won, with an excellent lot of plants, by Mr. Aylott, Oaklands, St. Albans. Of bouquets and table decorations the display was a fair one, but of the fruit department but little need be said. Mr. Sage, gr. to Earl Brownlow, Ashridge, showed the best collection of eight dishes, also the best Pine-apple, the best Melon, and the best dish of Peaches; while Mr. Pollard, gr. to H. J. Toulmin, Esq., Childwickbury, had the best six dishes of fruit; Mr. G. Aslett, gr. to C. Butler, Esq., Hatfield, the best white Grapes; and Mr. G. Chuter, the best Black Hamburgs. The cottagers' class for wild flowers was a very good one, and the winning collection, shown by Messrs. Willis and Grey, of Harpenden, was one of the best we have seen, being very extensive and most carefully and correctly named. Messrs. Paul & Son, of Cheshunt, Messrs. Paul & Son, of Waltham Cross, Messrs. Cutbush & Son, of Highgate, and Messrs. E. P. Francis & Co., of Hertford, contributed largely to the general effect.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON.
FOR THE WEEK ENDING WEDNESDAY, AUG. 25, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						Hygrometrical Deductions from Glasher's Tables 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.		
Aug. 19	29.86	+0.06	76.8	54.2	22.6	62.1	+0.9	58.2	85	{ E. S. E. : 0.00		
20	29.89	+0.08	72.1	58.5	13.6	63.6	+2.8	58.6	81	{ E. N. E. : 0.00		
21	29.91	+0.10	70.9	57.0	13.9	63.5	+4.8	56.4	73	{ E. S. E. : 0.00		
22	29.89	+0.07	74	51.0	23.0	62.4	+1.7	53.1	72	{ E. N. E. : 0.00		
23	29.87	+0.05	67.3	50.3	17.0	58.1	+2.6	53.2	84	{ E. S. E. : 0.00		
24	29.88	+0.05	69	50.0	19.0	58.5	+2.1	54.1	85	{ E. N. E. : 0.00		
25	29.82	+0.01	64.8	53.2	11.6	58.1	+2.5	57.2	96	{ E. : 0.10		
Mean	29.87	+0.06	71.0	53.9	18.0	61.2	+0.4	55.8	83	{ E. : sum E. N. E. : 0.10		

Aug. 19.—Overcast till 10 A.M., fine and bright but cloudy afterwards.
— 20.—A fine warm day, frequently dull and very cloudy.
— 21.—A very fine bright warm day. Strong breeze. Overcast at night.
— 22.—A fine bright day, partially cloudy. A strong wind.
— 23.—A fine day, but dull and cloudy. Cooler.
— 24.—A dull, cool day, very cloudy, yet fine. Bright evening. Cloudless at night.
— 25.—Overcast, dull, and damp throughout. Rain fell in early morning, and slightly in afternoon. Cool.

LONDON: Barometer.—During the week ending Saturday, August 21, in the suburbs of London, the reading of the barometer at the level of the sea increased from 30.10 inches at the beginning of the week to 30.12 inches by the evening of the 15th, decreased to 30.07 inches by the afternoon of the 16th, increased to 30.15 inches by the morning of the 18th, decreased to 30.02 inches by the afternoon of the 19th, increased to 30.12 inches by the morning of the 21st, and was 30.09 inches at the end of the week.

The mean reading for the week at sea level was 30.09 inches, being 0.01 inch below that of the preceding week, and 0.12 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 79½° on the 21st to 67½° on the 16th; the mean value for the week was 73°. The lowest temperatures of the air observed by night varied from 54½° on the 16th and 19th, to 58½° on the 20th; the mean value for the week was 56°. The mean daily range of temperature in the week was 17°, the greatest range in the day being 22½° on the 19th and 21st, and the least 11° on the 15th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—15th, 62°·1, +0°·4; 16th, 59°·3, -2°·1; 17th, 64°·2, +3°; 18th, 60°·6, -0°·4; 19th, 62°·1, +0°·9; 20th, 63°·6, +2°·8; 21st, 65°·5, +4°·8. The mean temperature of the air for the week was 62°·5, being 1°·3 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 143° on the 21st, 124° on the 19th, and 118½° on the 17th; on the 16th the reading did not rise above 85°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 53½° on the 21st, and 56° on the 17th; the mean of the seven lowest readings was 57°.

Wind.—The direction of the wind was N.E., and its strength moderately strong.

The weather during the week was fine and dry, though dull, and the sky very cloudy at times. There was but little sunshine, except on the 17th and 21st.

Rain.—No rain fell.

ENGLAND: Temperature.—During the week ending Saturday, August 21, the highest temperatures of the air observed by day were above 77° at Truro, London, Cambridge, and Wolverhampton, and below 66° at Leicester, Birmingham, and Sheffield; the mean value from all stations was 72½°. The lowest temperatures of the air observed by night were below 52° at Truro, Wolverhampton, and Hull, and above 57° at Plymouth and Brighton; the mean from all places was 54½°. The extreme range of temperature in the week was above 25° at Truro, London, and Wolverhampton, and below 11½° at Leicester, Birmingham, and Sheffield; the mean range of temperature in the week from all stations was 18½°.

The mean of the seven high day temperatures was above 72° at Truro, Plymouth, Brighton, and Lon-

don, and below 65° at Leicester, Birmingham, Sheffield, and Hull; the general mean from all places was 67½°. The mean of the seven low night temperatures was below 55° at Wolverhampton and Sunderland, and above 58° at Plymouth and Brighton; the mean value from all stations was 56½°. The mean daily range of temperature in the week was above 16° at Truro and London, and below 9° at Leicester, Birmingham, Nottingham, Sheffield, and Hull; the mean daily range from all places was 11½°.

The mean temperature of the air for the week from all stations was 60½°, being 2½° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 63° at Truro, Plymouth, and Brighton, and below 59° at Leicester, Wolverhampton, Nottingham, Sheffield, Birmingham, and Hull.

Rain.—Scarcely any rain fell, three-hundredths of an inch being the largest amount. This was recorded at both Cambridge and Nottingham; but at most places no rain fell. The average fall over the country was scarcely 0.01 inch.

The weather during the week was fine and dry, but dull, very cloudy, and almost sunless.

SCOTLAND: Temperature.—During the week ending Saturday, August 21, the highest temperatures of the air observed by day varied from 76½° at Greenock to 69½° at Aberdeen and Leith; the mean value from all stations was 72½°. The lowest temperatures of the air observed by night varied from 43° at Paisley to 51½° at Greenock; the general mean from all places was 48°. The mean range of temperature in the week from all places was 24½°.

The mean temperature of the air for the week from all stations was 59°, being 1½° higher than the value for the corresponding week in 1879. The mean temperature was above 60° at Greenock and Perth, and below 58° at Paisley.

Rain.—The falls of rain were very small. At Perth 0.10 inch fell, and at Leith 0.01 was measured. At Glasgow, Dundee, Greenock, and Paisley no rain fell; the average fall over the country was 0.02 inch.

DUBLIN.—The highest temperature of the air was 73°, the lowest 42°, the extreme range 31°, and the mean 58½°; no rain was measured.

JAMES GLAISHER, F.R.S.

Obituary.

We have this week to record with regret the death of Mr. ABRAHAM STANSFIELD, of the Vale Nurseries, Todmorden, which sad event took place from apoplexy, on August 15. Mr. Stansfield, who was born on January 12, 1802, at Hugen Croft, near Keble, in Stansfield, had reached the patriarchal age of seventy-eight years. His parents were handloom weavers, and in his earlier years he himself followed the same occupation. During his boyhood he formed the acquaintance of the late John Nowell, who acquired celebrity as a muscologist, and who then lived at Springs, on the hillside not far from Keble, their companionship enduring till death caused a separation in 1867.

At the age of eighteen Mr. Stansfield married, and for some years struggled on till the hard times of 1826, when, having obtained notice through a *Petition for Work*, in rhyme, addressed to an employer, Mr. Ramsbottom, this gentleman engaged him as his gardener; and he remained in that situation, enjoying the full confidence and respect of his employer, until the death of the latter, and continuing in the same relation with his successor, J. Fielden, Esq., M.P., for about a year, when, in 1844, he started in business on his own account, first at Ecclesholme, and shortly afterwards at Vale Gardens. The first year he was at Vale Gardens—unfortunately the year of the celebrated Potato disease and the Irish famine—nearly the whole of the ground was planted with Potatoes; the tubers had been gathered and stacked, there being about 30 loads, when the disease was discovered amongst them. Putting his scientific knowledge to the test he at once had the Potatoes ground up and converted into starch. Some time after that the growing taste for Ferns led Mr. Stansfield to turn his attention to their cultivation, and assisted by his family—nearly all of whom took the same enthusiastic interest in botany and other scientific subjects as himself—he soon gained a foremost position among Fern growers, a position which he maintained to the close of his life. He leaves in his nurseries one of the most extensive and complete collections of British Ferns which is to be found. His botanical researches extended to nearly every part of the United Kingdom, and he made some notable finds, of which the following are some of the most interesting:—*Asplenium Trichomanes*

incisum laciniatum, a very beautiful and now extremely rare variety, found by him in the West of Ireland; Blechnum Spicatum Aitkenianum, named in honour of his friend, Mr. T. Aitken, of Bacup, found in Ireland by Mr. Stansfield on his last visit in 1872; Blechnum S. serratum rigidum, found near the top of Catholes Clough; a good variety of Scolopendrium crispum, found in Ireland; a capital variety of Blechnum found in Walsden. Numerous new varieties of Ferns raised by the firm of which Mr. Stansfield was the head, now bear the name of Stansfieldii. Associated with the late Mr. Nowell, Mr. Stansfield was occupied with a *Flora of Todmorden and District*, a voluminous production dealing with the flowering plants, Ferns, mosses, &c., of the district, the late Mr. Nowell taking the bryological portion.

The Todmorden Botanical Society, of which Mr. Stansfield had been President since its foundation in 1852, owed its high position almost wholly to the influence and exertions of the President, his family, and the late Mr. Nowell. Mr. Stansfield's great services to the Society were recognised in 1874 by a handsome presentation, subscribed for by the members, and consisting of a telescope, a silver tea and coffee service, and a silver salver. Among other presentations made to him was a handsome watch by the Free Gardeners' Friendly Society. He was possessed of a wonderfully retentive memory, and acquired considerable fluency and power as a speaker; and his urbane and genial manner, coupled with extensive and careful observation, experience and reading, and his great fertility of imagination, made his public appearances very welcome. There was no more genial companion than he, and though naturally retiring and unobtrusive, he was conspicuous in every company that he entered.

Enquiries.

He that questioneth much shall learn much.—Bacon.

MULBERRY TREE NOT FRUITING.—Can any of your correspondents give me a hint about the management of a Mulberry tree. I planted one some eighteen years ago against a wall facing the east. It has grown luxuriantly, but has hardly had a fruit on it, and the few there have been are very small. To prevent its too luxuriant growth it has been root-pruned, but nothing will make it bear. C. T., Aug. 12.

Answers to Correspondents.

BEGONIAS: D. M. N. They have probably been grown too hot, and then may have suffered from chill during the dull wet weather. They do not require more than a medium, genial temperature. Now, they should be in a greenhouse, and have an abundance of air during mild weather.

BOOKS: H. Clerk. A little book of *Garden Plans*, published at 171, Fleet Street, E.C., would probably suit you.

CAMPANULA PYRAMIDALIS: Amateur. The plants very frequently die after flowering. You might try cuttings of the thick fleshy roots, put in a gentle heat, to save any particular sort; but your best plan will be to allow a little seed to ripen, and to raise young seedlings. The fertiliser may be given every alternate or third watering—or say about twice or thrice a week.

ERRATUM. In the report of the Torquay Horticultural Society's Show, at p. 250, the address of Mr. G. B. Kerswill should have been given as Bowhill Gardens, Dunsford Road, St. Thomas, Exeter, instead of Plymouth.

FIG TREE: H. Clerk. You may remove the tree with perfect safety in October, when the leaves have fallen. If done carefully, the lifting will do the tree good.

FRENCH BEANS: H. S. Gather them when quite dry, and prepare as for boiling; then get a large earthenware jar and put in the Beans alternately with a layer of salt, and tie up securely with stout paper. The jar should be kept in a cool temperature, and be occasionally looked to, to see that the Beans are covered with brine. They must be soaked in fresh water at least twelve hours before boiling.

LILIUM AURATUM: Amateur. After the flowering is over continue watering as before while the leaves keep fresh, but as soon as they show signs of ripening reduce the supply gradually, keeping the bulbs in the soil in a dryish condition, but not so dry as to cause them to shrivel. They should be reported about the beginning of October.

LOBELIA INFLATA: X. L. It is only cultivated in botanic gardens as a medical plant of the poisonous class.

NAMES OF PLANTS: J. McA. A species of *Epipactis*, which we cannot name without flowers.—J. M. A species of *Orobanchaceae*, which we are unable to name. What is its history? Is it a garden hybrid?—B. Pounsett. *Cotyledon orbiculata*.—Redwood. 1, *Aceris*

affine; 2, *Gongora histriónica*. Can you oblige us with a good specimen of this, with leaf and pseudobulb, for the herbarium?—C. W. D. 1, *Physostegia virginiana*; 2, seems to be a garden variety of the same plant.—W. Thomson. *Fluggea jaburan*.—Gordon. A pinnate leaf from a young plant of one of the phyllocladous *Acacias*; when young they often produce pinnate leaves, which at a later date are replaced by the phyllodes alone. We cannot name the species without flowers.—H. Watney. The common Ling (*Collina vulgaris*), upon which is growing the parasitical Dodder (*Cuscuta epithymum*).—R. Barrington. *Chenopodium polyspermum*.—M. Melica ciliata.—A Reader. *Sedum populifolium*.—H. Nedsey. 1, *Pteris serrulata cristata*; 2, *Asplenium Colensoi*; 3, *Adiantum assimile*; 4, *Pleopeltis Billardieri*; 5, *Davallia bullata*; 6, *Spiraea Filipendula*, fl.-pl.—W. C. B. 1 and 6, *Athyrium Filix-foemina*; 2, 4, 5, *Lastrea dilatata*—young plants or dwarf forms, we cannot say which; 3, *Polypodium Phegopteris*.—J. Wilson. *Adiantum Ghiesbreghtii*, alias *scutum*. The smaller frond is too young to determine; it looks like a fibriated sport of the other.—Sussexians. The purple-flowered plant is a seedling sport of the white, and possibly permanent; this is how many varieties of garden plants are obtained.—J. M. Neither 1, 2, or 3 are in fruit, and such materials are too incomplete for naming. 1 is probably *Asiphonia australis*; 4, *Nephrolepis tuberosa*; 5, *Cyathea dealbata*.—R. L. The Fern is too imperfect. The yellow flower is *Hedychium Gardenianum*.—G. W. Binns. Your Fern, which you say comes in quantity from France, and is much used by florists, is the Black Maidenhair *Spleenwort*, *Asplenium Adiantum-nigrum*.

PEACH: W. H. A. It cannot be Royal George, but is probably Lord Palmerston.

STRAWBERRIES, POTATOS, ETC.: O. P. 1. A ton of fruit from an acre of President Strawberries is considered a good average crop. 2. From 6 to 7 tons an acre is considered an average crop of round Potatos grown in fields. 3. The largest makers of punnets are to be found at Brentford, and the price per gross is about 4s.

WATER LILIES: R. G. M. These are difficult flowers to dry, on account of their fleshy substance. We know of no better plan than to pass a penknife, sideways, through the stalks and the thick part of the flower, and to press between thick layers of bibulous paper. The incision assists the expulsion of the contained watery juices.

* Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED:—Peter S. Robertson & Co. (33, St. Andrew Square, Edinburgh), Catalogue of Dutch Flower Roots.—Wise & Rides (3, Tavistock Court, Covent Garden), Trade List of Flower Roots, &c.—Sutton & Sons (Reading), Bulb Catalogue.—Stephen Brown (Weston-super-Mare), Catalogue of Bulbs and Flower Roots, Spring Flowering Plants, &c.—James Carter & Co. (High Holborn), Catalogue of Dutch Flower Roots, Roses, Fruit Trees, &c.

COMMUNICATIONS RECEIVED:—J. A. C.—C. E. F.—Royston. Forcettiana.—S. A. S.—J. D. R.—J. H. G.—T. D. H.—H. L. C.—J. W. & Co.—G. & S.—D. T. F.—G. W.—H. C.—W. P. J.—S.—Ebor.—J. C.—W. B.—J. P. P. C.—G. G.—R. H. P.

Markets.

COVENT GARDEN, August 26.

We have no alteration to record, business remaining about the same. James Webber, Wholesale Apple Market.

FRUIT.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0-3 0	Lemons, per 100	6 0-10 0
Apricots, per box	1 0-1 6	Melons, each	2 0-5 0
Cherries, per ½-sieve	6 0-12 0	Oranges, per 100	6 0-12 0
Currants, black,		Peaches, per doz.	4 0-8 0
½-sieve	9 0-11 0	Pine-apples, per lb.	1 6-4 5
Gooseberries, per		Raspberries, per lb.	3 0-3 0
½-sieve	2 3-3 6	Strawberries, per lb.	0 6-1 0
Grapes, per lb.	1 0-4 0		

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	4 0-6 0	Horse Radish, p. bun.	4 0-
per doz.	4 0-6 0	Lettuces, Cabbage,	
Aubergines, per doz.	3 0-	per doz.	0 6-1 6
Beans, French, p. lb.	0 6-	Mint, green, bunch.	0 4-
Beet, per doz.	1 6-2 0	Mushrooms, p. bask.	1 6-2 0
Cabbages, per doz.	1 0-2 0	Onions, per bushel.	5 0-
Carrots, new, bunch	0 4-0 6	— Spring, per bun.	0 6-
Cauliflowers, Eng-		Parsley, per bunch.	0 4-
lish, each	0 3-0 6	Peas, English, per qt.	1 6-
Celery, per bundle	1 6-2 0	Radishes, per bun.	0 2-
Chilis, per 100	3 0-	Small salad, pun.	0 4-
Cucumbers, per doz.	6 0-9 0	Spinach, per bushel	2 6-
Endive, per doz.	1 6-3 0	Tomatos, per lb.	0 9-1 0
Garlic, per lb.	1 0-	Turnips, new, bunch.	2 4-
Herbs, per bunch	0 2-0 4	Veget. Marrows, doz.	2 0-

Potatos are all much lower, and prices down all round from 1s to 1s 2d.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	3 0-6 0	Foliage Plants, vari-	
Balsams, per dozen	3 0-6 0	ous each	2 0-10 0
Begonias, per doz.	4 0-12 0	Fuchsias, per dozen	3 0-9 0
Bouvardias, per doz.	12 0-24 0	Lilium auratum, doz.	18 0-48 0
Calceolarias, per doz.	4 0-12 0	— various, per doz.	9 0-18 0
Chrysanth., per doz.	6 0-12 0	Loebelia, per dozen	3 0-6 0
Cockscomb, p. doz.	3 0-6 0	Mignonette, per doz.	4 0-6 0
Coleus, per dozen	3 0-9 0	Myrtles, per doz.	6 0-12 0
Cyperus, per dozen	4 0-9 0	Nasturtium, dozen	3 0-6 0
Dracena terminalis	30 0-60 0	Palms in var., each	6-21 0
— viridis, per doz.	12 0-24 0	Pelargoniums, dozen	9 0-24 0
Euonymus, various,		— Ivy-leaved, doz.	4 0-8 0
per dozen	6 0-18 0	— Tricolor	4 0-12 0
Ferns, in variety, per		— scarlet, per doz.	2 0-6 0
dozen	4 0-18 0	Rhodanthe, per doz.	6 0-9 0
Ficus elastica, each	1 6-7 6	Solanums, per dozen	6 0-18 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3-0 6	Heliotropes, 12 sp.	0 6-1 0
Asters, 12 bunches	3 0-6 0	Mignonette, 12 bun.	2 0-6 0
Bouvardias, per bun.	1 0-4 0	Pelargoniums,	
Calceolarias, p. bunch	0 9-1 0	sprays	0 6-1 0
Carnations, 12 bun.	3 0-9 0	— zonal, 12 sprays	3 0-6 0
Cornflower, per doz.	2 0-4 0	Phlox, 12 bunches	6 0-12 0
Eschscholtzia, 12 bun.	2 0-4 0	Primula, double, per	
Eucharis, per doz.	3 0-6 0	bunch	1 0-1 6
Feverfew, 12 bun.	4 0-6 0	Roses (indoor), doz.	1 0-6 0
Forget-me-not,	12	— outdoor, 12 bun.	3 0-9 0
bunches	3 0-9 0	Stephanotis, 12 spr.	3 0-6 0
Gardenias, 12 blms.	3 0-6 0	Træpæolum, 12 bun.	1 0-3 0
Gladioli, 12 spikes	1 0-3 0	Tuberose, per dozen	1 0-2 0

CORN.

A moderate quantity of new English Wheat was on sale at Mark Lane on Monday. The prices quoted were:—Red, 42s. to 45s.; and white, 46s. to 50s. per quarter. Old Wheat met with a dull sale, at a reduction in price of about 2s. per quarter. Foreign Wheat was very quiet; a reduction of 1s. 6d. to 2s. per quarter was quoted. In Barley prices were unchanged. Malt sold at about previous rates. Indian Corn realised fully late prices, but Oats were about 1s. per quarter cheaper. Beans and Beas sold slowly at about late rates. The top price of town-made flour was reduced 4s., or to 43s. per sack of 280 lb., and the value of other kinds had a downward tendency.—On Wednesday trade was a shade firmer. There was not much doing, but full prices were realised. The new English Wheat on offer was quoted as on Monday. Barley moved off slowly on former terms. Malt was neglected. Oats were in large supply, and, with a dull sale, prices were not very well supported. Maize was quite as dear. Beans and Peas changed hands to a limited extent at previous currencies. Flour was dull at the recent decline.—Average prices of corn for the week ending Aug. 21:—Wheat, 43s. 9d.; Barley, 29s. 8d.; Oats, 24s. 5d. For the corresponding period last year:—Wheat, 49s. 3d.; Barley, 31s. 1d.; Oats, 24s. 10d.

CATTLE.

At the Metropolitan Market on Monday trade in beasts was not very brisk, but it was quite possible to realise the previous Monday's quotations, the tendency being upwards for choicest. The number of sheep was rather small, but quite equal to the demand; indeed, that day's prices were with difficulty obtained. There was more briskness in the lamb trade, and rather more money given for choicest. The calf trade was unaltered. Quotations:—Beasts, 4s. 6d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 5s. 8d.; sheep, 5s. to 5s. 8d., and 6s. 4d. to 7s.; lambs, 6s. 8d. to 7s. 8d.—On Thursday trade was quiet in tone. A large supply of beasts was offered, including 500 fresh Canadians. There was a slow inquiry, at a decline of 2d. per 8 lb. Sheep met a fair inquiry at steady prices, and calves were firm.

HAY.

Tuesday's Whitechapel Market report states that good straw was scarce and rather dearer. In other respects there was no material change. Prime Clover, 120s. to 140s.; inferior, 70s. to 103s.; prime meadow hay, 93s. to 112s.; inferior, 30s. to 80s.; and straw, 26s. to 40s. per load.—On Thursday there was a moderate supply of hay and straw. Trade was very dull, and prices without alteration.—Cumberland Market quotations:—Superior meadow hay, 105s. to 112s.; inferior, 45s. to 90s.; new hay, 60s. to 95s.; superior old Clover, 128s. to 135s.; inferior, 106s. to 114s.; new Clover, 84s. to 110s.; and straw, 36s. to 40s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that fair average supplies are on sale, and transactions progress slowly at the subjoined currency:—Kent kidneys, 7s.; ditto, Regents, 6s. to 7s.; English, ditto, 4s.; and Jersey kidneys, 6s. per cwt.—The imports have been unimportant. Potatos have arrived in moderate quantities at Southampton from the Channel Islands.

COALS.

The following are the quotations current at market during the week:—Broomhill West Hartley, 14s.; East Wylam, 14s. 6d.; Walls End—Hetton, 15s.; Hetton Lyons, 13s. 6d.; Lambton, 14s. 6d.; Original Hartlepool, 15s.; Wear, 13s. 6d.; South Hetton, 15s.; Chilton Tees, 14s. 6d.; Tees, 14s. 9d.; Hawthorns, 13s. 9d.; Tunstall, 13s. 6d.; Radford Navigation, 15s. 9d.

Government Stock.—The closing prices of Consols on Monday were 97½ to 98 for both delivery and the account. The same figures were recorded on Tuesday. On Wednesday the final quotations were 97½ to 97½ for both delivery and the account. Thursday's closing quotations were 97½ to 97½ for both account and delivery.

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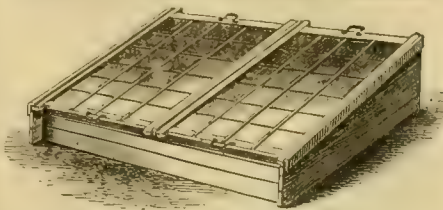
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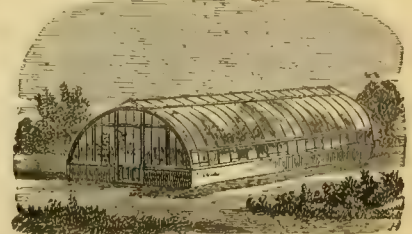
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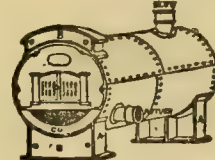
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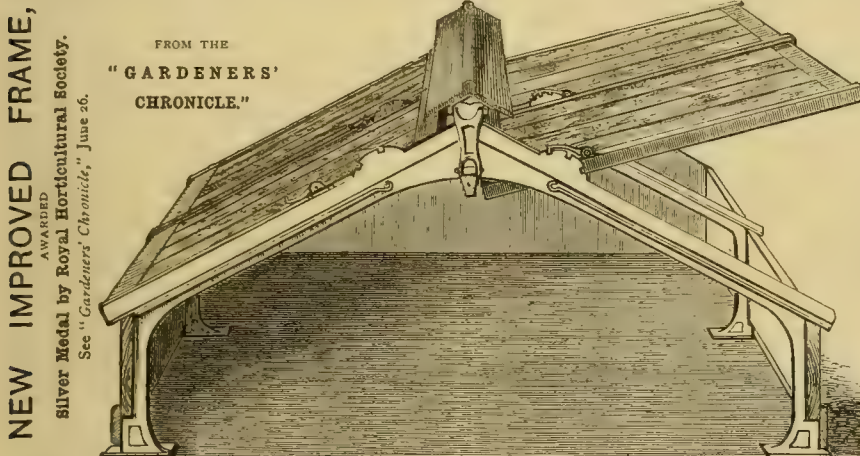
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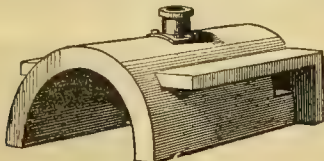
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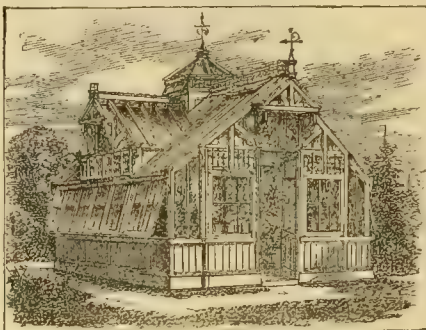
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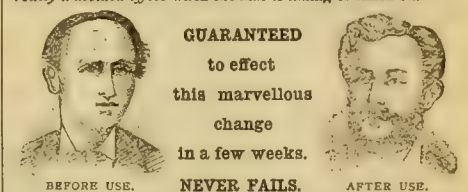
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—Safety and Certainty.—These celebrated remedies are superior to all others, in respect of the safety of their action and the certainty of their results. Mild, yet effective, they act as laxatives and detergents, eliminating from the blood all morbid and effete material, promoting the action of the skin, kidneys, and other excretory organs; thus placing the system in the most favourable condition for combating malaria, and the poisonous effects of sewer gases, tainted food, and other similar influences. —Fistulas, Ulcers, Boils, and every form of Skin Disease quickly assume a healthy aspect when subjected to the detergent action of this Ointment, as it reduces inflammation, cleanses the surface, and so causes healthy granulations to arise.

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The British Government. The Indian Government. The Colonial Governments. 15,000 of the Nobility, Gentry, and Clergy.

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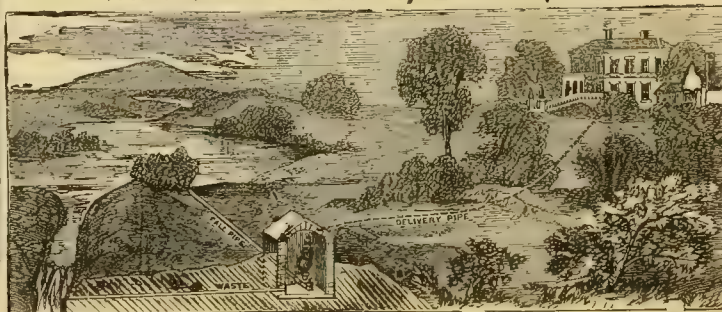
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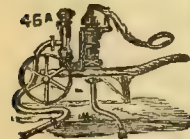


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THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance without cost for labour or motive-power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.



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S. OWENS AND CO. Manufacture and Erect every description of Hydraulic and General Engineers' Work for Mansions, Farms, &c., comprising PUMPS, TURBINES, WATER WHEELS, WARMING APPARATUS, BATHS, DRYING CLOSETS, GASWORKS, Apparatus for LIQUID MANURE distribution, FIRE MAINS, HYDRANTS, HOSE PIPES, &c., &c. Particulars taken in any part of the Country. Plans and Estimates furnished.

ILLUSTRATED CATALOGUES CAN BE HAD ON APPLICATION.

PARHAM'S PATENT SYSTEM OF GLAZING WITHOUT PUTTY,



With Wrought-iron Channelled Rafters, Continuous Lapped Glass, and Rainproof Ventilators under Glass Super Roof.



Parham's Patent Registered Plant Preservers,

With "Truss" Hinge, and no Principals. The Ridge always fits close, the interior is free from all obstruction, and the corners are secured in iron angle-plates: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
6 feet by 3 feet	..	£2 7 6	12 feet by 3 feet	..	£4 0 0
6 feet by 4 feet	..	3 0 0	12 feet by 4 feet	..	5 0 0
6 feet by 5 feet	..	3 15 0	12 feet by 5 feet	..	6 5 0
6 feet by 6 feet	..	4 15 0	12 feet by 6 feet	..	7 10 0

Any other sizes at proportionate price.

Both systems avoid the heavy expense of re-puttying and breakage of glass, and effect a great saving in cost of re-painting and repairs, combined with absolute freedom from drip.

The sole manufacture of both the above systems is carried on by

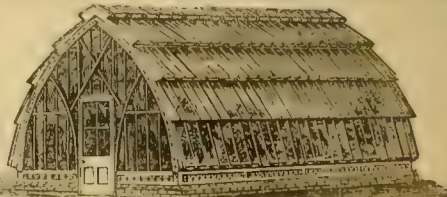
WILLIAM PARHAM,
Horticultural Builder and Hot-water Engineer,
NORTHGATE WORKS, BATH;
AND
280, Oxford Street, London, W.
(Who has purchased the Business of the late Firm of
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With Diffused Ventilation, Stepped Roof, Wood Grooved Sash-bars, and Curvilinear Outline on Laminated Principals.



Parham's Extra Strong Garden Frames,

With 2-inch sashes and 1 1/2-inch red deal framing, secured at each corner with two wrought-iron strap bolts: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
4 feet by 6 feet, 1 light	..	£2 2 0	16 feet by 6 feet, 4 lights	..	£7 5 0
8 feet by 6 feet, 2 lights	..	3 12 0	20 feet by 6 feet, 5 lights	..	8 15 0
12 feet by 6 feet, 3 lights	..	5 7 6	24 feet by 6 feet, 6 lights	..	10 10 0

Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork, at proportionate prices.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 349.—VOL. XIV. { NEW SERIES. } SATURDAY, SEPTEMBER 4, 1880.

{ Registered at the General Post-office as a Newspaper. } Price 5d. POST FREE, 5½d.

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NOTICE.—Will shortly be published with the "Gardeners' Chronicle," a Double-page Plate of NARCISSUS. Full particulars will be duly announced.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,
THE GARDENERS' CHRONICLE,
Volume XIII., JANUARY to JUNE, 1880.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

THE INTERNATIONAL POTATO SHOW will be held at the Crystal Palace, Sydenham, S.E., on SEPTEMBER 22 and 23. The Exhibition will be opened by the President, the Right Hon. the Lord Mayor of London. Last day of Entry, September 14. Schedules and all particulars to be obtained of J. A. MCKENZIE, Tower Chambers, Moorgate, London, E.C.

INTERNATIONAL POTATO EXHIBITION.—Intending competitors should bear in mind their entries for the Valuable Prizes offered by JAMES CARTER and CO., in connection with those given by the Right Hon. the Lord Mayor of London, in Class A, should be made on or before September 14th to J. A. MCKENZIE, Tower Chambers, Moorgate, E.C.
The matter of judging Messrs. Carter leave entirely to the Committee, feeling sure all competitors will be perfectly satisfied with their decision.
The Queen's Seedsmen, 237 and 238, High Holborn, W.C.

Deutzia gracilis.
WILLIAM FLETCHER has a fine stock of the above to offer. Fine bushy plants, with from 10 to 20 branches, price 21s. per 100, £10 to per 1000.
Ottershaw Nurseries, Chertsey.

JULES DE COCK, Nurseries, Ghent, Belgium.—Specialities of AZALEAS INDICA and MOLLIS, CAMELLIAS, DEUTZIA GRACILIS, and SPIRÆA JAPONICA, for forcing.

LILY OF THE VALLEY.—Fine strong Crowns for forcing, the best quality, as known in use many years; 40s. per 1000; by taking at least 5000, at 38s. per 1000, for cash, carriage free to Hamburg. By taking at least 10,000, and cash with order, carriage free to London. Early orders requested.
ROBERT NEUMANN, Erfurt, Germany.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this."
Two Cuttings, post-free, for 1s. 2d.
One Plant, post-free, 1s. 6d.
The Home for Flowers, Swanley, Kent.

CHRISTMAS ROSES,
ready to give two to five flowers next winter.
500 for £2, 1000 for £4, 5000 for £16.
PETER DE COCK, The White Flower Nursery, Meirlebeke, Ghent, Belgium.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE OF FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST OF FERNS," free on application.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—J. E. ALDERSON, Bell Farm, Hershaw, near Walton-on-Thames, Surrey.

EWING AND CO'S Magnificent Collection of ROSES is NOW in FULL BLOOM. Intending purchasers are specially invited to inspect the stock. The Nurseries are open to the Public on Week-days. CATALOGUES of Roses and General Nursery Stock gratis and post-free.
The Royal Norfolk Nurseries, Eaton, near Norwich.

To the Trade only.
E. H. KRELAGE and SON, NURSERYMEN, SREDSMEN and FLORISTS, Haarlem, Holland.
The Wholesale CATALOGUE (No. 347a) of Dutch Flower Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants, for 1880-81, is now ready, and may be had free on pre-paid application, by Nurserymen, Florists and Seedsmen.

Potentillas (Double and Single-flowered) in Pots.
ROBERT PARKER begs to announce that he can supply the above-named by the dozen or 100, in 40 named varieties, from 9s per dozen upwards. Priced LISTS with New General CATALOGUE of Hardy, Greenhouse, and Stove Plants, forwarded to applicants.
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MESSRS. JOHN STANDISH and CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
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CATALOGUES free. The Trade supplied.

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INFALLIBLE MILDEW COMPOSITION.
Special LISTS, with full particulars, now ready, gratis and post-free.
EWING and CO., EATON, NORWICH.

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BUDDENBORG BROS., BULB GROWERS, Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.

FRUITING PLANTS OF PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS and SON, Sawbridgeworth, Herts.

WANTED, SIX CAMELLIAS. Must be good, healthy Plants—two of which should be about 6 feet 6 inches high, two 4 feet 6 inches, and two 3 feet 6 inches.
Please state price and variety to
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Wanted, Rose Stocks.
WANTED, 5000 Standard BRIER ROSE STOCKS, to be delivered in November. Address price and particulars to
JOSHUA LE CORNU, High View Nurseries, Jersey.

WANTED, by a House in the Trade, a few Hundred good STANDARD ROSES for cash. Offers to be addressed,
C C., *Gardeners' Chronicle* Office, W.C.

Buds for Budding.
WANTED, Buds of the following varieties of ROSES:—Alfred R. Williams, May Quennell, Duchess of Bedford, Countess of Rosebery, Constantine Tretiafok, and Harrison Weir. Must be guaranteed true to name. Send Price and quantity to offer to
ROBERT MACK and SON, North of England Rose Nurseries, Catterick and Scorton, Yorkshire.

WANTED, offers for Specimen PALMS, FERNS, PANDANUS, &c.; 1000 GOLDEN EUONYMUS; also Budding GERANIUMS. To be cleared for want of room. Particulars on application to
W. GROVE, St. Owen's Nursery, Hereford.

WANTED, ZONAL PELARGONIUM CUTTINGS, Vesuvius, Bicolors, Crystal Palace Gem, Master Christine, Mrs. Pollock, &c. STRAWBERRY, Sir Harry (true), and the new kinds.
H. CANNELL, Swanley, Kent.

To Farmers, Market Gardeners, and Others.
WANTED, FRUIT of all kinds. Prompt returns and moderate Commission.—WISE and RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

Strawberries.

CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice.
The Royal Nurseries, Slough.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. **MANUAL ON STRAWBERRY CULTURE,** with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

STRAWBERRIES.—Strong and well-rooted Runners for fruiting next season.
Descriptive LIST with Prices on application.
THOMAS RIVERS and SON, Sawbridgeworth, Herts.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

STRAWBERRIES.
Strong Roots for Fruiting next year, 4s. per 100.
Descriptive LIST on application.
RICHARD SMITH and CO., Nurserymen, Worcester.

SPIRÆA ULMARIA VARIEGATA.—Beautiful golden variegated foliage (see the *Garden*, of June 12, 1880, p. 13).
Messrs. BUDDENBORG BROS., Hillegom, near Haarlem, Holland, offer fine plants of the above at 20s. per 100.

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JOHN LAING and CO'S unrivalled Gold Medal Collection is now in bloom. Inspection invited. Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out.
LISTS free on application.
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Primulas—Primulas.
CHINENSIS FIMBRIATA, ALBA, ROSEA, and VARIEGATED—all good, strong plants, well packed, at 1s. 4d. per dozen, 8s. per 100.
Post-free, cash with all orders.
T. FLETCHER and SON, Florists, &c., Chesterfield.

HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other choice flowering Bulbs. Carriage free. Our very large consignment of the above bulbs is now received, which for quality and quantity is unequalled. Early orders are respectfully solicited.
Descriptive and Priced CATALOGUE free on application.
DICKSON and ROBINSON, 12, Old Millgate, Manchester.

Bulbs, Orchids, &c.
THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

Hyacinths, Tulips, &c.
BUDDENBORG BROS., Bulb Growers, House Bloomsward, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

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C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to
Messrs. R. SILBERRAD and SON, 25, Savage Gardens, Crutched Friars, London, E.C.

Butterfly Tulips, Calochorti.
A well executed Chromo-Lithograph of these lovely, novel, and hardy flowers, is published in
HOOPER'S BULB CATALOGUE.
Their Dutch Bulbs have also arrived in splendid condition, and the Prices are extremely low. The Catalogue may be had for 6 stamps post-free.
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The Largest Rose Gardens in England.
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Descriptive CATALOGUES on application. Address
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ORCHID SPHAGNUM (fine Fresh Green), single bushlets 2s. 6d., sacks 6s. and 7s. 6d. Choice MOSSES for Dressing Bird Cases, small hampers, 5s. THOS. BEAUCHAMP, Woodfalls Cross, Downton, Salisbury.

EDWIN HILLIER has to offer in quantities Double White PRIMULAS, ADIANTUM CUNEATUM, DAPHNE INDICA RUBRA, Tea-scented ROSES, Pot VINES, all well grown. Price per dozen or 200 on application.
The Nurseries, Winchester.

Cabbages for Sale.
THE PETERBOROUGH CORPORATION have now on Sale several acres of SUTTON'S EARLY DRUMHEAD CABBAGE, well grown, and in quantities to suit purchasers. For price and particulars, apply to
JOHN ADDY, Queen Street, Peterborough.—Aug. 27, 1880.

SALES BY AUCTION.

Dutch Bulbs—Special Trade Sale.

MESSRS. PROTHEROE AND MORRIS will SELL BY AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half past 11 o'clock precisely, an extensive consignment of first-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, and various BULBS from Holland, specially lotted to suit the Trade and other wholesale buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Clapham, S.W.

Adjoining the Clapham Road Station.

MESSRS. PROTHEROE AND MORRIS will SELL BY AUCTION, on the Premises, The Royal Nursery, High Street, Clapham, S.W., on THURSDAY, September 16, at 12 o'clock, by order of Mr. T. C. Paget, 4000 Winter-flowering HEATHS, in good condition, 2000 well-berried SOLANUMS, 1000 AZALEAS, including several large specimen plants of INDICA ALBA; 200 PALMS, including 500 COCOS WEDDELLIANA; 2000 GREENHOUSE FERNS, 500 EPIPHYLLUMS, 500 named CARANTIONS and PICOTEEES, 100 CAMELLIAS, 500 CYCLAMENS, a few lots of ODONTOGLOSSUM ALEXANDRE, and other Established ORCHIDS, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Lee, S.E.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Gregory & Evans (who are removing to new premises at Sidcup) to SELL BY AUCTION, at the Effingham Nursery, Effingham Road, Lee, on FRIDAY, September 17, at 1 o'clock precisely, 16,000 well grown Winter-blooming HEATHS, including 3000 ERICA HEMALIS, in 48's, 32's, and 40's; 7000 E. Wilmoreana and gracilis, showing a profusion of flower; 5000 ERICAS in thumbs and stores; 5000 SOLANUMS in 48's, well furnished with berries; 1000 BOUVARDIA HUGARTII and VRELANDII in 48's and 32's; and a quantity of other stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. On the removal of the Firm to Sidcup, the beneficial interest in the LEASE of the LEE NURSERY will be DISPOSED OF. Rent only £50. Full particulars of the Auctioneers.

Lee, S.E.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. B. Maller to SELL BY AUCTION, on the Premises, the Burnt Ash Nursery, Lee, S.E., on TUESDAY, September 27, 17,000 Winter-blooming HEATHS, unsurpassed in the trade; 10,000 ERICA HEMALIS, in 60 and other pots; 5000 SOLANUMS, beautifully berried; 5000 remarkably fine ADIANTUM CUNEATUM, 3000 CYCLAMEN PERSICUM, 5000 CYTISUS RACEMOSUS, and other stock.

N.B.—Intending purchasers are invited to inspect the Stock, which is in splendid condition.

Lee Bridge Nurseries, Leyton, E.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to SELL, on the Premises, on WEDNESDAY, September 23, several thousands of Winter-blooming HEATHS and other stock.

Further particulars next week.

Brunswick Nursery, Tottenham, N.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Maller to SELL BY AUCTION, on the Premises, on THURSDAY, September 23, several thousands of Winter-blooming HEATHS, and other stock.

Further particulars next week.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY, during September, at half-past 12 o'clock precisely each day, consignments of DUTCH BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the morning of Sale, and Catalogues had.

Valuable Imported Orchids.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, of St. Albans, to SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 9, at half-past 12 o'clock precisely, splendid Importations of ORCHIDS, comprising the new Chondrorhyncha Chestertonii (see *Gardener's Chronicle*, November 22, 1879). Prof. Reichenbach says, "This is a very remarkable New Grenadian discovery." Flowers will be on view. Quantities of *Odontoglossum vexillarium* and *Roezlii*, *Oncidium tigrinum*, the rare *Scuticaria* *Dodgsoni*, and *Steele*, the splendid *Epidendrum cinnabarinum*, from Brazil; a large Importation of *Cattleya Mendelii*, *Cattleya Dowiana*, *intermedia*, *Mossiae* and *Trianae*; *Odontoglossum Pescatorei*, *nativum*, *majus* and *citrinum*; a fine lot of *Pescatorea* *Klabochorum*, *Paphinia rugosa*, *Mormodes luxatum*, and various other Orchids.

May be viewed the morning of Sale, and Catalogues had.

Manchester.

SALE OF A CHOICE COLLECTION OF CAMELLIAS, of exceptionally fine growth, numbering about 45 well-trained plants of good varieties, and varying in size from 4 feet to 15 feet high, all well set with buds; about 37 exceedingly fine Specimen AZALEAS, of good bushy growth, the sizes from 3 feet to 7 feet high, and from a foot to 7 feet through; a Selection of Choice EXOTIC and BRITISH FERNS, and a large number of Valuable STOVE PLANTS, in healthy condition.

MESSRS. CAPES, DUNN, AND PILCHER beg to announce that they are instructed by Mrs. Leisler to SELL BY AUCTION, on WEDNESDAY, September 15, at 11 o'clock, in the gardens of her residence, Victoria Park, Manchester, the remarkably fine Collection of Valuable CAMELLIAS and AZALEAS, STOVE PLANTS, FERNS, &c.

May be viewed on Tuesday, September 14, or previously, by order to be obtained from the Auctioneers, who will also post Catalogues to any address, on application at their offices, 8, Clarence Street, Manchester.

Stapleford: Manor Farm.

7 miles from Salisbury, and 2 miles from Wishford. HAMPSHIRE DOWN BREEDING FLOCK, Teams of CART HORSES, Clydesdale STALLION, NAGS, SWINE, 700 FLEECES OF WOOL; three HOTHOUSES, 2400 choice selected PEDIGREE POT ROSES, and several thousands of FLOWER POTS various sizes.

MESSRS. MARSH, DAWES AND DEAR are favoured with instructions from Mr. H. Bennett, who is leaving his farm at Michaelmas next, to SELL BY AUCTION, on the Premises, on THURSDAY, September 9, at 12 o'clock, the whole of the LIVE and DEAD FARMING STOCK, comprising 131 six-teeth Ewes, 176 two-teeth Ewes, 157 four-teeth Ewes, 200 chivver Lambs, 40 wether Lambs, 10 valuable Cart Horses, 2 Nags, portable Greenhouse by Bickley, 74 feet by 10 feet, with hot-water heating apparatus complete; out to (Paxton), 50 feet by 16 feet; ditto, 52 feet by 17 feet, with Messinger's patent heating appliances; 200 dozens of Pedigree Pot Roses, 700 Fleece of Down Wool, together with the modern Farm Implements, and numerous other effects. Sale to commence at 11 o'clock precisely; Luncheon at 1 o'clock.

N.B.—The Great Western Railway Company have kindly consented to allow the 10 A.M. train from Bristol to stop at Wishford Station, where conveyances will be in waiting to convey parties to the sale. Breaks will also meet the 10.45 train from Salisbury, and the 10.21 from Exeter at the Wilton Stations. Catalogues may be obtained of the Auctioneers, City Chambers, Salisbury, or Messrs. MARSH AND DAWES, Devizes.

Freehold Land, and extensive, valuable, and lucrative

Gardener's, Florist's, Fruiterer's, Nurseryman's, and Seedsman's Business, as a going concern, in the county of Cumberland, for Sale.

MR. C. P. HARDY has been instructed to SELL BY AUCTION, shortly, the entire BUSINESS, as a going concern, of the late Mr. Thomas Hamilton, of Botcherby. The Estate comprises 18 a. 3 r. 2 p. of superior Freehold Land, on which are erected extensive Vineries, Conservatories, Cucumber and Propagating Houses, Greenhouses, Dwelling House, with Out-offices, Stables, Coach House, Barns, Byres, Piggeries, Potting and Packing Sheds, Boiler and Forcing Houses, Cottage, Strawberry Forum, &c., &c. The Glass Houses, which are mostly in splendid condition, are filled with the choicest Vines, Cucumbers, Melons, &c., the whole of which have been intelligently cultivated, and the adaptation of the best mode of heating and ventilating at the least cost is very demonstrable. A large portion of the area is covered with fine Forest and Fruit Trees, in all stages of their early growth, for which large orders can be promptly executed. In addition to the foregoing are beautiful varieties of all kinds of Decorative Shrubs and Plants, large Fruit and Vegetable Gardens, and the celebrated Botcherby Strawberry Beds. Besides these are the growing produce of several fields in the immediate vicinity, held under lease, the goodwill of which will be included in the transfer. Botcherby Gardens are situate 1½ mile from the Citadel Station, Carlisle, and are an intensely popular institution. Messrs. Hamilton, the owners, will show the property, which embraces magnificent building sites.

Descriptive Catalogues will be published, and may be had, with further particulars, at the offices of Messrs. DOBSON AND WATSON, Solicitors, 47, Lowther Street, Carlisle.

The late Mr. John Verschaffelt.

THE NURSERY at LEDEBERG near Ghent, lately conducted by Mr. Jean Nuytens Verschaffelt, is for SALE, on advantageous terms, and with special facilities for payment to a suitable purchaser. Apply to MADAME NUYTENS VERSCHAFFELT, Chaussée de Bruxelles, 134, Ledeborg lez Gand, Belgium.

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TO BE LET, with possession at Michaelmas next, a commodious DWELLING HOUSE, and about 5 acres of GROUND, well stocked with Fruit Trees, Bushes, &c., at which the Business of a Market Gardener has been for some years profitably carried on by Mr. James Dawes, who is retiring from that occupation.

For particulars of rent, &c., apply to ROBERT FENN, Esq., Solicitor, Newmarket.

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TO BE LET, on LEASE, 4 a. 2 r. 23 p. of productive MARKET GARDEN LANDS, all walled in and well cropped with Fruit Trees. On the land are a Brick-built Cottage, Glass Erections, and Sheds. Rent £55 per annum. Further particulars and cards to view of Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

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And 2 ounce Sample Jars, 6d. each.

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MR. J. C. STEVENS has received instructions from Mr. F. SANDER, of St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 9, at half-past 12 o'clock precisely, splendid Importations of ORCHIDS, comprising the new CHONDRORRHYNCHA CHESTERTONI (see *Gardeners' Chronicle*, November 22, 1879). Professor Reichenbach says, "This is a very remarkable New Grenadian discovery." Flowers will be on view. Quantities of ODONTOGLOSSUM VEXILLARIUM and ROEZLII, ONCIDIUM TIGRINUM, the rare SCUTICARIA DODGSONI and STEELI, the splendid EPIDENDRUM CINNABARINUM, from Brazil; a large Importation of CATTLEYA MENDELII, DOWIANA, INTERMEDIA, MOSSIÆ, and TRIANÆ; ODONTOGLOSSUM PESCATOREI, NÆVIUM, MAJUS, and CITROSMUM; a fine lot of PESCATOREA KLABOCHORUM, PAPHINIA RUGOSA, MORMODES LUXATUM, and various other ORCHIDS.

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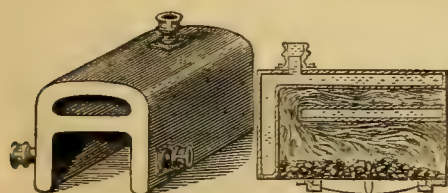
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EARLY DOUBLE ROMAN NARCISSUS,
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EARLY SINGLE TULIPS,
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Gratis and post-free on application.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.



THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 4, 1880.

GROUND-NUTS.

IN the natural order Leguminosæ, which contains such a large number of species, and plants of such varied characters, two genera are remarkable for having individuals with a peculiar habit, namely, that of ripening their seeds underground.

The first of these plants, commonly known as the Ground-nut (*Arachis hypogæa*), is a trailing, straggling annual, growing about 2 feet high, with a thick angular, pale green, hairy stem, and spreading branches. It bears yellow papilionaceous flowers, the calyx of which has a very long and slender tube, expanding at the top into two deeply cut lips. In general appearance this calyx tube has a strong resemblance to a flower-stalk, and being of a green colour it is the more easily mistaken; it was, indeed, for a long time so mistaken. The yellow petals are inserted in the throat of the calyx. The stamens are ten in number, frequently, however, one is abortive. The filaments are united into a tube for nearly their entire length, the anthers alternately rounded and oval. The ovary at first is very small, and is seated at the bottom of the calyx-tube. The style is very long and slender, projecting a short distance beyond the staminal tube. After the flower has withered or fallen off the ovary remains very small for some time, at the end of the long stalk, which, as it grows, curves downwards, pushing the ovary into the ground, and when sufficiently deep it begins to enlarge, perfecting itself in this position beneath the surface of the soil. So necessary is this burying process that, if anything occurs to prevent it neither the ovary is increased nor are the seeds formed. When fully grown the fruits are about 1 inch or 1½ inch long, of a dusky-yellowish colour, and with a netted or reticulated surface; each pod contains usually two brownish-red seeds, sometimes, however, three are found, but very rarely.

So largely is this plant cultivated at the present time in most tropical countries for the sake of the oil contained in the seeds, that it is difficult to fix upon its native country. It is, however, considered by some authors to have probably originally come from Brazil, the other species of the genus being natives of that country. Though, as we have already said, the plant is largely cultivated in nearly all tropical regions, it is in Western Tropical Africa that it is most extensively grown.

It is described by Mr. Monteiro, in his *Angola and the River Congo*, as perhaps the most important plant in native tropical African agriculture. Many thousand tons are grown on the west coast, large quantities being sent to Europe, principally to France. The author of the interesting work above referred to considers that the *Arachis* is destined to become one of the most important oil seeds of the future. The plant, which is known as the Mpinda or Ginguba, is cultivated in the greatest abundance a few miles inland from the coast,

where the soil and climate are both better than in the arid country near the sea. Requiring as it does a rich soil for its profitable cultivation, it is consequently chiefly grown in the bottoms of the valleys or in marshes, or in the vicinity of rivers. The cultivation is very simple. After the ground is cleared the weeds and grass are left to dry, and are then burnt off, after which the ground is dug only to the depth of a few inches by women with little hoes, which, indeed, are the only agricultural implements used. The seeds are then dropped into the ground and covered up. These operations are carried on in October and November, and the first crop of seeds which are gathered for eating in a green state is ready about April. It is, however, not till July or August that they become thoroughly ripe and fit for harvesting for commercial purposes. Several thousand tons of these seeds are annually produced in this part of Africa, the bulk of which is grown in the Mbamba country, lying parallel with the coast, at a distance of from 30 to 80 miles inland. The population of this comparatively small district is said to be very large, as may be gathered from the fact that the large produce of Ground-nuts are shelled by hand, and brought down to the coast on the heads of the natives.

It is found by the natives to be more profitable to sell the seeds than to express the oil themselves, therefore but little oil beyond that required for their own use is prepared by them. Formerly it was obtained in a very rude manner by first pounding the seeds into a uniform mass in a wooden mortar. A lump was then taken from the mortar, hot water poured upon it, and the whole squeezed in the hands, the oil and water running from it, which was afterwards separated. The oil is very largely used in Angola for culinary purposes. The seeds, simply reduced to a paste, by being ground on a stone, are used to thicken stews and similar dishes. Mr. Monteiro describes a large plantation of Ground-nuts as a very beautiful sight—"a rich expanse of the most luxuriant foliage of the brightest green, every leaf studded with diamond-like drops glittering in the early sun. The Ground-nut is an important part of the food of the natives, and more so in the country from Ambriz to the River Congo than south at Loanda and Benguela. It is seldom eaten raw, but roasted, and when young and green, and roasted in the husks, is really delicious eating. It is excessively oily when fully ripe, and the natives then generally eat it with Bananas, and either the raw Mandioca root, or some preparation of it, experience showing them the necessity of the admixture of a farinaceous substance with an excessively oily food."

From India also large quantities of Arachis or Ground-nut oil are exported. In some of the Southern States of America the plant is now largely grown. Marseilles is the principal centre of the trade in this oil, but enormous quantities are brought to London as well as to the chief towns of Holland and Germany. So largely is the oil developed in the seeds that it is easily obtained by simple expression either with or without heat, that produced by the cold process being of course the most valuable. The oil is of a very light colour, with a bland taste, so much resembling Olive-oil that it is said to be largely used for adulterating that oil. For pharmaceutical purposes Ground-nut oil is now almost exclusively used in India instead of Olive-oil, and in this country its chief use is in soap-making as well as in the preparation of cold cream and other toilet adjuncts. The residue of the seeds is made into cake for feeding cattle, and has been strongly recommended on account of the oil contained in it, its sweet taste, digestibility, and its richness in flesh-formers. As food for man the seeds are used in different parts of the world, either cooked or raw. In England they

are frequently seen in small shops, being eaten chiefly by children, who call them Monkey Nuts. In America a sweetmeat is prepared from them, by parching them and treating them with sugar: simply roasted, they are said to form a good substitute for coffee, and when finely beaten up into a pulp and formed into cakes are sold in America for use as chocolate. In Loanda the traffic in Ground-nuts is very extensive, and a source of great wealth to the country. In Am-bacca, one of the most populous districts of the interior, thousands of tons were, until recently, sold annually; at the present time this trade is said to have almost entirely ceased. In consequence of the decrease in the price of Ground-nuts—from £20 to £14 per ton—there has been but little inducement for the natives to cultivate the plant except for their own consumption.

The second plant, of which we spoke at the commencement as having a similar habit to that of the Arachis, of ripening the seeds beneath the earth, is known as the Bambaarra Ground-nut (*Voandzeia subterranea*). Like Arachis it belongs to the section Papilionaceæ. It is the only species of the genus, and is described as being a native of Africa, over which continent it is widely distributed by cultivation; it also occurs abundantly under the same conditions in Brazil and other parts of South America. Besides the name of Bambaarra Ground-nut, by which the plant is known in Africa, it is called by the natives in Natal Igiuhluha, and in Brazil Mandubi d'Angola. The plant is annual, creeping. The leaves are borne on long stalks, and are composed of three leaflets each, the central one itself being stalked. The flowers are yellow, papilionaceous, or similar in form to those of the last described plant. The calyx is bell-shaped, and the ovary, which bears two ovules, is surmounted by a short style and a hooked stigma. The flowers are both unisexual and perfect. After the period of flowering the flower-stalks bend over and push the young fruits into the ground, where, like the Arachis, they ripen their seeds. The pods, when fully grown, are about $\frac{3}{4}$ inch long, somewhat oval in shape, in colour resembling the pod of Arachis, and also marked with a network of ribs, but coarser and not so well defined as in the Ground-nut. Each pod contains but one seed, which is shining black marked by a small white hilum. These seeds are eaten in countries where the plant grows, either in an unripe state and boiled like Peas, or in their raw state when fully ripe.

ANNUAL LUPINES.

The annual Lupines are numerous, and varied in the character of the growth and the colours of their flowers; but it is very difficult to classify them in anything like proper order. There are certain species, some of which have been cultivated in this country for many years, and from these have been raised garden varieties, which inherit to some extent the characteristics of their progenitors, and form a group that have been denominated hybrids. Mr. Barron has this season bloomed a collection of Lupines at the Chiswick Gardens, many of them very effective and interesting, and furnishing pretty shades of violet and blue not found in some other flowers.

The groups of annual Lupines known as the Large Blue, the Dutch Blue, the Small Blue, the Rose, the Large White, the Small White, and the Yellow, are the most common in gardens. They are as generally grown as Mignonette, Nemophila, Nasturtiums, and others of the best known annuals. They are said to be imported species, some from the South of Europe, Spain, the Levant and Sicily. The Large Blue is *L. hirsutus*, and is well-known for its downy leaves and rich blue flowers; it is one of the best, growing about 2 feet in height; in the young blooms the centre is white, but it changes to a reddish colour with age. The Large Rose is *L. pilosus*, the Large White the white variety of this, both growing to a height of 2 feet, and bearing conspicuous flower-spikes. What Mr. Barron had in bloom as *L. hirsutus roseus* was, no

doubt, *L. pilosus*, and the ordinary yellow Lupine was there as *L. sulphureus*. Catalogues give us but little reliable information about the common Lupines, the species and varieties are mixed up in a confused manner by compilers of lists; and the nomenclature is very imperfect; as the same thing is entered under widely different names. The ordinary varieties are dear to many cottage gardens, and few plants in a humble way are more interesting from the neatness of the foliage and their elegant richly-coloured spikes of bloom.

When we come to the group of annual Lupines, in which we find *L. affinis*, *L. Hartwegii*, *L. nanus*, &c., the confusion is greater still. It is very difficult to correctly classify them. That there are different species we know. The blue flowered *L. Cruikshanksii* came from Peru about 1820; *L. nanus*, the pretty dwarf, branching, free blooming, and refined little Lupin, came from California in 1833; *L. Hartwegii*, from Mexico in 1838; *L. pubescens* from Quito in 1844; and so on. But many garden varieties have been obtained in this country, and especially on the seed farms of St. Osyth and Dedham, in Essex. The best information regarding these is in all probability in the possession of Mr. W. H. Dunnett, of Dedham. A Lupinus known as *monogyna* [*? Moritzianus*] was much used in the early stages of the production of these hybrids; but as it is now not to be found in catalogues it is perhaps out of general cultivation, or to be found under another name. It would appear from the information we have been able to obtain concerning it, that it is in the way of the downy *L. pubescens*, but the leaves are more erect, and also more glaucous.

One of the earliest of the garden varieties was raised from *L. pubescens*; it was originally named *tricolor elegans*, but is now known as *pubescens elegans*. With this there was distributed another new variety, named *Dunnettii insignis*, but now known as *hybridus insignis*. *L. hybridus*, which is but a garden variety, appears to form a distinct group, the best being *atro-coccineus*, a tall and strong growing type with flowers opening delicate pink, changing to deep pink with a pale plum-coloured centre; *insignis*, deep lilac, with pale purple centre, dwarfer than the foregoing, growing from 18 to 24 inches in height; *albus*, white, and *nigrescens*, dark purple.

L. Hartwegii and its varieties form an attractive and useful group; the former is one of the most showy of them, the flowers opening quite pale, and changing to deep blue; the young flowers have white centres, and they change to a reddish tint with age. This grows to a height of 3 feet, and is of a decidedly showy character. *L. Hartwegii albus* has white flowers in a young stage, but as they age they become tinged with pale lilac. This appears to be of dwarfer growth than the foregoing. There was once a variety named *rubus*, with pretty rosy-lilac flowers and white centres, but it was difficult to fix its character, and it became altogether lost. Another was named *persicus*, having Apple-blossom and lilac flowers, but this also could not be fixed. All the *Hartwegii* type have a free branching habit, and are prolific of bloom.

The pretty *L. nanus* is a delightful little Lupine, having a dense dwarf free branching growth, and being remarkably free of bloom; the colour of the flowers red, violet, and white. It is the smallest seeded of them all. *L. affinis* came also from California, and is supposed to have been a native selection from the foregoing; it keeps in bloom longer, the seed is of a darker colour, and a little larger in size than in the case of *L. nanus*. We may remark of these two, that if sown in the autumn the plants will flower in May and June; if sown in spring they will be in full beauty in July and August; and by means of successional sowings they can be had in flower as late as November if the autumn prove fine. *L. albo-coccineus* also comes from California, and is one of the most striking among this section of Lupines, having carmine-rose and white flowers, and a dwarf habit of growth.

L. pubescens partakes more of the biennial character than some of the foregoing, though many of them could be treated as biennials. It is not so woolly in the leaves and stalks as the typical *L. monogyna*, and puts out its leaves more horizontally; it is also earlier to flower. It is in the way of *L. Hartwegii*, but smaller flowered and a taller grower, and bears pale blue and white flowers, changing to blue and purple. There is a variety called *elegans* which is credited with richer colours in the flowers.

L. subcarnosus, the fleshy leaved Lupine, was introduced by Mr. Drummond from Texas nearly half a century ago, and has no doubt been improved by garden selection. It has a more prostrate growth than is common to the types in this section, in this respect coming nearer to *L. nanus*; the flowers are of a rich bright blue, with white blotches in the centre. If a select few Lupines are grown, *L. subcarnosus* should be one of them. *L. Menziesii* is another introduction from Texas, having pretty yellow flowers on handsome spikes of bloom, and the plant when well grown takes on a handsome pyramidal shape.

L. mutabilis is a late blooming type, growing 3 feet in height, the flowers opening white and yellow, changing to reddish-lilac, pale purple and orange; *L. mutabilis albus* is a distinct pure white variety, delicate and good. *L. Cruikshanksii* was formerly classed as a variety of *L. mutabilis* [As assuredly it is. Eds.], but now ranks as a distinct species in seed catalogues. All these annual Lupines are more or less changeable in the colours of their flowers, and especially is this true in the case of the varieties of *L. mutabilis*.

L. venustus is another Californian species of the character of *subcarnosus*, having bright blue flowers with a white lip, and growing to a height of 18 inches or so.

There are other names, but they are more or less repetitions of those noticed. A selection of the best forms should include *hybridus insignis*, *atro-coccineus*, *sulphureus*, *subcarnosus*, *Hartwegii*, and *nanus*. In cultivating these Lupines, they should be planted separately in good soil, and the plants supported with stakes, or they will be in danger of being blown about by the wind. The decaying spikes of bloom should be kept cut away, so as to assist the plants to put forth fresh heads of flowers.

The generic name *Lupin* signifies a wolf, in allusion to the exhausting habit of the plant, and its supposed injury to the soil. Some of the Lupines were extensively cultivated by the ancient Romans, both as forage plants for cattle and as pulse for human food, and they are still employed for the same purposes in some parts of the Continent. The white Lupine is so grown, and in Tuscany it is cultivated as an ameliorating crop to be ploughed in when no manure is to be had. The seeds have a strong, disagreeable, and bitter taste, and are said to be an excellent remedy for the complaint of worms, but they lose their unpleasant taste in boiling.

It used to be the practice years ago to grow *L. mutabilis* as a perennial, by cutting back the branches in autumn, and covering the plants with soft hay and mats for protection during winter. In this way it was had in flower for many successive seasons. *R. D.*

A WEEK IN SUSSEX.

(Concluded from p. 266.)

ROMNEY MARSH. — The following day I was driven over to Romney Marsh, by way of Beckley, Blackwall Bridge, Wittersham and Stonecliff. Conversation naturally turned on the denuding action of the sea, and in the distance we caught sight of Tenterden Steeple, which, according to tradition, "cost the Goodwin Sands." Money that was to be spent on a sea wall defrayed the church building expenses. Blackwall Bridge, near which are water meadows producing very heavy crops of hay, is the county boundary. With a small proportion of Crested Dog's-tail (*Cynosurus cristatus*), the grass was mainly Cat's-tails (*Alopecurus pratensis*, *bulbosus* and *geniculatus*) and Carices — rather a harsh selection. It seems that the present course of the Rother below this point has been artificially carried into an arm of the sea, the original channel being by Small, Hithe, and Ebony, round the other side of the so-called Isle of Oxney to Appledore. It is clear that at a very recent geological period the sea extended over the whole of Romney Marsh, and as far inland in a creek as Bodiam. The water-meadows of the Rother are now under water for months at a time, and would be so every high tide but for the embankments on the Marsh. The earliest mouth of the Rother seems to have been near Hythe or Lympe, the Portus Lemanis of the Romans. The old bay of Appledore must first have been silted up by tidal action, and would seem to have been upheaved naturally above sea-level, since peat occurs at some depth between Appledore, Rye, and Dungeness, forming what is, called, the "black water" of

the ditches. On this peat and silt has been deposited the alluvium of the various outlets of the Rother, which seems to have shifted its mouth from Lympe to Romney before the Norman Conquest, forming the raised Kee wall, just as the Mississippi runs between raised banks. In the middle of the thirteenth century some storms destroyed the Romney mouth, and the river shifted its outlet once more westward to Rye. The cut from Newenden to Blackwall and Stone was made about the middle of the seventeenth century, but the course taken had no doubt been a sea-creek, and Oxney once a sea-girt island. Parts of the Marsh are now at different levels, and the sea is kept out by a series of three earthworks, the chief of which is Dymchurch Wall, which are maintained by a "scot" on the land of so much an acre. Though intersected by "sewers" or wide brackish water-channels and narrower "dicks," the Marsh affords much permanently dry pasture, and rot is not common among the sheep. There is, however, a great deal of ague among the sparse population, which is composed chiefly of "lookers," or herdsmen, and some parts are under water in winter. The pasture on the whole is good, though "Squirrel-tail" (*Hordeum maritimum*) is too common; but the farmers are decided upon having no further crossing in their perfectly acclimatised Romney Marsh breed of sheep. Certainly for the combined production of wool and mutton few breeds can surpass or even equal it.

In a wood above Stonecliff amid abundance of of sphagnum I was shown the Cotton-grass (*Eriophorum angustifolium*) unusually luxuriant, and on descending the cliff, which is quarried for road metal, we found in the Military Canal an abundant aquatic flora, including yellow and white Water Lilies, *Myosotis palustris*, *Althea officinalis*, *Butomus*, *Alisma plantago*, *Sagittaria*, *Sparganium ramosum*, and *Typha angustifolia*, with several forms of aquatic *Ranunculi*. On the Marsh itself there was not much of interest, the sea Sandwort-spurrey, which we were told some one had collected as samphire, *Phragmites*, and common Rushes and Carices.

We inspected a quaint little church, known as Fairfield, in which one service is held on Sundays in the summer, it being in a swamp during the winter. The churchyard was approached by two foot-bridges and an ordinary field-gate: grass grew luxuriantly up to the door without a trace of a path, and there were no graves outside. Inside was a single slab in the floor. There were seven roomy pews besides those for the parson and clerk: the Royal arms and various texts in gold on black boards adorned (?) the white-washed chancel-beam and sloping roof: the communion table, under 4 feet square, stood covered with a short red cloth some 3 feet from the wall, surrounded on three sides with a railing and kneeling cushion. The belfry, the haunt of owls, contained three bells, but only one bell-rope, which threatened to pull down all the rotten gearing on the ringer's head; and all the windows, including that at the east end, were square, latticed, and protected by outside shutters. The land hereabout belongs to the Dean and Chapter of Canterbury. On the whole the district does not shine in ecclesiastical matters. The shingled spires or square towers with side turrets render the exterior of the churches pretty, and at Ewhurst Green, for instance, round and pointed Norman arches, ancient piscinas and ornamental Oak-work would make the interior so also, but for three glass chandeliers, reminding one of a London music hall. The congregations are very small, the livings valuable, and dissent flourishing. Perhaps the grandest sight of my visit was the wild fowl on a mere, or "brak," near Fairfield Church. Punting along a sewer among the reeds, we put up literally thousands, including herons, gulls, green plovers, sandpipers, snipe, widgeon, teal, and ducks. We saw some fine Wheat on the Marsh; but very little of it is arable, whilst in North-east Sussex, excepting very steep slopes, there is little pasture-land.

SUSSEX FARMING.

Returning under the old cliff line, close to the venerable town of Rye, and through Peasmarsh and Beckley, I had another opportunity of seeing the crops of the district. Steam cultivation is partly in use and horse-mowers, and the land is kept clean. The farming is not, however, very high, the fertility of the soil standing the owners in better stead than science. Much corn we saw dead ripe, or even sickle-eared, but the cutting had barely commenced. The backwardness of the hay-harvest was in part

answerable for this. Wheat and Oats were the only corn grown. Salt is used, though with sea breezes from the east and west, the necessity for it is doubtful. "Marling," with a clay loam, once much practised, is now wisely abandoned, though it has had the useful effect of supplying the district with plenty of ponds in the old marl-pits. Springs are abundant, some highly charged with iron. Swedes were not a heavy crop, and no doubt Hops are the farmer's sheet-anchor. Besides the Groundsel and Chickweed in the Hop fields the chief weeds were the Mayweed (*Anthemis cotula*) and the Knot-grass (*Polygonum aviculare*). The Onion Couch (*Avena elatior* var. *bulbosa*) is common, especially in hedgerows.

GARDENS.

The cottage and farmhouse gardens were gay with Japanese Honeysuckle, Canary Creeper, and monthly Roses, with occasional Clematis Jackmanni, or Wistaria, Phlox, and Monkshood, and but little bedding-out. The Snapdragons I noticed had almost universally been bored in the saccate base of the corolla by ants, which are very abundant. Apples are a fair crop on the young trees, but in too many orchards the trees are over-crowded, unpruned, covered with lichen and American blight, and naturally almost barren. They are old, their roots very probably reach down to an iron pan, and the sea breeze is also harmful. Strawberries and Gooseberries have been, and Plums are, very heavy crops, but the small birds had most of the Cherries and Chequers or Serviceberries (*Pyrus torminalis*), trees of which species are frequent. The large extent of woodland harbours numbers of blackbirds, jays, green woodpeckers, and other birds, among which we heard the Goatsucker. Walnuts are conspicuous by their absence; but the most lamentable sight was the Potatoes, which were universally diseased, though some had been attacked so late that the tubers were safe. My host's landlord had put up a considerable range of glass on the south side of the farmhouse, in which his tenant now rejoices in a fine crop of Grapes and Tomatoes.

ADDENDA.

In the woods there was a considerable variety of Ferns, including the ubiquitous Bracken, Blechnum, Osmunda, Filix-mas, Filix-fœmina, Lastrea æmula, spinulosum, and Polypody. In the meadows and woods we collected a considerable variety of fungi, Mushrooms being very abundant, and Chantarelles not uncommon. Our homeward walks were lit up by glow-worms, and if wasps were troublesome by day and one did hear of numerous vipers, snakes, and slow-worms, still they did not seriously mar our enjoyment; so that we left Sussex with the conviction that the peace and plenty of a farmer's life, though not perhaps largely owing to that ridiculous anti-Napoleonic ditch, the Military Canal, is by no means an unenviable lot. *G. S. Boulger, 144, Kensington Park Road, W.*

New Garden Plants.

MASDEVALLIA (FENESTRATÆ) DAYANA, n. sp.*

I have known this since 1875. It came in July of that year from my excellent correspondent, Mr. Day, with a fine sketch in water-colours, giving a very elegant *tournure* to the leaf. I begin with giving Mr. Day's note *verbatim*: — "Bought at Stevens, September, 1872, at a sale of Mr. Linden's plants. I believe it comes from some part of New Grenada. The plant was sold for 'Restrepia species nova,' and much resembles in general appearance *R. antennifera*. The stem is clothed with broad sheathing scales, pale green when young, turning brown and shrivelled afterwards. Leaves flat, thicker somewhat than drawing-paper, dark green above, purple beneath. The largest on plant is 4½ inches long by 3 broad. The flowers are produced on very short pedicels." The flower is rather flat, oblong, acute, curved downwards in a rather uncinat manner at the apex. The upper sepal is yellowish-white, with seven low longitudinal membranous keels, covered with numerous Indian-purple spots. The inferior connate sepals are orange, with

* *Masdevallia (Fenestratæ) Dayana*, n. sp. — Maxima omnium, caule vaginis compressis apice triangulari latis, folio cuneato abrupte elliptico apiculato magno; floribus ovario angulosis crispulosis alato, dellexo; perigonio oblongo-triangulo, apiculato; apice uncinato; sepalis superioribus carinis membranaceis elevatis septem, fenestra elongata humilo; tepalibus subquadratis antice acutis, infima basi inferiori obtusangulis; labello basi subcordato, trilobo; lobis lateralibus brevissimis angulatis; lobo medio producto ligulato acuto marginibus denticulatis, carinis longitudinalibus geminis. callo conico basi ante unguem; columnæ androcolum minute denticulato. *H. G. Rehb. f.*

some Indian-purple-brown spots and borders towards apex. I always think of certain birds, as partridges, when seeing the flower. I have no doubt we have the same plant from New Grenada in the Hamburg Botanic Garden, where it has not yet flowered. Finally, Messrs. Veitch sent it in capital state, collected by late G. Wallis. It justly bears Mr. Day's name, and was mentioned lately in a description of Mr. Day's collection in these columns. At all events, Mr. Day was thus better treated than our excellent M. Houillet, of Paris, whose glorious *Aerides* was named, in the description of Sir Trevor Lawrence's Orchidic paradise, *Aerides Ellisii*. *H. G. Rehb. f.*

CELOGYNE PELTASTES, *n. sp.**

This appears to stand near *Ceologyne pandurata* Lindl., and *Mayeriana*, Rehb. f., forming the third species of a small and curious group. Its great peculiarity is that the large but very thin oblong bulb forms a kind of convex shield over the scendent stem. It bears two cuneate oblong lanceolate leaves of parchment structure, 0.33 long by 0.05 wide at their broadest part. The raceme bears narrow ligulate bracts, nearly equalling the stalked ovaries. Sepals and petals ligulate acute, the sepals keeled over the middle, light yellow. Lip trifid, side laciniae oblong, acute in front of the apex, white, with dark brown nerves; anterior lacinia oblong, emarginate, with small points at end, crenate, very wavy, with some projecting warts, brown and white. Three low upright keels from the base of the lip to the base of the middle lacinia. Column clavate. Flowers of the finest emerald-green, smaller than those of *Ceologyne pandurata*, equal to those of *Ceologyne Mayeriana*. It was introduced lately from Borneo by Messrs. Veitch. *H. G. Rehb. f.*

RENANTHERA STORIEI, *n. sp.†*

A new Philippine *Renanthera*, just matching the celebrated *Renanthera coccinea* itself, or rather surpassing it. It has the flowers one-sixth shorter indeed, but the sepals are much broader, petals too, and the lip much larger. The side laciniae of the lip have a triangular, not a retuse upper border. The branches of the peduncle are stronger than those of *Renanthera coccinea* at hand. It is very floriferous, and appears to boast flowers of brightest yellow and vermilion. Lip dark (mauve?). Would that it were an improved *Renanthera coccinea*, inasmuch as it would not be shy of flowering? Yet I may state that *Renanthera coccinea* can flower as a small plant. I saw such a one fifteen years ago, or a few years more, at Consul Schiller's, under Mr. Stange's able management. It must be put as near the glass as possible. I have no doubt our American Orchidists may find it easy to flower, as *Vanda teres* enjoys the bright light of the French metropolis. It is the *Vanda Storiei* of Mr. James G. Storie, as I learn from Mr. Stuart Low, who sent me the materials. It affords me great satisfaction to name it *Renanthera Storiei*. *H. G. Rehb. f.*

ODONTOGLOSSUM VENILLARIUM (Rehb. f.) *LEUCOGLOSSUM* and *HILLIANUM*, *n. var.*

Amidst innumerable varieties I had two which were rather striking. The one is the leucoglossum with a white lip, just like a great fan of Peas. I had it with pallid sepals and petals from Mr. C. G. Hill, Arnot Hill, Arnold, Notts, grown by Mr. N. German; and from Mr. Ferdinand Massange de Louvrex, Château de St. Gilles, Liège, grown by Mr. Kramer, son and brother of our famous Hamburg Orchid growers, while M. Massange has his own brother, M. Massange de Louvrex, Château de Baillonville, près Marche, as his greatest rival, assisted by the zeal of his grower, Herr Wilkes. Then I had the same variety with beautiful mauve-purple petals and sepals, wonderfully bordered with white, from Mr. Day, in two varieties; one of which had one of the greatest flowers I ever saw. I call *Hillianum*, in honour of Mr. C. G. Hill, a glorious thing. Petals and sepals are nicely rose. The base of the lip is yellow, with three dark purple lines, as are two such lines on the base of the equal sepals. The broad lip has an undulate rosy margin on the sides, and the area between is covered with nice purple spots in great number. This is quite lovely, and gave me great pleasure. It is equally grown by Mr. N. German, gardener to Mr. C. G. Hill. *H. G. Rehb. f.*

* *Ceologyne peltastes*, *n. sp.*—Aff. *Ceologyne pandurata* Lindl., ac C. *Mayeriana*, Rehb. f. rhizomate valido scandente; p. c. bulbulo oblongo ancipiti foliaceo supra rhizoma scuti instar cuneato diphylo, foliis cuneato oblongo ligulatis acutis, geminis; racemo plurifloro; bracteis spatheis ligulatis acutis; ovaria pedicellata subaequantibus; sepalis linearis ligulatis, medium supra nervum medianum carinatis; tepalis cuneato ligulatis acutis; labello trifido; lacinis lateralibus semi-oblongis antorsum acutis, lacinia mediana oblonga apice retusa emarginata cum apiculo, lateribus crenatis crispis; carinis tenuis humilibus a basi in basin laciniae anticae papulis non ullis subseriatis in disco laciniae anticae; columna clavata. Ex *Borneo* introd. col. Veitch. *H. G. Rehb. f.*

† *Renanthera Storiei*, *n. sp.*—Aff. *Renanthera coccinea*, Lour.; fl. rubris; l. brevioribus; sepalis lateralibus unguiculatis oblongis undulatis latis; sepalis cuneato ligulatis obtusis latis, labelli majoris lacinis lateralibus limbo externo triangulari, lacinia mediana ligulata obtuse acuta porrecta lamellis geminis quadratis ante ostium calcaris concis. *H. G. Rehb. f.*

ONCIDIUM PRÆSTANS, *n. sp. (hybr.?).**

This was found amidst a lot of *Oncidium dasystyle* in the Royal Exotic Nursery of Messrs. Veitch. Though *Oncids* are said to have several species, which do not bring fruits at all, yet there is little doubt of this being a mule between *Oncidium dasystyle* and some species like *Oncidium Gardneri*. It is far superior to the first, has brighter colour, and a system of calli far nearer that of *Oncidium Gardneri*. It lacks also that nice blackish border of the basilar part of the lip, very often so remarkable in *dasystyle*, and exceedingly handsome in those dried flowers Mr. Blunt collected. I was in embarrassment what to do at reception of a single flower. A fully developed inflorescence made me rather sure that I had not a single aberration, but a well-defined curious novelty. *H. G. Rehb. f.*

ILEX INSIGNIS, Hook. f.†

Messrs. Rodger, McClelland & Co. have been good enough to send us a specimen of this noble Holly, which has also been brought under our notice by Mr. Gumbleton. It is a native of Sikkim Himalaya, where it grows at an altitude of 7000 feet. It has proved hardy in Ireland during the past winter, and may therefore be recommended as a most valuable evergreen in suitable localities. It forms a small tree or shrub with thick grooved branches of a purplish colour when young. The leaves sent to us, as shown in the sketch (fig. 53), are leathery, glabrous, dark green, elliptic lanceolate, pinnately lobed, the lobes spine-tipped and alternately raised and depressed, so that there appears to be a double row of spiny lobes on each side. The stalk of the leaf is about $\frac{3}{4}$ inch stout, and purple in colour. In the dried specimens the leaves are seen in some specimens to be nearly entire at the margin, or with only a few small serrations. *M. T. M.*

AN ALPINE AND ROCK GARDEN.

THE alpine and rock garden is a most pleasing feature at Southwood, Bickley. The rock garden is of large dimensions, well arranged, with numberless species and varieties of choice alpine and other plants, which in the great majority of instances are thriving well and making fine specimens. At the entrance of this garden, and at the foot of the rock, are some huge clumps of *Myosotis rupicola* [alpestris], the perennial Forget-me-Not; this is one of the most beautiful and rarest of our British plants. Closely joining this comes a mass of the alpine Snapdragon, *Linaria alpina*, some 4 feet of the rock being covered with this. It has a dense procumbent habit with glaucous leaves, and flowers of a bluish-violet with an orange palate. This plant, although little better than an annual, so freely reproduces itself from seeds which come up in spring and flower the same summer that it is always welcomed. *Arabis procumbens* is a curious little plant of dwarf habit, with small white flowers. A very large and exceedingly good form of the white chimney plant, *Campanula pyramidalis alba*, holds a good position high up the rock, while *Zauschneria californica* is just opening its scarlet flowers below; and next to this are arranged some fine masses of *Silene Schafta*, a showy species with rose-coloured flowers, and one of the best of the autumn flowering *Silenes*. *Ajuga alpina* is a good plant with bluish purple flowers. Some very fine rosettes of *Saxifraga longifolia vera* may be mentioned as well as *Campanula Thomasi*, a distinct plant with pale lavender-blue flowers. *Dryas octopetala* forms a dense carpet covering the ledges of rock with its free and abundant foliage: this when seen in good condition is very striking. *Coronilla iberica* is producing its bright yellow flowers in great abundance; *Hypericum reptans* is a new St. John's Wort of dwarf caespitose habit with small yellow flowers; some good strong plants of *Linum viscosum* have been flowering freely, and a fine plant of *Meconopsis nepalensis* promises to flower next spring. *Polygonum vacciniifolium* is doing remarkably well and flowering freely; *Cyananthus lobatus* is a plant of prostrate habit with light blue flowers, the interior of the flowers being beautifully fringed. *Campanula Waldsteiniana*, a rare species from Carinthia, is doing well, forming dense tufts of

* *Oncidium præstans*, nov. sp. (hyb ?).—Omnia *Oncidii* dasystylis exceptis sepalis lateralibus alte fossis; tepalis multo latioribus, retusis, undulatis; labelli auriculis basilaribus parvis quadratis retusis; isthmo bene evoluto, elongato; callis majoribus, retusis extrorsis in isthmo bigeminis, 12 minoribus biserialis intus; duobus inter utrumque vixim medianis. Col. cel. Veitch, qui inter specimina *Oncidii dasystylis*, Rehb. f. receperunt. *H. G. Rehb. f.*
† *Ilex insignis*, Hook. f. in Hook. *Flora British India*, vol. i. (1875), p. 599.

erect bluish lilac flowers. *Saxifraga cochlearis* and *S. lantoscana* are both looking well, as also is *Frankenia levis*, a native plant with flesh-coloured flowers, though not in flower at the time of my visit. *Bellium minutum* is producing its numerous rosy-white flowers in abundance; *Eriogonum racemosum* is a distinct species, of erect habit and white flowers. *Pratia* (*Lobelia*) *ilicifolia* is a very distinct plant, with numerous pure white flowers. It grows close upon the ground, rooting itself into the soil in its onward course. It continues flowering till the frost arrives, and is perfectly hardy, thus forming a good addition to rock plants. It grows best in a cool, shady situation. *Stachys coccinea* is a good plant, with bright scarlet flowers; *Erpetion reniforme* is in full flower, and somewhat resembles a small blue and white Violet, and is well adapted for moist, boggy situations; *Borago laxiflora* is a charming Boraginaceous plant, with sky-blue flowers, the buds and opening flowers of which are of a delicate pink; *Campanula isophylla* is very fine, producing in one pyramidal spike its lovely pale blue flowers.

Most noticeable in the herbaceous border are fine specimens of *Geranium Endresii*, with bright pink flowers; *Harpalum rigidum*, one of the best of Composites for autumn border decoration; *Achillea Ptarmica* pl., with double white flowers; *Veronica longifolia* var. *subsessilis*, without doubt the best of the long-leaved section: this is of recent introduction, and a native of Japan, and a fine addition to border perennials; *Anemone japonica* and its white variety are also fine.

In the pond are noticeable fine specimens of *Buto-mus umbellata*, *Villarsia ovata*, and *V. nymphæoides*. In the bog garden are some fine specimens, 4 feet high, of *Lobelia fulgens*, with several spikes of bright scarlet flowers; *Monarda fistulosa*, *Gunnera scabra*, *Caltha leptosephala*, with flowers of a pure white and veined, and a yellowish exterior, is a new, rare, and distinct plant, a native of the Rocky Mountains. I also noted *Swertia perennis*, *Eulalia japonica zebrina*, *Athyrium Filix-femina*, *Polemonium confertum*, a fine clump but not in flower, *Rhexia virginica*, *Spigelia marilandica*, "the Maryland Worm-grass," with erect tubular-shaped flowers of a bright scarlet outside, the interior being of a soft yellow; *Orchis foliosa*, *Gentiana bavarica*, *Primula sikkimensis* in a damp peat bed doing well, as also were fine tufts of *Androsace Lageri* and *A. carnea*; also fine specimens of *Sarracenia flava* and *S. variolaris*, the former with very fine pitchers. These latter were planted in this bed in February last, since that time the young pitchers have been subjected to 10° of frost, which has not impeded their progress in the least, the pitchers being large and well coloured. *S. variolaris* is a distinct species, from North Carolina, and is beautifully marbled with white at the apex. *J.*

ANNAN NURSERIES.

ANNAN is a small, neat, compact little town in Dumfriesshire, pleasantly situated on the banks of the noble and circuitous river. Like all border towns, it has its history, and has figured not inconspicuously in the "wars of the borders." On an elevated mound between the river and the town stood Bruce's Castle, surrounded by a famous moat, the name of which only remains, the castle and moat having long disappeared.

With the exception of the shipping and a small cotton-mill the district may be considered as purely agricultural, and has undergone in our remembrance of sixty years but little change. The climate is moist, mild, and salubrious; the soil chiefly loam, sand, and gravel. The surrounding country is exceedingly picturesque, tastefully wooded, and well cultivated, with many noble mansions, beautiful seats, and splendid grounds and gardens, all or any of them possessing sufficient horticultural merit and interest to be worthy of notice in your paper; however, for the present at least, our attention must be directed to another subject, which, to us, and no doubt to a large number of your readers, is of greater interest—the rise and progress of one of our large commercial nurseries.

Within a stone's-throw of "Bruce's Moat" stands, a little way back from the road, a neat one-storied cottage, with a charming little garden at the front, and a few choice trees and shrubs nicely distributed, and with such good taste that the whole aspect of the place is that of elegance and refinement. This was the residence of the late John Palmer, the founder

of the now celebrated nurseries, and the well-known firm in the trade of John Palmer & Son.

It is now over forty years since we first made the acquaintance of the late Mr. Palmer, and some ten years earlier than that was the beginning of the nursery. Mr. Palmer was not brought up to the

he should turn his attention to the more genial business of a nurseryman.

Mr. Palmer's first attempt was about 3 acres, and was confined to raising a few seedlings from fruits and seeds produced in his own neighbourhood—haws, acorns, Ash, &c., but soon extending to Larch, Scotch,

ere long Art had to give way, and Nature became master of the field, and from 3 acres the nurseries were extended to 20, and year by year went on increasing. Mr. Palmer was a thorough disciplinarian, and knew well the value of time and how to make use of it, nothing being put off till to-morrow that



FIG. 53.—*ILEX INSIGNIS*. (SEE P. 296.)

nursery business, but was engaged as travelling agent for Messrs. Blackie & Co., the eminent publishers, and being a man of no ordinary stamp—a thorough lover of Nature, of a refined taste, quick conception and unbounded energy—it was not surprising that, in the course of his wanderings and frequent intercourse with nurserymen and gardeners,

Spruce, &c., which he found a ready market for amongst nurserymen not growing their own seedlings. The agency business being successful, as a prudent man, he did not relinquish it until he had made sure of the other, so that for some years the two were carried on together, the productions of Nature and Art working with perfect harmony and success; however,

with him should be done to-day. He was at all times well up with his work, and had time to spare for many public duties, to which he was frequently called, for which he was well fitted, and which he judiciously fulfilled. He was twice, we believe, Provost of his native town. He died in 1870, at the ripe age of seventy, beloved and respected by all.

It is not often that we find the mantle of order, neatness, perseverance and business tact gliding so easily and fittingly from father to son; but we cannot help, after a careful survey of these nurseries, coming to the conclusion that the son is a worthy chip of the old block, and is carrying on and extending with equal success the work the father had begun.

The nurseries now comprise 120 acres, and demand is still crying out for more room. They almost encircle the whole town, and add no little to its interest and beauty. The miles of well trained hedges interspersed with full-grown Purple Beech, Scarlet Thorns, Scarlet Chestnuts, worked Elm, Ash, Maple, Holly, and other stock plants are a sight of themselves; but when we see mapped out before us in lines, beds, and squares, millions upon millions of one and two year seedling trees, and these again frequently repeated in one and two years transplanted, and in all varieties, we cannot help wondering where such a quantity can find a market; but in this we are told there is no difficulty, the quantity grown always falling short of the demand. This year we find 2 tons of Larch seed were sown, 3 cwt. of Highland Pine, the same each of Spruce, Austrian, and Laricio; 2 cwt. of Alder, many hundred bushels each of Sycamore, common Ash, Mountain Ash, Elm, Norway Maple, Service trees, Chestnuts, Hazel, Oak, &c. As to hedge Thorns, no less than 3000 bushels of haws are sown annually; some 4000 bushels we saw in preparation for sowing in the autumn; seedling Rhododendrons in various sizes—at least 20,000,000; also Azalea pontica, Kalmia latifolia, with such other American and evergreen plants in smaller proportions.

Fruit trees of all kinds are another great feature, many acres being devoted to their culture. Thousands of stocks of all kinds for working are put out every year, and the seasons of grafting and budding are not only exciting but exceedingly interesting, owing to the dexterous and successful way in which this work is carried out.

Another feature of interest we cannot help mentioning, that is, the propagation going on all the year round under glass, in pits, and frames—grafting, inarching, budding, layering, and cuttings in all shapes and forms—comprising the extensive families of Roses, Coniferae, Rhododendrons, Clematis, Holly, &c., by thousands; but to describe quantity and variety would far exceed our bounds. We must, therefore, conclude by stating that the nurseries are exceedingly clean, and in every respect well kept, all apparently being carried on methodically, therefore with economy. *John Shaw.*

POTATO MANURES.

THE trial of the Potato manures which I undertook to carry out here during the summer has now been completed, and the crops to which the manures were applied are lifted and weighed, and the results given below. Although it is often said that statistics can be made to prove anything, yet it is not possible to controvert the figures here given, as they represent actual results told by those unquestioned agents, the scales. The ground planted with the trial sorts of Potatoes was in two separate plots, the soil stiff and clayey, but having been trenched deeply during the winter it was in excellent friable condition for planting early in April. In the one plot eight sorts, five rows each, were planted, and in the other five sorts of six rows each. In the first plot the length of the rows was 30 feet, and in the second 40 feet, and throughout there was 3 feet space between the rows. When planting, shallow trenches were thrown out with a fork, the tubers laid in these, and then the various manures were strewn along them; then the soil on each side was forked in lightly, and the rows left. The season generally was most favourable for the testing of artificial manures, as there was, after the few weeks of drought in May, ample moisture, and no great lack of warmth and sunshine; in fact, how favourable the season has been for Potato growth reports have abundantly shown. The soil was quite free from any animal manures, having had none applied for two years; it therefore enabled a full and impartial test to be made. The sorts of Potatoes planted were robust growers, and such as would be likely to test the fertilising properties of the several manures to the utmost.

The kinds of manures employed were, first, malt-dust, obtained at a cost of about 6d. per bushel;

second, an ordinary Potato manure, supplied by Messrs. Hill & Co., of Deptford, at 10s. per hundredweight; third, a special Potato manure, from the same firm, at 15s. per hundredweight; fourth, Amies' Potato manure, at 15s. per hundredweight; and fifth, Clay's Potato fertiliser, at 16s. per hundredweight. The quantities of each used for both short rows and longer rows were the same, and were as follows:—Of malt-dust about two-thirds of a bushel, costing 4d.; of Hill's ordinary manure 4 lb., costing about 4½d.; of Hill's special manure 3 lb., at the same price; of Amies' manure same weight and price; and of Clay's fertiliser 2 lb. only. This was the proper quantity to allow at the then understood price of 20s. per hundredweight, but Mr. Levesley informs me that the Potato fertiliser is but 16s. per hundredweight, and therefore throughout the results from the use of the fertiliser suffers somewhat, because the quantity employed was less than should at the lower price have been applied. I remarked that whilst the four chemicals differed materially in appearance, also that 2 lb. of Clay's fertiliser was just equal in bulk to 3 lb. of Amies' manure, the latter, whatever may be its component parts, possesses the greatest specific gravity. The results in produce of the eight sorts of five rows, each planted in the 30-foot rows, are thus:—

	Malt Dust.	Hill's Ordinary.	Hill's Special.	Amies' Manure.	Clay's Fertiliser.
	lb.	lb.	lb.	lb.	lb.
International Kidney ..	41	44	47	40	36
King of Potatoes ..	37	33	34	33	31
Bedfont Prolific ..	33	36	36	28	25
Magnum Bonum ..	43	39	45	33	35
Vicar of Laleham ..	52	46	49	40	41
Bresee's Prolific ..	36	45	44	39	36
Blanchard ..	32	35	36	33	30
Grampian ..	43	37	36	30	31
Total weights ..	310	315	327	276	265

The five sorts planted in the 40-foot rows, six rows of a sort, were manured in the same order, but with the exception of Heather Belle the sixth row was left without any manure, as it was thought desirable such a test should also be made. How great the value of all the manures, and some specially, are, the results fully show. Column No. 1 shows the result with malt-dust, 2 with Hill's ordinary, and so on, column 6 showing the result where no manure was applied:—

	1.	2.	3.	4.	5.	6.
International Kidney ..	64	63	66	58	56	51
Advance ..	73	63	67	64	60	49
Bedfont Prolific ..	55	60	60	60	54	32
Vicar of Laleham ..	66	68	72	66	62	40
	258	254	265	248	230	172

This table shows that by the use on four rows of manure costing 1s. 4d., it is possible to increase the produce as against the highest by not less than 83 lb., or just about 1½ bushel, of not less value, even with common kinds, than 5s. Spread this gain over an acre, and the result will be much more manifest. Heather Belle was not included in this return, because the sixth row was inadvertently dressed with malt-dust, and thus the result could not be counted with the rest. The rows showed 40 lb., 50 lb., 51 lb., 41 lb., 39 lb., and 36 lb. Malt-dust is, without doubt, a valuable plant fertiliser, and, as seen above, in some cases productive of great root produce. Its great effect, however, was seen in the haulm growth, which was most marked, the leafage being deep green and the haulm tall and very robust, much more so than was the growth produced by the chemical manures. The result, however, in spite of this robust growth, was evident. Its defect was that it lacked the stimulus to promote early and quick growth which the chemical manures possess. And this is an important feature in the artificials that must not be overlooked. On the other hand, where malt-dust was used the tubers invariably came out cleaner and drier. That malt-dust is a good plant manure the way in which it was filled with myriads of rootlets showed. I believe that mixed in quantities of 1 bushel of dust to 6 lb. of chemical manure, and properly

applied, first-rate results would be obtained. Clay's fertiliser gave the next darkest tint to the leafage, but the strongest growth was, after the malt-dust, made by Hill's manures, the strength of both of which, as applied relative to price, is about the same. I prefer the 15s. special manure on the whole, as giving the best average results with the least bulk.

As all the sets used were selected, and no difference was made in favour of one row over another in that respect, and as, further, the utmost care was exercised throughout in the impartial carrying out of the trial, the results may be implicitly accepted. I believe it is obvious now that manures specially promotive of plant growth are not the best for Potatoes, as the ingredients essential for the production of tubers are not necessarily promotive of plant development. Neither in the case of the Potato does tuber production always follow upon robust tops. On the other hand a stimulus to haulm growth would no doubt be advantageous in hot dry soils with dwarf-growing kinds, but the addition of some chemical substances would be of great assistance. I think it but fair to add that had a little more of Clay's fertiliser been employed it would have shown that, relative to cost, it is about equal to Amies' manure in productiveness. *A. D., Bedford.*

COLONIAL NOTES.

DARJEELING: June 26, 1880.—The season was unusually favourable for planting operations, and about 750,000 young Cinchona trees were planted out, of which 644,222 were Succirubra, covering an area of a little above 196 acres, against 353,415 planted over an area of 120 acres in the previous year. During the year 276,700 trees of this species were put out on the new plantation of Sittong, covering an area of nearly 101 acres; 258,620 were planted on the old plantation of Rishap and Mungpoo, though on virgin soil, and 108,900 replaced those that had to be uprooted for the bark crop. In addition to these, a good many young plants were utilised in filling up gaps as they occurred in the older parts of the plantation. It is gratifying to observe that the efforts made to propagate the Calisaya and hybrid varieties have at last begun to bear fruit. Of the hybrid species, 39,400 were planted during the year at Mungpoo, and 36,680 at Sittong, and of Calisaya 12,782 were planted out at the latter plantation. The nursery stock of all three kinds has also been kept up, the year ending with a total of 16,000 stock plants and 403,000 young ones.

Dr. King's report shows that, in respect of soil and climate, the Java plantations have great advantages over those of Sikkim, but on the other hand labour is much cheaper in British Sikkim. The conclusions arrived at by Dr. King were that efforts should be made to graft *C. Ledgeriana* and approved varieties of *C. Calisaya* on succirubra stocks; that attention should be directed towards propagating the best varieties of Calisaya; that trial should be given to the Java plan of shaving the bark of Cinchona trees; and that a more suitable locality for Cinchona cultivation than Sikkim should be sought for in Burma, the Andaman Islands, and the Khasia Hills. The Dutch method of shaving the bark of living trees has already been tried at Mungpoo, but there has been as yet no time to judge of the results.

The entire produce of the plantations for the year was 361,590 lb. of dry bark against 261,659 lb. in 1878-79; of this, 29,520 lb. were yellow and the rest red bark. The new plantation of Sittong grew its first crop during the year, and of the bark gathered 15,850 lb. represented the yield of that plantation. The aggregate yield of bark in former years amounted to 1,134,901 lb., so that the total produce of the plantations since their opening, including the crop of the past year, has been 1,496,491 lb.

The introduction upon the plantations of a new species of Cinchona which yields the Carthagena or Columbian bark, is an interesting feature in the operations, and it is hoped that the plants brought out to India from Kew may be successfully propagated.

The Superintendent reports that there is a considerable demand for seed of Cinchona succirubra among the Coffee-planters of Ceylon, who sow it broadcast between the trees on their plantations, as also for seed of Cinchona Calisaya; but it has been found impossible to meet the demand for the seed of the latter variety to the full extent, as the bulk is required for the Government plantation.

The total expenditure on the plantation from its commencement (including compound interest at 4

per cent.) is a little less than ten lakhs of rupees. The cash transactions for the year, therefore, show a profit of rather more than 5½ per cent. on the capital. But this does not represent the whole of the gain for the year, for the stock in hand has been increased in value by Rs. 42,775, which is equal to another 4 per cent. on the capital. The amount of febrifuge used in substitution of quinine in Government hospitals and dispensaries during the past year was 5400 lb. Calculating the average price of quinine in Calcutta at Rs. 90 (a rather low estimate), the saving effected by this substitution during the year has been very nearly four lakhs of rupees, and the total saving since the factory commenced working aggregates 11½ lakhs of rupees, or more than the plantations have cost since their opening.

The sulphate of quinine prepared by Mr. Gammie, though on a small scale, has been declared on analysis to be equal to that of the best European makers. In addition to his work in the factory, Mr. Gammie has devoted much time and attention to the plantations. The Lieutenant-Governor entirely concurs in the praise accorded to Mr. Gammie by Dr. King. The other assistants of the Superintendent are also highly spoken of. *Condensed from the Official Report.*

Notices of Books.

A Dictionary of English Plant Names. By James Britten, F.L.S., and Robert Holland. Parts I. and II. (Trübner & Co.)

The two parts before us form a very considerable instalment of a work, the value and importance of which to literary and to botanical students will increase year by year. It is a very full list of the specially vernacular names of plants made use of in the various counties of Britain, as well as of those included in sundry glossaries and books of ancient date. The general plan of the work is best illustrated by an example. We take the first that occurs to us, which happens to be one of some interest to gardeners:—

“**Bindweed** (*i.e.*, the weed that binds, a name applied to several plants which climb up and clasp the stems of other plants).

- (1). *Convolvulus arvensis*, L.—Turn. Names; Hal.; Hants. Holl.; Kent. Holl.; Linc. Brogd.; Swes.; N. and E. Yks.; E. Bord. Bot. E. Bord.; also a book name and in general use. Prior, p. 20. This is usually pronounced *Bindweed*, but Mr. Peacock (E. D. S. Gloss., C. 6) says that in N. Linc. the *i* is short.
- (2). *Convolvulus sepium*, L.—Turn. Names; Hants. Holl.; Suffolk. Moore's Gloss., where it is also given as **Bine weed**.
- (3). *Polygonum Convolvulus*, L.—“In the fens.”—Holdich. W. Ches. Cumb.
- (4). *Lonicera Periclymenum*, L.—Yorksh. (Craven).
- (5). *Senecio Jacobina*, L.—Scotl. (S. Renfrewsh.), Jamieson. In this case a corruption of *Bun Weed*, having no connection with *Bind* in the sense explained above.
- (6). *Tamus communis*, L., according to Nemnich; but this is doubtful.

Bindweed, Black, *Polygonum Convolvulus*, L.—Lyte, Prior, p. 23.

Bindweed, Blue, *Solanum Dulcamara*, L.—So called in Ben Jonson's *Vision of Delight*, Prior, p. 21.

Bindweed Corn, *Polygonum Convolvulus*, L.—N. Yks.

Bindweed, Great, *Convolvulus sepium*, L.—N. Yks.

Bindweed, Great, *Convolvulus sepium*, L.—W. Chest.

Bindweed, Ivy, *Polygonum Convolvulus*, L.—Lyte.

Bindweed, Sea, *Convolvulus Soldanella*, L.—Ger.

Bindweed, Small, *Convolvulus arvensis*, L.—Lyte.

Bindweed, Nightshade, *Circæa Lutetiana*, L.—Ger. 280.

The above extract, detached from its context, may look somewhat formidable, but its appearance will be softened by giving the abbreviations in full; thus, “L.” signifies *Lionæus*; “Turn. Names” = the *Names of Herbes in Greke, Latin, Englishe, &c.*, by William Turner, 1548; “Hal.” stands for Halliwell's *Dictionary of Archaic and Provincial Words*; “Holl.” refers to William Holloway's *General Dictionary of Provincialisms*, 1838; “Brogd.” stands for J. E. Brogden's *Lincolnshire Glossary*; “Bot. E. Bord.” is the abbreviated title of Dr. George Johnston's *Botany of the Eastern Borders*; “Lyte” denotes the *Nieuwe Herbal* of Henry Lyte,

1578; “Ger.” points to our old friend Gerard. The other abbreviations of the names of counties will be readily understood.

We have cited this extract for the purpose of showing how valuable this Dictionary is likely to be. Another deduction may be made from it, and that is, the uselessness of popular names (with a few well-marked exceptions) as designations of plants. So true is this, that the authors have been compelled, although their work is arranged alphabetically, to frame an index also, because, “not only is the same name applied in many cases to a number of different plants, . . . but frequently a plant has received a very great variety of popular names—in some cases as many as from twenty to thirty—in different counties, and sometimes even in neighbouring parishes.” We think, if experience had not already taught the same fact, that this statement is a sufficient answer to those who advocate the general adoption of English names for plants. Where such a name exists in common use, and is unequivocal in its application, by all means stick to it; but where, as in the vast majority of cases the fact is quite otherwise, then make use of the Latin names, which with all their uncouth barbarism are far more certain in their application, and have the merit of being understood in all parts of the world where plant lore is studied.

Certain names, by some process of survival or natural selection, come to be generally adopted, as, for instance, *Golden Feather*. It would be futile to attempt to discard this name now that it is in general use, but it would be equally vain to uphold such names as the *Bulbiferous Bitter Cress*, the small-flowered *Melampyre*, the serrated *Winter Green*, or similar names proposed by such botanists as Lindley, Bentham, and Henslow, but which have not been taken up by the public, and never will be. On the whole, then, the balance of opinion is decidedly in favour of the general use of the definite Latin nomenclature, and the book before us, admirable as it is for literary purposes, is but another confirmation of this view.

The London Market Gardens: or Flowers, Fruits, and Vegetables as Grown for Market. By C. W. Shaw. London: 37, Southampton Street, W.C.

We must apologise for having so long overlooked this deserving little book. It is a reprint or reproduction of a series of very concise and remarkably well written articles on London market gardening, published in the pages of our contemporary, *The Garden*. In the style of Cuthill's *Market Gardens Round London*, it contains ten times the information there to be found, and such information about market gardening as has always been considered most difficult to obtain. A great air of secrecy has somehow long pervaded the doings of our market growers, and a perfect halo of mystery has surrounded their wonderful cultivation. One dreaded putting a foot within their sacred portals, and dared not risk a question. But better acquaintance dispels all this, and we find market growers just as willing to impart information and to tell us “all their tricks” as their other brethren of the spade. The great perfection to which the cultivation of plants and indeed all kinds of market produce has arrived is the wonder and admiration of every gardener in the kingdom. Very few private growers ever produce anything like such results, and it is all obtained by the most unremitting care and attention to small details and by doing everything at the proper time. Mr. Shaw has been singularly fortunate in noting these little but all-important matters, and the great mass of information which he has thus secured and now presents to his readers is of the most valuable description. It is the best instructor in market garden cultivation that has yet been published. A few inaccuracies here and there creep in, such as where *Beurré de l'Assomption* and *Madame Treve* Pears are recommended as ripening in July along with *Citron des Carmes*, and *Coe's Golden Drop Plum* is stated to be largely grown for market. *Princess of Wales Plum* is evidently a misprint for *Prince of Wales*. Mr. Shaw speaks of early fruits—Plums, Apples, and Pears—as being a bad investment, because being early the blossoms get cut by spring frosts, &c., and the fruit does not sell so well as late sorts, whereas the contrary is almost always the case. Late Plums pay the grower fairly well, because there are few cultivators, and they are not imported; but the early varieties of Apples and Pears are the only ones that pay London growers at

all, because of the enormous supply later on of these fruits from America and elsewhere. As for spring frosts it is not safe to speculate.

The Tree Planter and Plant Propagator. By Samuel Wood. Crosby Lockwood & Co.
The Tree Pruner, &c.: by the same. Crosby Lockwood & Co.

It would be a kind thing for Mr. Samuel Wood's reputation if some judicious friend were to remove pen and ink from his reach. We open the first-named book at p. 9 relating to the Ash, and we read the following astounding statement:—“It (the Ash) is also liable to the attacks of those wonderfully minute insects, *Sirex Gigas* and *Sirex Juvancus* (*sic*), the wood-borers. Of all insects these are no doubt the most wonderful. You observe your chairs or table full of pin-holes, and these holes increase in number, yet you can never discover what causes them. Well, these tiny little insects, not large enough to be seen [!], have done it all, and will ultimately destroy the article, so that one day it will drop to pieces in your hand.” If this statement were solitary we might pass it over as a mere slip, but both books afford but too numerous indications that Mr. Wood is setting himself up as a teacher when his great necessity is to be taught himself. We quote one more passage, and then throw the books down with regret that so much time and honest printers' labour should have been expended on such trash. “*Aquifoliaceæ* conveys no idea of the class, but simply refers to the plant (*Holly*) belonging to those with prickly leaves. This being the case, I am disposed to look upon the term ‘*Aquifoliaceæ*’ as misleading, because there are some other genera possessing prickly leaves, and some *Hollies* that have leaves with no prickles; and in the case of the *Ruscus*, which has prickly leaves, it may be and is called a *Holly*, while it is of another genus.”

Foreign Correspondence.

STERNFELDE BEI ANGERMÜNDE, PRUSSIA: Aug. 28.—*German Potatos.*—Amongst my Potatos there are a good many which are not table Potatos, but which are only grown for distilling purposes. We have in the north and east of Germany very large estates, comprising sometimes from 3000 to 4000 acres, which are either farmed by the owners themselves, or let to one farmer. The soil is for the most part rather poor, and not nearly so well cultivated as the farms I lately saw in the South of England. The climate being much drier than that of England, we have almost no permanent pasture, and the cattle are for the most part kept the whole year round in stables, as many as 100 to 150 cattle in one stable, to obtain sufficient manure for the large tracts of land under cultivation. The greater part of the estates have very large distilleries, in which the produce of sometimes as many as 800 to 1000 acres of Potatos are distilled into spirits of Potatos, and the residue is used, together with hay, oilcake, &c., as food for the cattle. It is now the principal aim of the sellers of seed Potatos to offer those which contain a high percentage of starch, and are at the same time prolific. The greater the percentage of starch, the greater the quantity of spirit produced. The best Potato for distilling purposes is doubtless the *Dabersche*, known as *German Reds* in the English markets, which is at the same time the best liked Potato for the table. There are, however, many new kinds which compete, being more prolific. The *German Red* is, however, a Potato which does not ripen early, and therefore the greater part of all new Potatos grown with us are early sorts, such as *Early Rose*, *Snowflake*, *Blues*, &c. All these Potatos contain, however, less starch than *German Reds*. In exhibiting my different sorts at the forthcoming International Potato Show I shall give for every kind the average percentage of starch.

During the last few seasons we have tried to offer Potatos of larger size for export to England, such as *Redskin Flourball*, *Peachblow*, *Compton's Surprise*, *Magnum Bonum*, *Champion*, &c. The bulk of exported Potatos consists of *German Reds*. I may mention that we cannot understand here why the British consumer insists upon having such very large Potatos, whilst middle-sized specimens, say from 1 inch to at most 1½ inch, are more nutritious, contain a relatively larger proportion of starch, less

water, and cook much better. With us here people object to large-sized Potatoes, except for soldiers' messes, convict prisons, or similar establishments, where it is hard work to peel large quantities of small-sized Potatoes.

This year there is a good deal of blight amongst the Potatoes, especially the white kinds, whilst red-skinned Potatoes are almost free; the only two white kinds free from disease are *Magnum Bonum* and *Champion*, the latter kind looking the healthiest of all my Potatoes.

All the different sorts of Potatoes are grown in the field, valuable new kinds are multiplied in hotbeds, getting sometimes twenty and more plants from one tuber. I keep no cattle for the three autumn months, only a few hundred sheep, and I keep thirty-two horses for farm work. All the manure I get from Berlin—about 80,000 cwt. a year, besides which I use a good deal of artificial manure. I shall be delighted to hear that some of the Potatoes I propose to show find favour with English growers, and shall be glad to give full particulars if addressed as above.

My farm, which is my own property, contains about 800 acres of very good soil in very good cultivation. I plant every year about 220 acres of Potatoes, which are all sold. I grow besides, Wheat, Rye, Barley, Maize, and Beetroots (sold to the sugar mills). On about 80 acres I grow vegetables for the Berlin market, including 13 acres of Asparagus. For the English market I grow about 4 acres of Lily of the Valley. I find this cultivation the best paying of all. I intend to extend this branch yearly, getting more young plants every year. *O. Mooya.*

GRIMSTON PARK.

THIS place, the seat of J. Fielden, Esq., is situated about 11 miles from York, and 1 mile from the village of Tadcaster. The principal entrance is on the old coach road from London to York, at no great distance from where stood the toll-bar, which, according to legend, was cleared by the notorious highwayman Turpin on "bonny Black Bess," in his celebrated ride between the two cities. The wrought-iron entrance gates (by Walker, of York) are worth notice, being very handsome. The drive at a short distance within the grounds crosses the site of an old Roman road, still visible, but planted with forest trees. The Park, some 600 acres in extent, was laid out by the elder Nasmyth about forty years ago. The land here—as in this neighbourhood generally—is very good, as proved by the progress the trees planted at the time above-mentioned have made, and still more by the appearance of those that are older; Thorns especially, of which there are numbers of very large fine examples, show the nature of the soil, for although indigenous and able to live almost anywhere where not too wet at the roots, yet I have invariably noticed that they never grow to a large size unless the soil is good. The Purple Beech has been plentifully and judiciously introduced in the foreground of the planting all over the place, and is very telling in the early part of the season. The view from the carriage-drive, here and there, through breaks in the planting of the surrounding country over Tadcaster, and in the direction of York, is effective, although wanting in the decided undulations of surface which add so much to the scenery where it exists. This road leads past the mansion to Ulleskelf, and opposite the mansion, which stands a short distance from the road, is another set of gates of a similar description to those at the entrance lodge.

The present house was built by Lord Howden on the site of, or rather, I believe, incorporated with more or less of an old building that before existed. It is Italian in style, substantially built of stone obtained not far distant from the place, and is a handsome extensive block, about 300 feet in length. The entrance front faces north, and before it is a considerable piece of close-shaven lawn interspersed with some nice specimen evergreens. The opposite side, or garden front, overlooks an extensive flower garden separated from the park beyond by a low wall. This garden is laid out so as to be in character with the building, still further in keeping with which there is a good deal of statuary in and about the garden, mostly in white marble, several of the groups being of a costly description. The beds are cut out of the grass, in panels sunk a few inches, edged with stone level with the surface. The walks are also in like manner edged with stone, which has assumed a mellow dark grey shade, and has none of the objectionable appearance

present where stone that retains a new terra-cotta like look is used. Some 30,000 plants are required to fill this garden; when I saw it about the middle of June the planting was just completed, and gave promise of being very effective. Mr. Clayton, who has been gardener here for some eight years, adopts a good deal of mixture in his arrangements, using in combination plants that both in form, colour, and height depart from the strictly defined colours and even surface present where the selection is more restricted; for instance, *Blue King* bedding *Pansy* is used in large quantities intermixed with the more usual summer bedders. There is one important gain in the employment of these things, they make the beds look cheerful at once when put out, and when the brighter flowered plants get established and in full blooming condition, the *Pansies* tone down the colour.

There is a broad terrace-walk that runs parallel with the mansion through this flower-garden and westwards beyond it, in length some 200 yards. To the right of it and fronting the conservatory, which is attached to the house, is a Rose garden, filled with about 450 standard plants, but of which the frost made such havoc that only some half-dozen are left. Roses do well here, and I believe the plants were unusually strong, mostly with heads a yard across. The loss is a severe one, for although Rose-trees have again been planted, it will take some years to get them up so as to give the garden anything like the appearance it had. This is not the only loss sustained at Grimston by the severity of the winter. Flanking this part of the lawn, and in several other places, were large breadths of *Laurel* kept cut to a height of some 3½ feet, forming a close, even, unbroken surface, so as to still further carry out the style of a building and garden combined. These occupied a space in all of about 2 acres, but not a plant remains, having all been killed to the ground. Several men were employed for seven weeks in sawing them off just above the collar; they are now mostly springing up again. *Aucubas*, 8 or 10 feet high, and as much through, are all killed down; *Hollies* 20 feet in height have shared the same fate, and a few that are not quite destroyed look as if they would do little more good. I noticed a *Catalpa* near 30 feet high that seems to be killed, or all but so. Little remains of either *Laurustinus* or *Arbutus*. Nothing that I have noticed connected with the past winter's frost is more singular than the varied influence which soil and situation have had upon different kinds of trees and shrubs in enabling them to withstand the cold: in one place a particular species has suffered severely, another escaping with little injury, whilst in another place the conditions between the respective species have been just reversed. Here *Cryptomeria japonica* has stood much better than *Araucaria imbricata*, which is so far injured as to be useless; in some places that have come under my notice the *Cryptomeria* has suffered more than the *Araucaria*, and the same unaccountable differences exist between several other kinds. The old *Yuccas*, with stems almost as thick as a man's leg, are killed right down.

At the end of the terrace-walk already mentioned stands a very fine *Sycamore* that presents a remarkable appearance; it looks as if it had sprung up from and partially around a stool, or otherwise been injured in its early days near the base, so as to cause it to break up round the bottom, for the trunk on one side has the appearance of being composed of three or four stems that have all become united together for some distance upwards; but the most singular thing is, that on the outside there is little or no trace of the union. The circumference at 4 feet from the ground is 21 feet, and the spread of its branches 91 feet; the space underneath, so far as the branches extend, is gravelled, and Mr. Clayton has arranged a low circular piece of rockwork around, which is planted with Ferns; it forms an agreeable shady retreat, from which a good view of the flower garden is obtained. From this point a winding path leads to the Emperor's Walk, so called from the series of busts of Roman emperors which stand on each side, alternately with examples of Irish Yew about 10 feet in height; the deep green of these shrubs helps to relieve the overpowering whiteness of the marble. There is a broad piece of green turf behind the line of statues and Yews on each side, which is backed with a dense growth of tall trees. The walk terminates in a raised temple, approached by a few steps, and in it is a bust of the first Napoleon, crowned with a *Laurel* wreath. Those who do not approve of statues in a garden will no doubt say that a more appropriate place might have

been found for these marble representations of men, mighty in their day for good or evil, but here at all events, midst the gloom and still surroundings, some of the individuals represented afford wide field for reflection as to the mutability of all that is human.

From this point for a considerable distance through the wood the walks are arched overhead with evergreens, such as Yews and Box, which have been extensively planted amongst the deciduous trees. One of these overhung paths leads back to the lower side of the Rose garden before mentioned, opposite the conservatory. This is a lofty, handsome structure, about 60 feet in length, in keeping with the mansion, from which it is approached through the drawing-room. The roof is metal, with a central dome; the stonework similar to that of the mansion. It is a much better house for plants than many I have seen of a like description, owing to the position in which it stands, which is endways to the building, consequently permitting it to get the full light on both sides. When a high conservatory like this is made to do duty as a sort of stop-gap to fill up some defective or vacant corner in the architect's plan, it often happens that the place is nothing better than a living tomb for plants, enough to break the heart of any one who has to provide the material to keep it presentable, but such is not the case here, as is evident by the condition of the plants, which are arranged on the floor-level on each side of a wide central path. Those that are permanently located in the house consist of match pairs of *Dicksonia antarctica*, *Seaforthia elegans*, *Latania rubra*, and *Rhapis flabelliformis*, all handsome specimens; some very fine *Camellias* and equally large and well-grown *Azaleas*. The plants are by necessity all in tubs or pots, but are as vigorous and full of free growth as one usually sees them when planted out. In a narrow border at the western end are a couple of very large *Roses*, *Climbing Devonensis* and *Gloire de Dijon*. These, together with *Tacsonia insignis* and *T. exoniensis*, hang in festoons from the roof, but are not allowed to get so crowded as to interfere with the plants grown underneath them. Some large, very effective baskets, filled with suitable subjects, are used; amongst them was one containing *Harrison's Musk*, which completely enveloped the whole surface above and underneath, forming a close mass of foliage, thickly studded with flowers. Nothing that I have met with as a basket plant, not even *Achimenes*, presents a more even sheet of bloom than this easily managed subject, the yellow blooms of which have a good effect amongst the tall green foliage plants associated with it.

The kitchen garden, with the vineries, fruit and plant houses, are situated at a short distance from the eastern or opposite end of the mansion, altogether occupying about 4 acres. There is a walk from the flower garden leading in this direction with a wide border that has recently been filled with a good selection of herbaceous plants, consisting of most of the best free-growing species, and which, when they get fully established, will be an interesting feature, as the soil evidently is of a nature that will grow them well. There are a compact lot of substantial fruit-houses, including five good-sized vineries, three of them 40 feet by 16, the others smaller. Three of these houses have been planted by Mr. Clayton, and have done well—the crops in all were even, and if anything, too heavy, nevertheless the Vines seemed capable of finishing off the fruit well. The first house, all *Black Hamburgs*, was just ripe; it has been planted five years. The Vines intended to remain permanently have each a couple of rods, several others that have acted as supernumeraries, are to be cut down at pruning-time, and a young cane brought up so far as to admit of its being inarched near the bottom to the permanent Vines, and in this way made to assist them by the additional root-power brought to bear. The crop is large, even in berry, and finishing nicely. The next house is all *Muscats*—an immense crop, nearly ripe, the bunches as well filled and the berries as even in size as the freest setting black varieties are usually met with. We then come to a house filled with *Frankenthal*, coming on to succeed the first *Black Hamburgs*—the crop was about stoning, and in every way promising. The fourth house is occupied by *Lady Downe's*, *Gros Colmar*, and *Muscats*, all bearing a uniform, handsome lot of bunches. The next and remaining vinery contains *Alnwick Seedling* and *Muscats*. Part of them were removed here twelve months ago from another house in which they had been planted a year. There are several planted along the middle of the

house, with a view to their fruiting at once, and then being removed as the permanent ones come in. They carry a nice lot of bunches, the collective weight to each Vine not less than 10 lb. The border of this house is all inside, as likewise that of the late Muscat-house; the others have their roots both inside and out. There is also a small house for fruiting pot Vines, from which the earliest crop is grown.

Peaches are equally well done. They occupy three houses, each averaging 45 feet by 16. The nature of the soil is such as to cause the trees to make unusually strong growth, which it is necessary to counteract by partially lifting the roots. The first house is planted with *A Bec*, Royal George, and a *Violette Hâtive Nectarine*. Some idea of the progress the trees make may be formed by the example of Royal George in

much as if they were grown in pots—a method which enables the succession to be kept under control.

Mr. Clayton grows his Figs all in pots. They occupy a good-sized house during the time they are being brought on and fruited, the house being used for forcing flowers in the winter. The trees were bearing good crops. The sorts grown are Negro Largo and Brown Turkey. A few pot Vines are grown on the roof, but not so many as to interfere with the admission of enough light. In this house there was a number of Tuberose flowers flowering nicely. This is a plant not nearly so much grown in private establishments as it deserves to be, for it is a general favourite for cutting wherever sweet-scented flowers are required. There is a good sized plant stove, in which is grown quantities of flowering and the usual

tinct and large finely marked flowers I have ever met with. Mr. Clayton has, I understand, been selecting and raising seedlings of this useful flower for some time, and it would be difficult to imagine what further improvement they admit of.

The adjoining house is mostly occupied by Ferns of the kinds particularly serviceable for cutting and general decoration. In these *Adiantums* and *Pteris* play an important part. A good many are grown in baskets, *Adiantum amabile* being one of the best—it is evidently at home grown in this way. In a small house a collection of cool Orchids has been commenced, in which I noticed healthy plants of the usual kinds, such as the best *Odontoglossums*, *Masdevallias*, and others of a like nature. A large lean-to greenhouse is filled with plants to supply the con-



FIG. 54.—GRIMSTON, THE SEAT OF J. FIELDEN, ESQ. (SEE P. 300, 305.)

this house, which was planted in 1874, and it now covers a trellis 15 feet by 15. The trees were bearing the remains of a good crop. The second house contains Belle Beauce and Grosse Mignonne Peaches and an Elruge Nectarine, each carrying a weighty crop. The latest house has in it a couple of Bellegarde Peaches and one Balgown Nectarine. It seems strange that this fine old Nectarine is not more generally grown, for it is an excellent sort—a large fruit of fine quality, and, what is of importance, possessing a stout, healthy constitution in the tree.

There are two span-roofed Pine-houses, well adapted for the cultivation of this fruit. Some good useful fruit were ripe. The sorts grown are principally Queens, Smooth Cayenne, and Black Prince. On each side of these houses next the wall substantial slate enclosures have been erected for Melons and Tomatoes, where the roots can be restricted at will, as

fine-leaved decorative plants; on the roof are trained *Stephanotis floribunda* and *Bougainvillea glabra*, kept thin so as not to shade the general occupants too much; on the side tables were numbers of the useful winter-flowering Orchids, *Calanthe Veitchii* and *C. vestita*, that apparently make stout strong bulbs. When these are well done and in sufficient quantity, independent of the effective appearance of their flowers on the plants, they give a supply for cutting second to nothing else that can be grown for winter use. Their ability to stand long in water is not their least merit. Associated with them were other healthy Orchids, such as *Dendrobium thyrsiflorum*, *D. Bensoniae*, *D. Devonianum*, *Cattleya Mendelii*, *C. Mossiae*, *C. Skinneri*, *Laelia purpurata*, and the fine old *Oncidium Lanceanum* doing very well, a condition it is not always seen in. Amongst a quantity of seedling *Gloxinias* were several with the most dis-

servatory, comprising Azaleas, Fuchsias, Pelargoniums, and also *Petunias* in baskets, in which way they are not only seen to the best advantage, but are amongst the best plants that can be used. Fuchsias are trained to the rafters of this house, in which position they afford plenty of material for cutting. They are equal in appearance to most things grown in this manner, and can be kept cut in so as to prevent their interfering with the plants underneath them to an extent that many climbers would not bear.

In the roomy open space where are located the numerous pits and frames, there is another house, principally for forcing Strawberries—a light convenient structure, where this fruit is forced in considerable quantities. The erection of a suitable house for the purpose is in keeping with true economy, for when these plants have all to be brought forward on shelves in vineries, Peach-houses, and any available corner,

however inaccessible, where giving water and attending to them occupies more than double the time that they want when in a place where they can be readily got at, the labour saved by the convenience of a house, which has no need to be an expensive erection, in time more than meets the cost incurred, to say nothing of the plague of red-spider, which the presence of Strawberries amongst Vines and Peaches generally brings earlier than in their absence would occur.

I noticed that Mr. Clayton has made ample preparation for keeping up an effective display in the conservatory, and for cut flowers during winter; for the latter purpose such things as Bouvardias and Tree Carnations were being prepared in quantity, with a large number of Chrysanthemums grown on both the standard and bush fashion, and which were evidently receiving the attention this useful flower deserves, but does not always get. An old favourite of mine for summer blooming, *Campanula pyramidalis*, was here grown in pots really well done, and in numbers sufficient to make the display it is capable of, and which few plants so easily managed can equal. By those who form an estimate of a plant solely on its merits, regardless of its being new or old, it seems strange that such things as this *Campanula* should not be much more generally cultivated than it now is, for it is so easy to manage. The tall elegant spikes of both the white and the blue varieties last for a couple of months at a season when there is little variety.

The kitchen garden is a good one, enclosed by excellent walls, well stocked with fruit trees. Apricots and Peaches succeed well, as also do the more hardy kinds of Pears and Plums. Apples grown in the form of large bushes bear well generally, but are not very promising this year. Cherries only do moderately. Bush fruits and Strawberries are very full this season, the former carrying much heavier crops than I have met with in most places. Gardening collectively is here well done, the cultivation in each department, both under glass and outside, bearing evidence of skilful and intelligent management. T. B.

GREENHOUSE FLORISTS' FLOWERS.

AZALEAS.—No better weather could be desired for the well-being of these plants than we are at present experiencing. Let the plants be fully exposed in the open air as long as fine weather continue: see that they receive a due supply of water to cause the flower-buds to swell, and if these are placed too thickly let them be thinned out. The warm weather has been very favourable to the increase of insect pests; thorough syringings twice a day will generally destroy them. Thrips sometimes get such a hold of Azaleas that syringing with clean water will not dislodge them. Mr. Fraser, of Lea Bridge, recommends the following:—"Take 5 lb. or 6 lb. of soft-soap, and dissolve it in 12 gallons of rain-water; then add a gallon of strong tobacco-liquor, dip the plants, and before they become dry wash them in a tub of clean soft water, and not a thrips will be left alive." It is necessary, he adds, to repeat the process in a fortnight, to kill those which are hatched from eggs attached to the back of the leaves.

BOUVDARIAS.

These are now very finely in flower, and a succession of bloom will be kept up until Christmas. At present a light, airy greenhouse is the best place for the plants. Succession plants may still remain in cold frames and receive abundant supplies of fresh air; they do not require any heat until later in the season. All the varieties are now in flower. B. *Vreelandii* must be considered the best white. Maiden's Blush, a pink form of the same variety, is pretty; and the red form, Hogarth, is much esteemed. B. *elegans* is richer in colour than Hogarth, and a more desirable variety. B. *leiantha* is quite distinct, rich scarlet, and most desirable as a dwarf, neat-habited plant. A few, such as *umbellata alba*, *candidissima* and *longiflora*, may be grown for variety, but they are not so useful as the others I have named.

CALCEOLARIAS.

The young plants will require to be pricked out as they become large enough, using a liberal portion of sand in the soil. The plants succeed best in a shady place at this season; the glass lights should be kept rather close at first, but afterwards air must be freely admitted. Greenfly sometimes gets on the leaves in the

very earliest stages of the plants' growth, and they will do no good unless the pest is destroyed. This plant dislikes syringing or any form of washes for the leaves, and insect pests should always be destroyed by fumigating.

CHINESE PRIMULAS.

Strict attention to the requirements of these plants now will ensure a good bloom in the winter season, when flowers are of much value. They may be grown on to a large size, if plants of that character are required. More attention is required in the potting of large plants. The compost should be much rougher, good turfy loam torn up by the hand, with well rotted cow-manure and leaf-mould about a fifth-part of each; broken charcoal ought also to be mixed with the compost, and plenty of drainage should be placed in the bottom of the pots. Later seedlings must be pricked out into pans or pots, and be potted on as they require it.

CINERARIAS.

The earliest sown plants must be potted on into larger pots as needful. Some of them may be flowered in 6-inch pots, others in 8-inch. Do not allow the plants to become root-bound before repotting them. The earliest struck cuttings may be potted on the same as seedlings. Another sowing for late bloom may even yet be made, and the stock of choice varieties yet further increased by cuttings or offsets. The late hot weather does not suit the plants, but ours are doing fairly well in a frame with its back to the south. Water freely when the pots are well filled with roots, but do not pour the water over the leaves.

CYCLAMENS.

The plants are still kept in cold frames and slightly shaded from the sun during the hottest part of the day. Water carefully, let no plant become too dry, but the opposite of this must also be avoided.

CHRYSANTHEMUMS.

At no time during the growing season must these be neglected. From the time that the cuttings are put in until the plants receive their final shift, watering, potting and staking out the growths require attention. The interest in the plants increases as the flower-buds are formed, and daily attention must be the rule. If the buds are not looked after now the shoots which start from the stem immediately below them would exhaust the buds and prevent them increasing in size. All the shoots must be removed with the fingers as soon as they can be pinched out. Each stem will produce one good flower, but the main stem of a plant intended to produce large blooms to cut for exhibition is encouraged to break into three stems, so that three blooms only are expected from one plant. The specimen plants are treated in the same way. They have, of course, many stems, but the flowers must be encouraged to grow into large size the same way as the others. Surface-dress the pots now, and give weak manure-water occasionally.

FUCHSIAS.

The young plants produced from cuttings put in early this year should now be nicely in flower. Grown in 6 and 7-inch pots, they form very pretty bushes, their graceful habit and handsome drooping flowers never failing to cause admiration. The Fuchsia does not suffer very much from insect pests if ordinary care is taken of it; but red-spider sometimes gains too strong a footing on the leaves, and causes them to drop off, quite ruining the plants. No other attention is required now with healthy plants than to supply them freely with water, and remove all the seed-pods as they form.

PELARGONIUMS.

Instructions were given at p. 142 as to cutting down the plants and repotting those that are ready. The shaking out of the plants and repotting them should be seen to without delay. Some growers leave their plants out-of-doors for a considerable period; but it will not be safe to do so now that the days are so much shorter and the autumn rains may be expected. The plants should not be placed in low damp pits either, as spot is apt to attach itself to the leaves if the plants are kept in cold and damp situations. The very earliest plants that are intended to flower in May, should now, if the pots are well filled with roots, be potted into their blooming pots. This may be done up to the end of September, or early in October, according to the state of the plants. See that the plants are in a proper state as regards

moisture before repotting, and do not water them at the roots for two or three days after. Let cuttings be potted off as they require it, and also small seedling plants. Fancies merely require lighter soil and a rather warmer atmosphere, and to be placed near the glass. Airy span-roofed houses are the best adapted for Pelargonium culture, whatever section may be represented.

VERBENAS.

These flowers are now very valuable for decorative purposes in the greenhouse, if they have been kept clean and healthy. As the old trusses go off they must be removed, to throw more strength into the younger ones coming on. They will continue to bloom a long time at this season, but they are very liable to be attacked by mildew, which is very destructive; it can be destroyed in its earlier stages by dusting it with flowers of sulphur. Fumigate to destroy greenfly. About the end of the month cuttings can be put in. They form roots best in a cold frame. Before putting them in, wash well in soft-soapy water, to which some sulphur has been added; this kills aphids, mildew, spider, or thrips, all of which prey upon the Verbena. J. Douglas, Loxford Hall, Ilford, E.

Garden Operations.

HARDY FRUIT GARDEN.

Such a period of fine weather as we are having at the present juncture for the ripening of fruit crops, and the consolidation of the growth of fruit trees, cannot fail to encourage the hopes of those who, in the depth of adversity, clung to the opinion that the good old summers would once more return again, and with them an abundant fruit harvest. As I walked round upon a tour of inspection of the walls this evening (August 30) I thought of Mr. Wildsmith, who had hope of a brighter future for hardy fruit growers when many were disposed to give up in despair. Still, we have our troubles. Wasps and blue-bottles are a perpetual and increasing plague, and threaten to destroy Nectarines and Plums totally unless very expensive remedies are resorted to to prevent their ravages. The best fruits of Peaches, Nectarines, and Plums, that are required for dessert we have had to "bag" singly, in order to keep them from being disfigured for table. We use thin muslin cut up into pieces of the proper size, and find it is the only safe remedy to defeat our enemies. Reverting to the weather, and the condition of fruit-trees, the opinion I have already expressed with regard to them is being confirmed as time progresses in a very decided and satisfactory manner. The majority of fruit-trees are thickly set with fruit-buds, and are clean and healthy. I observe that those trees that are restricted as to space in which to extend their branches, and that have suffered most from canker consequent upon the same crude condition being maintained year after year, are now shooting out second growth. The plan to adopt with these will be to thin out the trees, and to root-prune later when the wood has grown firm, and there is no danger of shrivelling after the operation. Root-pruning fruit trees with half developed growth, as recommended by some, is a thing I could never understand, and as I do not follow the practice myself, I cannot recommend it to others. Every tree should be taken in hand according to its own individual condition. Where these remarks apply it will be necessary to make arrangements beforehand for prosecuting the work. This consists in having a suitable compost prepared, and in such condition that it will work freely when required for use. I have never had any scruple in using fresh loam carted from the meadows for planting or replanting fruit trees, so long as there was sufficient pulverised earth—say from 4 inches to 6 inches in depth—to cover the roots. These remarks are anticipatory. With ourselves they are suggested by actual exigencies, and it is not improbable that after the past two winters there will be a good deal of replacing and filling up of gaps in many places, as well as here. The fruit-room should now be put in order for the reception of early Pears and Apples, which in many cases will be a scanty harvest; still there must be good order and cleanliness observed, and a scrupulous carefulness exercised over gathering, in order to avoid losses by bruising. As the crop is gathered from early trees the condition of their roots should be examined, and, except in the case of heavy retentive soils, a good soaking of liquid-manure will help them to swell up their fruit-buds. Late varieties of Strawberries that have been layered in pots may still be planted out for succession upon north borders. W. Hinds, Canford Manor.

FLOWER GARDEN.

Much as the bedding-out system has been decried, I still venture to state my conviction that at this time of year no other style of gardening is so popular, or so

generally criticised (a sure sign of popularity) by all classes of gardeners and non-gardeners. Why, then, should the system be discarded? Not, surely, for a style of planting that would give less pleasure, even though the labour were somewhat less. Surely additional pleasure is worthy the bestowal of additional labour—not that I would for a moment adopt the bedding system to the exclusion of all hardy herbaceous and perennial plants, but as supplementary to these, and particularly for employment in formal or geometrical gardens, for which positions the great bulk of herbaceous plants are in nowise suited. It is admitted that the advocates for the annihilation of bedding plants have good grounds for their dislike when the plants consist of Pelargoniums, Calceolarias, Lobelias, and similar shortlived plants, but that dislike should and will vanish in proportion as hardy plants are pressed into the bedding service, and in this direction we must work till most of the plants used for summer bedding consist of hardy kinds only. These remarks are suggested by practical experience in the use of many kinds of hardy plants for bedding purposes, and which are now in every particular effective beyond all expectation, though as a matter of course they principally consist of foliage plants. The usual routine of labour will now mainly consist in removing all such flowers and regulating the growths by pinching or pegging, as the case may be, cutting of edgings, verges, and lawns, and sweeping and rolling walks after rains. Roses should have the bad flowers removed, and for appearance sake straggling shoots cut off. To keep them growing and flowering without check, mulch them; cocoa-fibre is every way suited for the purpose, and imparts a bright appearance to the beds. Pansies and Violas that sometimes serve to furnish an undergrowth for such beds may now be cut over to induce them to make young shoots, for propagation by division, or as cuttings to be put in at the end of the month. Daisies, Polyanthes, and Primroses should all have a good soaking at least once each week, so long as dry weather continues. Annuals that are to be used for spring gardening cannot be brought up too sturdily; thin out betimes, and give plenty of room, as one good plant will then fill as much space as half a dozen inferior ones, and will certainly winter better. Such as the following may still be sown:—Silenes, Nemophilas, Collinsias, Saponarias, Limnanthes, Candytufts. Hardy border flowers are now as gay as at any time during the year. We have the following in fine flower:—Phloxes, Veronics, Anemone japonica, Spiræa Filipendula plena, Funkias, Double Sunflowers, Wild Bergamot, Pentstemons, and Potentillas, most of which require an occasional tie to keep them from injury. Where the border is not planted with dwarf plants as undergrowth, the soil will need to be sometimes stirred with a small hoe to kill weeds and hinder it from cracking. Complete the propagation of stock plants for the production of spring cuttings at the earliest convenience; this is work that is so well understood generally, that nothing need be said as to the manner of striking them, except that Pelargoniums at this time of year strike most freely in the open air and exposed to the full sunshine; but all other bedders require a close frame, and Coleus, Iresine, and Alternantheras a slight bottom-heat; the latter should always be increased by cuttings, as the old plants when lifted and divided get stunted by the production of flowers. *W. Wildsmith, Heckli hl.*

FRUIT HOUSES.

VINES.—Pot Vines intended for early forcing may now be divested of all laterals close down to the main buds, and in the event of their being still under glass no time should be lost in getting them removed to a south wall in the open air, where they must be well secured from injury by wind, and to prevent the roots from becoming too dry a little litter or dry Fern may be placed loosely about the pots. Permanent Vines in the early house should also be encouraged to go to rest by having all lateral growths removed, care being taken that the old leaves are not injured, as they will help to feed and perfect the bunch, producing buds as they ripen off. It will be necessary to give an abundance of air, and a continuance of this fine summer weather may render the removal of some of the sliding sashes an advisable precaution; but where the roots are in a satisfactory state the check which follows the removal of the growing laterals generally produces the desired result. Houses in which ripe Hamburgs are hanging will be the better for having some light shading drawn over them for a few hours on bright days, as the strain of a heavy crop of fruit, independently of the fact that the berries soon lose their colour, is a great strain upon the Vines. Muscats and the winter hanging kinds have now reached a degree of ripeness that will admit of a reduction of fire-heat and a lower temperature through the night. This treatment applies to houses that were helped forward with a little fire-heat early in the spring; but where the parsimonious system of trusting to solar-heat alone is still in practice the fires will have to be kept going—and it is well known that

autumn forcing is neither favourable to the finish or keeping of the Grapes. The latest Hamburgs will now be colouring fast, the bright weather having forced them forward with greater rapidity than may be desirable, at least where they are to be kept for use up to December. Should this be the case a good canopy of foliage for some time to come will be of great service both in delaying the ripening and preserving the colour of the fruit. As days decrease in length, and there is danger to be apprehended from an excess of moisture, the steady reduction of the laterals and increased ventilation with gentle fire-heat will be advantageous to the Grapes and the ripening of the wood. To succeed well with these late Hamburgs it is a good plan to cut off all the largest shoots and to well thin the medium-sized bunches, to prevent the berries from binding when they are ripe. As the season advances we always cut our latest crop with the wood, and place them in bottles of water in an elevated part of the Lady Downe's house, where they keep well, and we are then able to shorten back all the spur-shoots to five or six eyes, and apply fire-heat until the wood is thoroughly ripe; moreover, the house being wanted for large terrace plants in winter, the dry, warm air is also favourable to them after they are housed. Alnwick Seedling having been unfavourably noticed, it is only bare justice to state that it fruited with me last year, set well, and coloured as freely as a Hamburg, and is equally satisfactory this season. I obtained my Vine from Mr. Williams, of Holloway. It is a fallacy to suppose that all kinds of Grapes will do equally well in every garden, as I could give the names of some of the ordinary white kinds that positively refuse to be coaxed into bearing a decent bunch in our soil, while Muscats can be grown well under our usual treatment. *W. Coleman, Eastnor Castle.*

MELONS.

The beautiful and seasonable weather with which we have been lately favoured, has been very conducive to the swelling off and ripening of Melons growing in unheated pits and frames, in which, however, water must be used very sparingly; but should the plants be likely to suffer for want of water, which seems doubtful, let them have it before mid-day—at all events, sufficiently early to allow of the foliage becoming dry before night, otherwise mildew would be likely to be troublesome, and canker, too, would, under such circumstances, probably appear. Do not wait its approach, but as a preventive—and a cure if necessary—place some quicklime and new dry soot around the collar of each plant, which will generally absorb any unnecessary moisture that might arise, on or about the stems of the plants. Late plants will require the stopping, thinning, and tying of the shoots being attended to in the usual way. The necessary dampings, mornings and afternoons, must be attended to as circumstances may render needful. Light the fires at night to prevent the temperature falling below 70°, and expose the fruits well to the sun's rays. *H. W. Ward, Longford Castle.*

CUCUMBERS.

The treatment of plants recently planted must, in a great measure, be regulated in accordance with the time when they are expected to produce fruit. If the object is to obtain a supply of fruit as soon as possible, early stopping must be had recourse to, say at the second wire of the trellis, which will result in fruit-producing shoots, but in the generality of places the object is to get the fruit in time only to succeed those grown in frames, in which case the plants are allowed to reach the third and fourth and sometimes the top wire of the trellis before being stopped, and all the young fruits removed as they appear, in which case they break as regularly as a Grape Vine from the axil of every leaf, and the laterals from each individual plant are nearly allowed to meet before being stopped, thus concentrating all the energies of the plants on the development of wood and leaf, so that at a fixed period the plants will be in a position to produce and sustain a good and continuous supply of fruit during the winter and early spring months. To these plants water must be applied somewhat sparingly at the roots, until such time as they have become well established, with plenty of hungry roots permeating the soil in all directions in search of food. Maintain a minimum temperature of 65°, and a maximum of 75°, with fire-heat, running 10° or 15° with sun. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

FERNERY.—Although, as is well known, Ferns are shade-loving plants, yet in the majority of cases they get more than is good for them, and especially is it so at this period of the year when the days are fast shortening, and the sun losing much of its power. To get the fronds mature, which is a matter of the greatest importance towards carrying the plants safely through the winter, or in such a manner that they will not look shabby, it is necessary that they be afforded plenty of light and less atmospheric moisture,

as the two combined have a hardening tendency and bring about the desired result. Prepared and fortified in this way, there will be no damping-off by-and-bye, and the fronds, should they be required for cutting, will stand without flagging or losing their freshness—a condition they would be quite unable to maintain unless they undergo a course of treatment that will improve the texture by rendering the tissues firm before the time arrives for the plants to be going to rest. This state is often brought about by withholding water at the roots, which is a great mistake, and particularly dangerous as regards Ferns, they being subjects that are very impatient of any check caused in that way, as not only do the most active fibres perish, but the crowns or embryo fronds suffer to a serious extent. It should be borne in mind, however, that though dryness is an evil to be avoided, excessive wetness is just as much so, the thing being now and for some months to come to preserve that happy medium between the two, and if this is done they will start with health and vigour when the time arrives for them to do so in the spring. There are so many purposes to which small plants of Ferns may be put that seedlings are always valuable, and as many of the kinds come freely from spores that float about in the air and alight on favourable positions for their germination, they should be preserved and potted singly in small pots in sharp peaty soil, when, if kept close for a week or two where they can be syringed, they will be fully established and become of great use for furnishing indoor window-boxes among flowers, which they help much to adorn. Young Palms, too, are exceedingly serviceable for the same kind of work, and if pinched at the roots may be kept in a small state for years, but to maintain them fresh looking the small body of soil allowed them to grow in must always be moist or the foliage soon assumes a hue that detracts greatly from its beauty. Clarified soot-water is a fine thing to give Palms, as without stimulating them unduly, it imparts a deep green, a shade of colour most pleasing to the eye, and one that shows up in nice contrast to gay blossoms.

STOVES.—Here, too, shade must be gradually dispensed with, as the thing to be aimed at is to bring all plants to proper maturity, without which flowers cannot be produced in the free manner they ought, neither will plants bear the changes incidental to the season now shortly before us. Among those which require a good deal of ripening are the Gardenias, so useful for winter blooming when properly prepared; if these are placed in a house or pit where they can be kept cool and occasionally have the lights off when the weather is favourable, the wood they have made will become thoroughly hardened and bristling with buds. Climbers, such as Clerodendron Balfourianum, and others of that class, will do best now if loosened and detached from their trellis so that they may be brought up pretty close under the glass, which may be done by slinging the branches to strained wires or suspending them to a tack or two in the rafters near which they may be kept out of the way, and there receive the full benefit of the solar rays till taken down to be stored away for the winter. To assist the sun and air in its work, much may be done by a judicious use of the water-pot, as so long as the soil in which the plants are, is kept just sufficiently moist to prevent excessive flagging, that is all they require. In cases where any Allamandas or other stove subjects still remain in conservatories, great care will be required, as now that the thermometer runs down considerably they will soon begin to feel the cold, and if watered too freely or allowed to remain in positions where they are liable to draughts, the effect may be such as to cause their utter destruction. In order to avoid such loss, it will therefore be advisable to remove them at once, for although they may not show symptoms of suffering now, they are sure to be apparent later on when placed in heat, as then, instead of pricking up their leaves and looking better, it will be found that they will quickly cast them and die.

GREENHOUSES.—The bulk of the Fuchsias will now be getting shabby, from having ceased to bloom freely, and should at once be removed and set out abroad in a sheltered spot where they can ripen their wood. Such plants will be of great use again in the spring for starting early after being pruned, but as young ones are very desirable to succeed them, cuttings ought to be put in at once, and if when struck they are kept growing gently on by placing them in a warm house during the winter, they will make handsome little specimens laden with flowers. As we may now expect heavy rains, choice hard-wooded plants outdoors will no longer be safe without lifting them well above the ground, by standing them on bricks, or something to raise them out of the water. Should the wet be excessive it will be well to tilt the pots on their sides for a bit, by doing which it is an easy matter to prevent the soil getting more than is good for the roots. To be ready for housing the glass and woodwork should have a thorough cleaning, and every part put in proper order, that there may be no delay when the season comes to get all under cover. *J. Sheppard, Wolverstone.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Sept. 6	Sale of Bulbs and Plants from Holland and Switzerland, at Stevens' Rooms.
	Sale of Dutch Flower Roots at the Auction Mart, E.C., by Frotheroe & Morris.
	Oxfordshire Horticultural Society's Autumn Exhibition.
WEDNESDAY, Sept. 8	Royal Caledonian Horticultural Society's Show (two days).
	Sale of Dutch Bulbs, at Stevens' Rooms.
THURSDAY, Sept. 9	Sale of Imported Orchids, at Stevens' Rooms.
	Paisley Horticultural Society's Show.
FRIDAY, Sept. 10	Sale of Natural History Specimens, at Stevens' Rooms.
SATURDAY, Sept. 11	Sale of Dutch Bulbs, at Stevens' Rooms.

THE Report of the Select Committee on the POTATO CROP, ordered to be printed by the House of Commons, is an interesting, if not very satisfactory document. The nature and general course of the disease may be considered—allowing for a few exceptional points still in dispute—to be well known, and away go at once all the crude theories and unsupported assertions which have been made with so much freedom, and with a positive assurance in direct proportion to the theorists' want of knowledge as to the real cause. The truth is, this is a matter which no ordinary observer is competent to deal with; it requires the special knowledge and the trained observation, continuously applied, of the specialist. Practically, the only steps considered likely to mitigate the disaster are the entire destruction of the affected haulm and tubers, care in storage, and in not planting a second crop within a certain period on the same land, and possibly the production of varieties more capable of resisting disease than others. The old fallacy of varieties wearing out was again advanced, and the comparative immunity of the Champion variety noted, with the very proper qualification that it, too, like the others, might be expected to succumb to the disease, as, indeed, it has done already in some places.

The most important point, to our thinking, is that to which we have often adverted, and that is, the general neglect on the part of the growers of those precautions which common sense, independently of any proved demonstration, would have dictated. Diseased haulm and diseased tubers are left to rot and disseminate the disease wholesale. The manure heap is made the vehicle for the broadcast dissemination of the disease, and not one attempt is in general made to avert or diminish the effects of the malady. So long as we are content to let things go, so long are we likely to be punished for our remissness, and those few who do adopt some little precaution are almost entirely at the mercy of those careless fatalists who will not stir hand or foot to help themselves, much less their neighbours.

The committee finally recommend the establishment of experimental farms, "for the creation and establishment of new varieties," either under Government control or under that of existing agricultural societies.

We can but look upon the report as being on the whole extremely unsatisfactory, and not the less so that not a word of acknowledgment is given to those scientific and practical men who, with such untiring zeal and patient labour, have brought to light the facts that we are in possession of as to the nature of the disease, and to those who have done so much by cross-breeding and selection to improve the Potato.

There are several points in the evidence, both of the scientific and of the practical witnesses, which are open to criticism and question: for instance, the identity or otherwise of the disease formerly known as the "curl" with the Potato murrain now generally recognised; but on these we need not now dwell. Meantime we may draw attention to yet another fungus enemy, which was described by Mr. W. G. SMITH in our last issue. This consists of the formation of lumps of hardened spawn within the haulm. These Pea-like lumps are the immature condi-

tion of some fungus, whose further history needs unravelling, and whose full significance is not yet apparent.

SOME time since we mentioned that the American Government had organised an expedition to explore the forests of the Pacific Coast region, and that Drs. ENGELMANN and PARRY, with Professor SARGENT, of the Arnold Arboretum, had been commissioned to visit and report on the district in question. No better selection could have been made, and we may look forward to very valuable results, both from an economic and a strictly botanical point of view. The three gentlemen we have named are indeed specially competent, and their selection for the duty will excite the warmest satisfaction on both sides of the Atlantic. The riches of this district are still but imperfectly appreciated. Some portions indeed have never been visited by botanical travellers since the time of DOUGLAS, and we may confidently hope that some of the puzzles and confusion that have arisen as to certain Conifers may now be unravelled. Already, as we learn, the party have ascended Silver Mountain, near Fort Hope on the Fraser River, and have found there, at an altitude of 4000—5000 feet, the true *Abies* (or *Picea*) *amabilis*, whose identity had become a matter of doubt. It was found growing with *Tsuga Mertensiana*, *T. Pattoniana*, *Pinus albicaulis*, and *P. monticola*, and at somewhat greater elevations than the Douglas Fir.

In the early part of last month Professor SARGENT undertook the ascent of the very mountain just south of the cascades of the Columbia River where DOUGLAS fifty-five years ago discovered *A. amabilis* and *A. nobilis*, and found on that classic ground not only the two trees just mentioned, but *P. Pattoniana*, *Pinus monticola*, *P. contorta*, and some stunted specimens of *Abies grandis*. *A. amabilis* is better developed here than further north, and is described to us as a magnificent tree when growing at an altitude of 4000 feet. The largest specimens grow on the banks of a mountain torrent, and attain a height of 160 to 200 feet, with a trunk 4 feet in diameter, branching to the ground and forming a perfect cone of dark green foliage. The bark of the old trees is $1\frac{1}{2}$ to 2 inches thick, furrowed and reddish-grey; that of younger trees less than 100 years old is quite thin and smooth, light grey or almost white. It is certainly very closely allied, as Dr. ENGELMANN tells us, to *A. grandis*, but may be distinguished by its very crowded darker green foliage, whence the name given to it by Dr. ENGELMANN, when he considered it a form only of *A. grandis* as var. *densiflora*, and its dark purple cones. We reserve further details, with which we have been obligingly furnished by Dr. ENGELMANN and Professor SARGENT, till we are enabled to publish woodcuts from the photographs sent to us. We may add, however, that, so far as we can judge from the photograph and a few leaves which have come to hand, the plant grown as *amabilis* (true) in some of our nurseries, such as those of Messrs. WATERER, LEE, BARRON, PAUL, and VEITCH, is the true plant; which is the more important, as from what we are told most of the seed imported of late as true *amabilis* has turned out to be that of the plant known in our nurseries as *Lowiana*, *Parsonsiana*, or *lasiocarpa*. *A. grandis*, which is common on the low lands along the rivers in Oregon, Washington Territory, and the southern parts of British Columbia, is only found exceptionally on the mountains. It has lighter coloured, usually longer, and always less crowded leaves, and apple-green cones. Of this also we expect to receive photographs, and hence reserve further details till we are in a position to publish illustrative engravings. We trust also that we shall be in a position, thanks to the labours of

these eminent botanists and arboriculturists, to clear up the confusion still attaching to the names *concolor* and *lasiocarpa*, concerning which we had occasion to write lately.

The best wishes and the most anxious hopes of our botanists and cultivators attend the arduous labours of the illustrious trio. We can but feel that they are pre-eminently the right men in the right place, and we earnestly wish them God-speed.

—GARDENERS' TESTIMONIALS.—The Publisher will be much obliged to "J. A.," who advertised in the *Gardeners' Chronicle* for July 31 for a "head working gardener," if he will be good enough to return the original testimonials sent to him by a gardener who applied for the situation from Berkhamstead. The loss of such testimonials to the gardener in question would be irreparable, and therefore it is to be hoped that "J. A.," should he see these lines, will at once return the documents to their owner. The Publisher would also take this opportunity of cautioning gardeners applying for situations against the folly of sending their original testimonials to unknown advertisers.

—THE PELARGONIUM SOCIETY has decided to hold its next annual exhibition on June 28 and 29, 1881, and has already issued its schedule of prizes, copies of which may be obtained from the hon. secretary, Mr. SHIRLEY HIBBERD, 15, Brownwood Park, Finsbury Park, N.

—M. JEAN VERSCHAFFELT'S NURSERY AT GHENT.—We learn that this celebrated establishment, conducted until recently by the late M. JEAN VERSCHAFFELT, is for sale on advantageous terms. Further particulars may be seen in our advertising columns.

—GENTIANA KURROO.—One of the most distinct and beautiful of Indian Gentians, equal in size of flower to that of *G. acaulis*, but of rich indigo-blue, and densely spotted with white in a reniform blotch near the throat; it is of decumbent habit, the leaves closely resembling those of *Armeria plantaginacea*. It is a decided acquisition to its genus, but doubtful whether hardy in this country; it is now flowering on the rockwork in the Tottenham Nurseries.

—PHYLLOXERA REGULATIONS.—We learn that the Turkish Government has forbidden the introduction of any plants whatsoever into the territories of the Sultan. This wholesale interdiction (supposing it were practicable to enforce it) has at least more logic and sense about it than the rules which permit a wagonload of hay to cross the frontier, but confiscate a Rose in the buttonhole of a tourist.

—WHEAT HYBRIDS.—In the *Bulletin* of the Botanical Society of France, February 27, 1880, we find a note of M. H. VILMORIN on the hybridisation of Wheat, the general result of which is that *Triticum sativum* and *T. spelta* cross reciprocally with the greatest ease, and give origin to an offspring absolutely uniform, and in which all the individuals seem to have borrowed their characters from one or other of their parents in rigorously identical proportions. M. COSSON, in adverting to M. VILMORIN's researches, recalled similar phenomena in *Aegilops triticoides*, a fertile hybrid, the characters of which are so fixed and invariable as to constitute a species.

—ZAUSCHNERIA CALIFORNICA.—This is a highly effective autumn-flowering rock plant, with bright scarlet tubular flowers, which it produces in abundance until very late in the season. Its habit is neat and compact, growing from 1 foot to 1½ foot in height. Some fine plants of this, 2 feet across, will shortly be making a fine display on the rockwork in the gardens of Southwood, Bickley.

—NOBLE MARKET GARDENERS.—To private gardeners it is peculiarly distressing when they learn that one of their number has proved so delinquent to his profession and to his employer as to be heavily punished by imprisonment, but a recent case, and happily a very unusual one, opens up a wider field for reflection, because the evidence given in the case showed that the gardener was in the employ of one of that now rather too abundant class—noble market gardeners. Having regard to the contempt usually

shown on the part of the upper classes for mere trade and its concerns, it is marvellous how soon noblemen and rich commoners descend into the arena of trade and barter when the products of their garden are concerned. If the public were permitted to inspect the books of some of our well-known fruit salesmen there would be much surprise expressed at finding that his Grace of this and his Lordship that, of all the sections of titles, with a large number of rich gentlemen, had become market gardeners, and send not merely the surplus but rather all the good produce of their gardens to market, taking only the surplus themselves. Here there is an undoubted grievance to the genuine market grower, the man who has to live by his labour and to whom competition of this kind is most hurtful.

England nurseryman informs us that where a few years ago he sold hundreds of Peach and Nectarine trees, he does not now sell dozens, while the demand for trained Green Gage Plums has increased to an extraordinary extent. It is found to be a reliable cropper; it is a valuable market fruit, always commanding a price above other Plums; and the fruit can be utilised in many ways. It is a favourite practice with some to bottle the Green Gage Plum, filling up the vessel with rich old gin; and it is said that Plums kept in this way for one or two years are not only of fine quality, but the spirit in which they have been preserved forms a liquor of surpassing merit. "Plant the true old Green Gage," is the advice given by our informant, as some of the spurious forms of it fall far below it in usefulness and quality. The Green Gage

for wiring for bouquets, &c. Quite small plants were very free of bloom, and it would make a pretty feature in the greenhouse. To have it in perfection it should be grown in pots and flowered under glass, as this assists the purity of the flowers; when planted in the open ground the flowers become tinged with pink, and lose their snowy whiteness. *N. acutifolia* would appear to be almost, if not quite, identical with the foregoing.

— *CHRYSANTHEMUM INDICUM NANUM* AS A SUMMER BLOOMING VARIETY. — At the exhibition of the Maidstone Horticultural Society, a few days ago, Messrs. GEORGE BUNYARD & Co., nurserymen, Maidstone, staged some plants of this useful *Chrysanthemum*, of dwarf growth, and having dense heads of

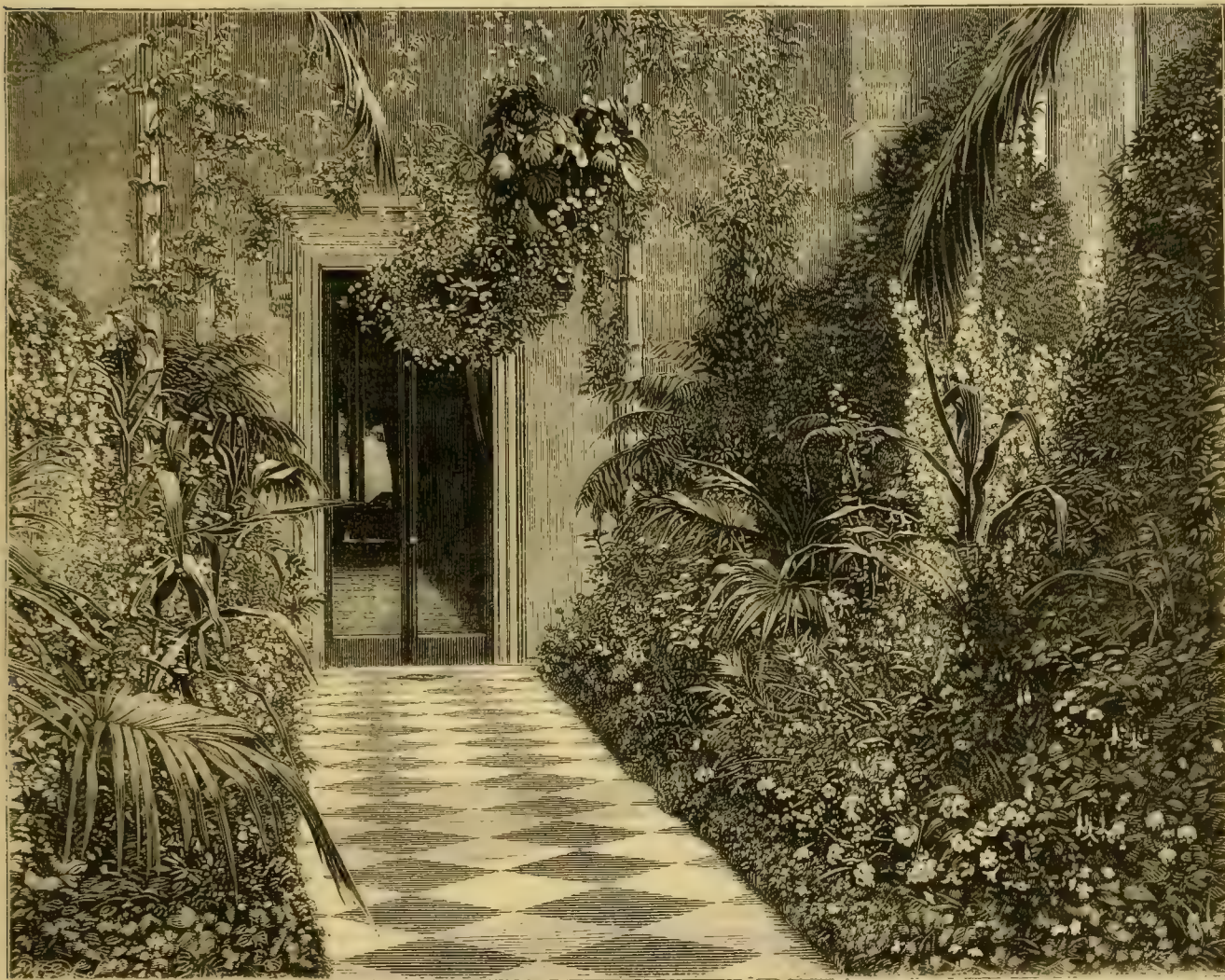


FIG. 55.—VIEW IN THE CONSERVATORY AT GRIMSTON PARK. (SEE P. 300.)

As a rule, all large places, the property of noblemen and gentlemen, are very insufficiently rated, and still more lightly taxed, whilst the *bonâ fide* market grower finds his premises and his outlay rated and taxed to the uttermost. No doubt the public benefit by the competition, and gardeners in the employ of these trading nobles and gentlemen also, as but for the sale of fruit and vegetables the establishments would be greatly curtailed. None the less, if these places are market gardens, they should, in justice to the trade, be rated and taxed as such.

— THE PEACH AND GREEN GAGE PLUM.—It is said that the failure in the crops of wall fruit during the past few years, in so far as it refers to the Peach and Nectarine, is operating in the way of inducing gardeners to take out their Peach and Nectarine trees and plant Green Gage Plums instead. A West of

Plum, it is said, is greatly improved by being grafted on the Apricot.

— *NICOTIANA LONGIFLORA*. — It is interesting to note how frequently it occurs that an old plant, after having been almost forgotten, comes to the fore and engages a good share of public attention. Such is the fate of the plant that heads this paragraph. It was introduced from Buenos Ayres as far back as 1832, but it is only rarely it has been met with of late. At the summer exhibition of the Reading Horticultural Society on the 20th inst. some plants of it, of small size, but nicely bloomed, growing in pots, were the admiration of many of the gardeners and others to whom the plant was quite unknown. Mr. GEORGE PHIPPIN, of Reading, who exhibited this *Nicotiana*, stated that he found the flowers, which have quite a pleasant fragrance, very useful indeed

very fine pure white flowers. The plants were in 48-sized pots, one plant in a pot, raised from cuttings struck in the spring, grown on in a cold frame, and treated to occasional doses of Clay's Fertiliser. The plants were perfect in foliage and flower, and the variety is worth noting down on account of its exceptional value for blooming at this season of the year.

— *IIABENARIA CILIARIS*. — This is one of the best of the North American Orchids. Its flowers, which are of a bright orange yellow, are produced on dense spikes 2 feet high; the lip is densely clothed on either side with deeply serrated thread-like feelers or hairs, and is a most rare and interesting species. Flowering in the Hale Farm Nurseries, in a bed with *H. psychodes*, of which the varieties vary in colour from light lilac to dark purple: this forms a most pleasing and striking contrast.

— *HYDRANGEA PANICULATA GRANDIFLORA*.—This fine and useful species should become as popular in gardens as the Clematis. If any doubt existed as to its hardihood, the fact that it stood out unharmed all last winter in Messrs. BUNYARD'S nurseries at Maidstone may tend to assure the doubtful. It forces well, it is an excellent greenhouse plant, and it is in the first class as a hardy flowering subject in the garden. When a plant can be turned to good account in so many ways it must be very useful indeed.

— *SARRACENIAS*, &c., AT MR. BULL'S.—Nothing could go further to prove the benefit which *Sarracenia*s derive from being grown near the glass in a very light house with a comparatively cool temperature than the extensive collection of these plants in this establishment, which, with a few other singularities in plant life, fill one of the long new span-roofed houses in that establishment. They are within a few inches of the glass, receive very little shade, are kept quite moist at the roots, with a moist atmosphere as well, just enough air being given to keep the young pitchers from getting drawn. The whole are as stout and strong as they well could be; we measured a plant of the handsome hybrid, *S. Chelsoni*, with pitchers 21 inches long, the lids 5 inches in diameter. Not the least advantage of growing them in this way is that the plants, when newly imported, recover their vigour and attain a size with one or two seasons' growth that they would not reach in less than half-a-dozen years where kept darker. In the house along with them are quantities of most of the *Drosera*s, both large and small growers, all, with the exception of the small young stock, grown without bell-glasses over them, being subjected to the full air of the house. These most interesting plants also seem to do equally well without being covered, attaining a size combined with robust condition and deep colour of their gland-tipped hairs, which shows that the treatment suits them. The dwarf *D. capensis*, *D. dichotoma*, *D. dichotoma rubra*, *D. dichotoma longifolia*, *D. spatulata*, and *D. filiformis*, with others, are here in beautiful condition. There was likewise in flower in one of this new group of houses a handsome form of *Lælia elegans*, of the *L. Turneri* section, with petals and sepals pale claret; column, inside and out, white; lip broad, and of an intense dark purple colour.

— *ALBUCA NELSONI*.—The very fine and unique plant of *Albuca Nelsoni* recently described and figured in these columns has, by the liberality of its discoverer, Mr. NELSON, been presented to the Royal Gardens, Kew. It appears to be a rare species, as we understand from Mr. NELSON that he only saw two plants of it in South Africa.

— AMIES' MANURE COMPANY.—We are requested to state that at the last meeting of AMIES' Chemical Manure Company Mr. G. NEILSON TUCKER was appointed Managing Director.

— *TIGRIDIA PAVONIA*.—At Mr. BULL'S nursery may now be seen a magnificent bed of this grand old iridaceous plant, which, by the way, is not so generally cultivated as it deserves to be; a fact that is somewhat surprising, for, considering the grandeur and beauty of the freely produced flowers, and the ease with which the plant may be cultivated (being quite as easy to manage as a *Gladiolus* or scarlet *Pelargonium*), it is just one of those plants which might have been expected to have found its way into every cottage garden. The bed at Mr. BULL'S is now in full beauty, hundreds of the gorgeously coloured flowers being open at once; the large bed of the brilliant scarlet typical form is flanked by beds of a paler orange-coloured variety (*T. pavonia aurantiaca*), a form that will be found useful where variety is needed as offering a pleasing contrast to the more richly-coloured type.

— *HARDY FERNS*.—One of the most attractive features at the Wilderness, near Reading, is the fernery, into which Mr. LEES has gathered a varied and most interesting collection of hardy varieties. Lovers of these plants, and who find in Ferns the proper denizens of paradise, would no doubt enjoy a look over this collection. Some semi-hardy kinds usually grown under glass have also been planted out in sheltered nooks, for the immediate proximity of trees and tall shrubs give not only that protection, but also the shade in which Ferns as a rule delight.

We alluded some time since to the big boulder stones with which this large fernery was formed; these are practically imperishable, and may to some seem rather too large; but steam-hammers would have been needed to split them into pieces. Around these the Ferns cluster lovingly, as it is evident the roots like not only the hard stone surface, but also the moisture that is ever existent around these monsters of the rocky strata. Every year adds not only variety, but expansion and growth, and the charms incidental to such a fernery constantly increase.

— *CEDRONELLA CANA*.—This plant seems generally to have withstood the past severe winter with impunity. One large plant, 2 feet high and as much through, has been flowering profusely for weeks past on the rockwork in the Hale Farm Nurseries, Tottenham.

— *TALL POTATOS*.—One of the latest introductions in the way of Potatoes is a kind that has haulm 8 feet long; at least that was exactly the length of a sample shown us the other day from a garden where Potatoes grow freely, and which was but a sample of the entire plant growth. If this sort of thing goes on we may as well at once order in a stock of small Hop-poles, and train our Potato-tops as runner Beans. Perhaps such a mode of culture may prove an antidote to the disease. Who can tell? Strange things now and then are discovered, and, as a rule, by accident. Perhaps the longer the course the *Peronospora* has to travel through the plant-stems the more its destructive powers are weakened. Here is a nut for the practical man to crack.

— *NYMPHÆA SCUTIFOLIA*.—This species is now finely in flower in the Hale Farm Nurseries, Tottenham. The flowers, which are of a light blue, are very pleasing, and form a valuable component of our list of cool greenhouse aquatics. It is a native of the Cape. *N. odorata* and *N. tuberosa* are also flowering.

— *GOOSEBERRY GROWING NEAR BIRMINGHAM*.—Harborne, not far distant from the Botanic Garden, Edgbaston, is one of the places where the Gooseberry finds a home. The growers hold two shows annually, and at the last exhibition in the Botanical Garden there was a good display, exemplifying what is done in the neighbourhood. Prizes are offered for 1 lb. of fruit, the exhibitor who produces the least number of berries that will give the weight winning. Three dishes of Leveller were shown, fifteen fruits weighing 16 oz. This is a really good dessert kind, which beyond its merits as a show sort deserves to be generally grown.

— *SENECIO PULCHER*.—This striking and valuable addition to our autumn flowering perennials is now flowering freely at Mr. WARE'S. Its flowers, which are large, are of extraordinary substance and of a glowing purplish-crimson; its leaves are of glossy green, large and fleshy. It is perfectly hardy, and most suitably adapted for classing among the choicest collections of hardy plants.

— *ANÆCTOCHILUS*.—Several kinds of these touchy subjects are now growing very well in one of the hottest houses in Mr. BULL'S establishment, particularly *A. Lowii*, of which there are some very strong plants.

— *HECKFIELD GARDENS*.—On Monday next, and during the ensuing week, these charming gardens will, as usual in the autumn, be thrown open to the public. So often have the chief features of Heckfield been described in these pages, that even in that way alone most readers must be familiar with them, but none the less, descriptions, however able, rarely give the impression conveyed by a personal visit; and those who may care to do so during the coming week will, in addition to a view of some charming elevated country, see also much to repay them for the trouble involved, in a garden that is deservedly held in high repute. Just within the garden entrance some deference to the growing taste for hardy plant borders is shown, as what for a long time were carpet borders are now filled with showy hardy border flowers associated with many half-hardy plants. The hardy borders are thus contrasted with the beds shown further on, where at the first glance a visitor might be led to infer gardening has run mad in the direction of Thistles, but a moment suffices to

show that it is but a line on either side the path of *Chamæpeuce* very charmingly set in a carpet of hardy plants, whilst behind is a glorious backing of *Sedum* spectabile in full bloom. On the terrace the bedding this year will be found not less well done than in previous years, and in some features much better. The introduction of hardy carpet plants gradually proceeds, the *Herniaria glabra* just now making the very best green carpet; but a new green *Silene* from the Caucasus bids fair to rival, if not to excel, that useful plant. In the fruit-houses there is, as usual, a grand show of Lady Downe's, and plenty of other Grapes, all good and well done; the questioned Alnwick Seedling here has set as freely as the Black Hamburg, and is a first-rate Grape; the bunches are compact as can be, and the berries like sloes. Pearson's Golden Queen ripened early; now cut, and hanging in the fruit-room, are good bunches, of a rich amber hue. When will Mr. WILDSMITH, or some other good Grape grower, treat us to a sight of such a show of these fine Grapes as he can now show his visitors of Lady Downe's?

— *AGAPANTHUS UMBELLATUS CANDIDUS*.—Mr. BULL has imported from the Cape a beautiful variety of the white *Agapanthus*, a very different plant to the one that has hitherto been known under the name. It bears large full-sized umbels of flowers as large as those of the blue kind; the colour is a clear decided white. Standing so long as the flowers of *Agapanthus* do, it will not only be very useful as a decorative plant, coming in towards the latter part of summer, when good flowers are less plentiful, but the individual blooms, on account of their enduring property, will be most acceptable for bouquets and other floral arrangements.

— *OUTDOOR PEACHES AT ARNO'S GROVE*.—In seasons like the present, when Peaches on open walls are in most places all but a total failure, it is a pleasure to note an instance, not alone of success but where in addition to there being a full crop the fruit individually is so unusually fine that it might well be taken for the produce of well managed trees growing under glass. The garden we allude to is that of J. WALKER, Esq., Southgate. A few details as to the conditions under which the trees are placed, their management, and the extent of the crop, may be both useful and interesting. Some of the trees are young, others old; the walls, facing due south, are old, and 9 or 10 feet in height: one portion has a narrow permanent coping, the other none at all. The finest fruit is borne by the trees on the uncoped part, though this may possibly be attributable to the state of the trees rather than to any influence for or against arising from the absence of the coping. We rather look to the treatment having much to do with success by aiding the wood to get fully ripened—a difficult matter to secure last summer, and to the absence of which this year's deficiency of fruit is, no doubt, in a great measure attributable. Each summer the whole energy of the trees is directed to the support of the crop they carry, and the formation of just as much young wood as is required to bear the ensuing season; and in this respect Mr. GRAVER keeps his trees considerably thinner than most growers—the shoots in the spring, when nailing is completed, being further apart than usually seen, although nothing is retained for cutting out in the winter. They are kept completely free from insects of all kinds, the first curled leaf in the spring being the signal for the destruction of the aphides that have attacked it. Thrips and red-spider receive no quarter, thus the trees are never weakened by injury to the leaves, or expend their strength in the production of shoots and fruit-buds that have to be removed either in the summer after they have attained considerable size, or later on, when their growth is complete; added to this, the more open condition of the shoots during the time of their formation accelerates the ripening of the wood, which in such seasons as the last was never completed if the trees were at all crowded. The number of fruit on a single square yard of each of several trees are—Bellegarde, twenty-seven and twenty-six; Royal Charlotte, twenty-two; Late Admirable, twenty-six; Royal George, twenty-eight. It is well to mention that the crop on these, and a good many others fruiting similarly, although even, would not average equal to the above over the whole surface of each tree, most of them being fuller on the lower half of the wall. The fruit are as large as generally met with where they have been thinned

with a view to getting extra size. Most of the trees needed considerable thinning. The situation is high and dry, but not more so than many places where Peaches have failed this season. No protection whatever is given to the trees at the time of blooming, and they rarely miss giving a sufficient crop.

— NOTICE OF REMOVAL.—We are requested to state that, in consequence of 6, Leadenhall Street being required by the Corporation of London for city improvements, Messrs. HURST & SON have removed their offices to 152, Houndsditch.

— ORCHIDS IN FLOWER.—The following are in flower at Mr. WILLIAM BULL'S establishment, King's Road, Chelsea:—

<i>Acropora Loddigesii</i>	<i>Mesopitidium vulcanicum</i>
<i>Aerides suavisimum</i>	<i>Miltonia bicolor</i>
<i>Bollea celestis</i>	„ <i>Clowesii</i>
<i>Calanthe pleiochroma</i>	„ <i>Morelana</i>
<i>Catantemum macrocarpum</i>	„ <i>spectabilis</i>
„ <i>maculatum</i>	<i>Mormodes pardium unicolor</i>
<i>Cattleya Eldorado</i>	<i>Odontoglossum bictenense</i>
„ <i>guttata</i>	„ <i>roseum</i>
<i>Colax juteosus</i>	„ <i>crispum</i>
<i>Cypripedium Crossianum</i>	„ <i>splendens</i>
„ <i>Harrisianum</i>	„ <i>grande</i>
„ <i>javanicum</i>	„ <i>Pescatorei</i>
„ <i>purpuratum</i>	„ <i>Roezlii</i>
„ <i>Sedeni</i>	„ <i>album</i>
„ <i>Stonei</i>	„ <i>Rossii majus</i>
<i>Dendrobium bigibulum</i>	„ <i>vevillanum</i>
„ <i>chrysanthum</i>	„ <i>picturatum roseum</i>
„ <i>Jamesianum</i>	„ <i>superbum</i>
<i>Dendrobium filiforme</i>	<i>Oncidium cuculatum</i>
<i>Diss grandiflora</i>	„ <i>flexuosum</i>
„ <i>Burrellii</i>	„ <i>facatum</i>
<i>Epilobium filicatum</i>	„ <i>incurum</i>
„ <i>vitellinum majus</i>	„ <i>intermedium</i>
<i>Laelia Dayana</i>	„ <i>Kramerianum</i>
„ <i>elegans</i>	„ <i>ornithorhynchum</i>
„ <i>marginata</i>	„ <i>Papilio</i>
<i>Luscia tenuifolia</i>	„ <i>pratense</i>
<i>Lycaste Larringtoniae</i>	„ <i>Retemeyerianum</i>
„ <i>lanipes</i>	„ <i>roseum</i>
„ <i>Schilleriana</i>	„ <i>tectum</i>
<i>Masdevallia Harryana</i>	„ <i>tigrinum</i>
„ <i>cerulescens</i>	„ <i>unicorne</i>
„ <i>igneae</i>	<i>Saccolabium Blumei</i>
„ <i>maculata</i>	„ <i>majus</i>
„ <i>militaris</i>	„ <i>Rheedii</i>
„ <i>oculata</i>	<i>Trichopilia tortilis</i>
„ <i>peristeria</i>	<i>Vanda tricolor planilabris</i>
„ <i>Veitchiana</i>	<i>Zygopetalum Gautieri</i>
„ <i>violacea</i>	
<i>Maxillaria grandiflora</i>	

— AMARYLLIS BELLADONNA MAJOR.—This is an exceedingly large and finely-coloured form of the well-known Belladonna Lily. The flowers, of which there are from four to six on stout stems upwards of 2 feet in height, are of a bright rose. Flowering on one of the corners of the rock in the Hale Farm Nurseries, it is a very conspicuous plant just now.

— DAHLIA JUAREZI.—This is now flowering profusely in the Tottenham Nurseries, at Mr. CANNELL'S, and other places. It is a most distinct plant: the flowers are double, and of a rich crimson; the petals, which have a long lanceolate outline, are distinctly recurved at the extremities. It was figured in our columns last year, p. 433, vol. xii.

— ONOSMA TAURICA.—A fine specimen of this still uncommon Boraginaceous plant, some 2 feet across, has been flowering freely on the rockwork at Southwood, Bickley. This, like many other good alpine plants, is seldom met with in good condition, but when seen in this way it is a charming plant. When planted in a mixture of sharp sand, peat, and rich loam it thrives admirably in any ordinary situation.

— THE TREES IN KENSINGTON GARDENS.—We are pleased to observe from a recent statement in the House of Commons, made by the First Commissioner of Works, that our comments on this subject in a recent number were not made in vain. Mr. ADAM, in reply to a question as to why so large a number of trees in Kensington Gardens were being cut down, and as to what extent it was proposed to carry out the operation, said:—"I am very glad that the hon. gentleman has asked this question, as the forms of the House would not have given me an opportunity of explaining what is now being done in Kensington Gardens, and as the matter is very likely to be misunderstood by those who have not carefully watched the gradual decay of the trees in that park, which decay has become rapid and decided in the last two years. Hon. gentlemen who were in the House when the vote for the parks came on may remember that I then observed how many of the trees in Kensington Gardens were either dead or hopelessly dying, and how necessary it had become that some decided

action should be at once taken with regard to them. The natural decay, owing to impoverished soil, and terrible neglect of timely thinning fifty or sixty years ago, had been much aggravated by the hard winters and the cold and wet summers of the last few years. In the more thickly-planted portions of the gardens the trees were dead and dying in hundreds, and in all parts the dead trees were very numerous. I had made up my mind what course ought to be pursued, and knowing the sensitiveness of the public regarding tree-cutting, and being aware how averse people generally are to that free and bold use of the axe which is of the essence of good wood management, I thought it advisable to ask the co-operation of a small committee of experts, who might give their advice, and support me by their authority. I applied accordingly to Sir JOSEPH HOOKER, Mr. CLUTTON, Mr. THOMAS, so distinguished as a landscape gardener, and to my right hon. friend the late First Commissioner of Works. These gentlemen all agreed to assist me, and several meetings have been held in Kensington Gardens between myself and Mr. MITFORD, the secretary of the Office of Works, who is himself eminently qualified to give a sound opinion on the subject. The result has been a unanimous resolution that we ought to proceed at once to clear away the dead and dying trees. This is now being done. In some places an absolute clearance has had to be made, and all over the gardens numerous trees are being removed. The spaces cleared will either be trenched, drained, and replanted, or will be left open as may appear best. At present any one who has not studied the subject, or carefully observed the trees for some years past, may think that too much is being done; but I can assure the hon. gentleman and the House that the utmost care is being used in the work; that not a tree is being cut that can be properly spared; and that every effort will be made to restore life to the trees which are now dying. I may say, speaking with the authority of the committee, as well as from considerable personal experience, that this work has not been begun one moment too soon if the beauty and enjoyment of Kensington Gardens are to be properly preserved."

— A WARNING.—The Registrar-General for Scotland reports a recent death in Sutherlandshire resulting from blood-poisoning, and states that the local Registrar says, "The deceased had been employed scattering artificial manures, from which the poisonous matter must have entered into his system."

— RICHMOND (SURREY) HORTICULTURAL SOCIETY.—The second annual autumn exhibition of Chrysanthemums, fruit, &c., will be held at the Castle Hotel, Richmond, on Tuesday and Wednesday, November 23 and 24. Schedules will shortly be issued.

— THE WEATHER.—General remarks on the weather during the week ending Aug. 30, issued by the Meteorological Office, London:—"The weather though much brighter in most places than during last week, has again been rather dull over the greater part of the kingdom—especially over the inland counties. Thunderstorms occurred at many stations on the 26th, and again in some localities on the 29th. Rather heavy rain fell at some of the inland stations, and at Valentia, but elsewhere the amounts collected were very small. The temperature was above the mean in all districts; in Scotland, Ireland, and in "England, S." the excess was as much as 4° or 5°. The thermometer was generally highest on the 28th, when it rose to 80° in Ireland, and to 81° at Hastings and in London. The lowest of the minima occurred in most places on the 24th, and at Churchstoke a reading as low as 43° was registered. The rainfall was less than the mean in all districts. Bright sunshine was more prevalent than during last week, but the number of hours recorded was still very few. The percentage of total possible duration varied from 46 in "England, N.W.," to 25 in "England, S.," and 22 in "Scotland, E." The wind was generally light from between east and north; on the 26th, however, a southerly breeze set in over Scotland, and continued to prevail there during the remainder of the period."

— GARDENING APPOINTMENTS.—Mr. ALEX. MACMILLAN, late Gardener to T. JOHNSON, Esq., Holland House, Spalding, has been appointed Gardener to Sir EDWARD KERRISON, Bart., at Oakley Park, Scole, Suffolk.

AGRICULTURAL CHEMISTRY.*

WHAT is agricultural chemistry? It is the chemistry of the atmosphere; the chemistry of the soil; the chemistry of vegetation; and the chemistry of animal life and growth. And but a very imperfect indication of the amount of labour which has been devoted of recent years to the investigation of these various branches of what might at first sight seem a limited subject will suffice to convince you how hopeless a task it would be to seek to do more than direct attention to a few points of special interest. Indeed, devoting to the purpose such leisure as I have been able to command, the more I have attempted to become acquainted with the vast literature which has been accumulated on the subject, the more difficulty have I felt in making a selection of illustration which should not convey an idea of the limits, rather than of the extent, of the labour which has been expended, and of the results which have been attained, in agricultural research.

The works of Liebig have, as you all know, been the subject of a very great deal of controversy. Agricultural chemists, vegetable physiologists, and animal physiologists, have each vehemently opposed some of the conclusions of the author bearing upon their respective branches. But if the part which has fallen to my own lot in these discussions qualifies me at all to speak for others as well as myself, I would say that those who, having themselves carefully investigated the points in question, have the most prominently dissented from any special views put forward in those works, will—whether they be agricultural chemists, vegetable physiologists, or animal physiologists—be the first to admit how vast has been the stimulus, and how important has been the direction, given to research in their own department, by the masterly review of then existing knowledge, and the bold, and frequently sagacious, generalisations of one of the most remarkable men of his time!

EARLY INVESTIGATORS.

From what we now know of the composition and of the sources of the constituents of plants it is obvious that a knowledge of the composition of the atmosphere and of water was essential to any true conception of the main features of the vegetative process; and it is of interest to observe that it was almost simultaneously with the establishment, towards the end of the last century, of definite knowledge as to the composition of the air and of water that their mutual relations with vegetation were first pointed out. To the collective labours of Black, Scheele, Priestly, Lavoisier, Cavendish, and Watt we owe the knowledge that common air consists chiefly of nitrogen and oxygen, with a little carbonic acid; that carbonic acid is composed of carbon and oxygen; and that water is composed of hydrogen and oxygen; whilst Priestly and Ingenhousz, Sennebler and Woodhouse, investigated the mutual relations of these bodies and vegetable growth. Priestly observed that plants possessed the faculty of purifying air vitiated by combustion or by the respiration of animals; and, he having discovered oxygen, it was found that the gaseous bubbles which Bonnet had shown to be emitted from the surface of leaves placed in water consisted principally of that gas. Ingenhousz demonstrated that the action of light was essential to the development of these phenomena; and Sennebler proved that the oxygen emitted resulted from the decomposition of the carbonic acid taken up.

So far, however, attention seems to have been directed more prominently to the question of the influence of plants upon the media with which they were surrounded than to that of the influence of those media in contributing to the increased substance of the plants themselves. Towards the end of the last century, and in the beginning of the present one, De Saussure followed up these enquiries; and in his work entitled, *Recherches Chimiques sur la Végétation*, published in 1804, he may be said to have indicated, if not indeed established, some of the most important facts with which we are yet acquainted regarding the sources of the constituents stored up by the growing plant. De Saussure illustrated experimentally, and even to some extent quantitatively, the fact that in sunlight plants increase in carbon, hydrogen, and oxygen, at the expense of carbonic acid and of water; and in the case of his main experiment on the point he found the increase in carbon,

* An address to the Chemical Section of the British Association. By Dr. J. H. Gilbert, F.R.S., President of the Section.

and in the elements of water, to be very closely in the proportion in which these are known to exist in the carbohydrates. He further maintained the essentialness of the mineral or ash constituents of plants; he pointed out that they must be derived from the soil; and he called attention to the probability that the incombustible constituents so derived by plants from the soil were the source of those found in the animals fed upon them.

With regard to the nitrogen which plants had already been shown to contain, Priestly and Ingenhousz thought their experiments indicated that they absorbed free nitrogen from the atmosphere; but Sennebie and Woodhouse arrived at an opposite conclusion. De Saussure, again, thought that his experiments showed rather an evolution of nitrogen at the expense of the substance of the plant than any assimilation of it from gaseous media. He further concluded that the source of the nitrogen of plants was more probably the nitrogenous compounds in the soil, and the small amount of ammonia which he demonstrated to exist in the atmosphere.

Upon the whole, De Saussure concluded that air and water contributed a much larger proportion of the dry substance of plants than did the soils in which they grew. In his view a fertile soil was one which yielded liberally to the plant nitrogenous compounds, and the incombustible or mineral constituents; whilst the carbon, hydrogen, and oxygen, of which the greater proportion of the dry substance of the plant was made up, were at least mainly derived from the air and water.

Perhaps I ought not to omit to mention here that each year for ten successive years, from 1802 to 1812, Sir Humphry Davy delivered a course of lectures on the *Elements of Agricultural Chemistry*, which were first published in 1813, were finally revised by the author for the fourth edition in 1827, but have gone through several editions since. In those lectures Sir Humphry Davy passed in review and correlated the then existing knowledge, both practical and scientific, bearing upon agriculture. He treated of the influences of heat and light; of the organisation of plants; of the difference and the change in the chemical composition of their different parts; of the sources, composition, and treatment of soils; of the composition of the atmosphere, and its influence on vegetation; of the composition and the action of manures; of fermentation and putrefaction; and, finally, of the principles involved in various recognised agricultural practices.

With the exception of these discourses of Sir Humphry Davy the subject seems to have received comparatively little attention, nor was any important addition made to our knowledge in regard to it during the period of about thirty years from the date of the appearance of De Saussure's work in 1804 to that of the commencement of Boussingault's investigations.

(To be continued.)

NEW BRITISH DISCOMYCETES.

THE value of a work like *Mycographia seu Icones Fungorum*, in which the microscopic characters of all the larger Discomycetes are given, lies in the fact that our knowledge is brought up to the latest date of a very difficult genus, and the starting point for fresh discoveries is clearly fixed. Though the list of species included in the section *Humaria* is large, still well-marked additions continue occasionally to present themselves, one of which I wish to bring to the notice of your readers. Mr. C. Bucknall, of Clifton, near Bristol, found a small brown *Peziza* growing on a composition of lime and cowdung spread on the trunks of fruit trees for their protection, which presents some striking points of structure. My friend, Dr. Cooke, from whom I rarely venture to differ, considers it too near *Peziza exidiiformis*, B. and Br., to admit of it being regarded as distinct. Through the kindness of the Rev. M. J. Berkeley I possess authentic specimens of the last-named species, and for the following reasons believe the Clifton plant to be perfectly distinct. It is only one-half the size, it is much softer in texture, the sporidia are much nearer, being spherical, and have but one large nucleus instead of two, and the paraphyses are much more branched and pyriform at the summits. Indeed, the paraphyses are remarkable for their proliferous growth, a character altogether absent in *Peziza exidiiformis*, B. and Br. A comparison of the accompanying

figure with No. 60 in *Mycographia* will make these differences more obvious. I would describe it as follows:—

Peziza (Humaria) mistura.—Crowded or scattered, sessile, concave when dry, applanate when



FIG. 55.—PEZIDIUM TETRASPORUM.

moist, submarginate, chestnut-brown, glabrous; asci cylindraceo-clavate; sporidia 8, ovate or sub-globose, smooth, with one large nucleus, .014—.016 x .011—.012 mm.; paraphyses from one to six times branched, summits proliferously pyriform, or moniliform, or only slightly enlarged.

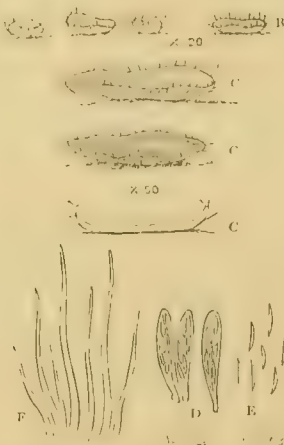
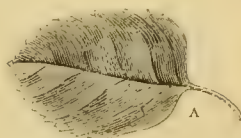


FIG. 57.—PEZIZA ARANEO-CINCTA.

On a mixture of lime and cowdung spread on the trunks of Apple trees. Spring. Clifton. Mr. Cedric Bucknall. $\frac{1}{2}$ —3 mm. across. The paraphyses are remarkable for their proliferous growth, and the cells of the exterior of the cup are small, oblong rather than globose.

Fig. 58.—A, natural size of cups; B, enlarged twenty times; C, group of asci and paraphyses magnified nearly 400; D, a group of paraphyses; E, sporidia; F, external cells of cup.

Another minute species of *Peziza*, belonging to Fries' section *Dasyscyphae* sessiles, was also sent to me by the same gentleman, quite distinct from any of the described species of that section as far as I am aware, which I propose naming

Peziza (Davy, sess.) araneo-cincta.—Scattered, minute, sessile, concave, thin, pale yellow, margin fringed with long, slender, flexuous, pointed, white hairs; asci broadly clavate: sporidia biseriate, narrowly fusiform, acutely pointed, .01—.013 x .001—.0015 mm.

On decayed Birch leaves. October. Leigh Down. Clifton. Mr. Cedric Bucknall. Cups .2—3 mm. across. The hairs are without septa, and are so delicate that they are diffident in water with only slight pressure. I have not seen any paraphyses.

Fig. 57.—A, natural size; B, magnified twenty times; C, magnified fifty times; D, asci; E, sporidia; F, hairs of margin.

The Rev. James Keith, of Forbes, who has for some years been engaged in studying the mycological flora of his neighbourhood, sent me a very striking *Phacidium* which he found on the leaves of the common Juniper (*Juniperus communis*) while yet green. As I have searched in vain for a description of this species in all the works at my command, I conclude it is a new species.

Phacidium tetrasporum, Ph. and Keith.—Epiphyllous, erumpent, circular or oblong, convex, cinereous, seated on a brownish-yellow spot, splitting irregularly into three or four laciniae; disc black on the surface, brownish-yellow within; asci broadly clavate; sporidia 4, elliptical-ovate, with a septum near the lower end, often with a papilla, brown; paraphyses numerous, septate, with brown pear-shaped heads.

On the upper side of Juniper leaves while yet green, simulating a *Puccinia*. Forbes. The Rev. James Keith. 1 mm. across. Sporidia .025—.028 x .017 mm.

Fig. 56. A, natural size; B, magnified ten times; C, asci and paraphyses; D, three sporidia separated from the ascus. William Phillips.

THE BALDWIN APPLE.

THE eulogy bestowed on this Apple by Mr. C. M. Hovey, at p. 49, leads me to record my opinion of its flavour and value. That the Baldwin must be an undoubted pet of your correspondent is evidenced by the fact of its being his favourite fruit for the last "forty years," in "preference to 200 others," hence his unqualified praise. That it deserves a meed of praise is freely admitted, but it must not be forced upon us as the Apple before carefully examining its claims to that title. Its principal claim to be considered one of the first of Apples is in its ability to stand the rough usage consequent upon its being transported by land or sea, for long distances, with but a minimum tendency to decay. In its home it cannot take rank with many other varieties, unless toughness of skin and harshness of flavour can be said to be recommendations in its flavour. I also much doubt if the residents in Calcutta could endorse your correspondent's opinion, though "it has been shipped for years and years on cargoes of ice" to British India.

It is shipped to Jamaica in the same manner, and it cannot be said here to possess anything to recommend it, except it is (that excellent quality in Potatoes) mealiness. It arrives here with little of its original flavour left, and is only eaten by those who, longing for a fruit of their native clime, accept it as the best apology to be had. That it is equal to many other varieties is much to be doubted, and the grand secret of its great popularity undoubtedly lies in the fact that the tree is a thrifty grower, good bearer, and the fruit being an excellent traveller, consequently can be sold cheaper than any other variety without the risk of loss. It may supply "the intelligent Englishman's table with dessert," but it is only when his pocket will not allow him to purchase higher flavoured and rarer varieties that are only to be found in the rich man's establishment. For market purposes, no doubt, the Baldwin stands pre-eminent, but that it deserves the praise bestowed upon it I cannot allow, without recording some of its faults, to prevent others from being misled by your correspondent's opinion of its merits. *J. H., King's House, Kingston, Jamaica.*

THE POTATOS IN THE FENS.

In a long run through the Fens the other day I did not see a sound Potato; the tops were enormous, many of them from 3 to 4 or 6 feet long, but all without exception infected—of many the mere blotched skeletons only remaining. Another marked peculiarity of the disease of this year was more apparent in the Fens than elsewhere—the odour was vileness itself. I do not know whether this feature of the disease this year has been so marked by observers as it deserves. It is almost impossible to walk past many fields and gardens without being made ill, the smell is so atrocious. Doubtless the unusual bulk and length of the haulm has contributed to this result. The progress of the disease has also been exceptionally rapid. You could almost see the smitten Potatoes rot under its blasting power. The consequence was enormous masses of green succulent tissue suddenly converted into sheer rottenness. This among other matters convinces me that

example, as blind faith in Champions or other disease-proof sorts that have no existence except in the report of the Royal Commission—the old worn-out theory that the Potato is worn out, varieties lasting about ten years, and a hopeless search after sorts recommended that would grow out or resist the disease.

I trust, with your permission, to go more into this matter on some future occasion, but permit me to challenge proof that any variety of Potato is worn out. As proof to the contrary, I would cite Ash-topped Kidney in its original state, and under its many improved selections. This is doubtless one of our oldest cultivated varieties, and I boldly affirm that it is just as disease-proof as the last Champion, perhaps more so. I have certainly never seen it sounder nor better than this season.

I would venture to offer some advice that will be far more likely to mitigate the force of the disease. Let us go in for short-topped Potatoes as for short-

be carefully watched, and the moment the disease appeared the shaws to be drawn and destroyed. By some such means the disease may be kept in check, if not finally got rid of. While the crops are left to their fate, as in the Fens and elsewhere, or witnesses before Royal Commissions take for granted facts, or rather theories, which have not been proven, and base their remedial measures on such baseless fabrics, there is but little hope of the disease being either weakened or destroyed. *D. T. Fish.*

Home Correspondence.

The Coddling of Out-of-Door Figs.—Permit me to join Mr. H. W. Ward (see p. 246) against this practice. When we first grew Figs in the open air they were bunched up into bunches, thatched with straw, or covered with mats, for the winter. When undone, about the middle of April, and displayed in their summer quarters, the whole of the autumnal Figlets, as a rule, fell off. The result was that young ones could hardly be formed in time to be ripened before their further progress was arrested by autumnal or winter colds. The winter coddling of the trees had made them exceptionally tender, and this tenderness had not only cleared them of fruit, but also retarded their time of growth so much as to prevent the possibility of their wood being ripened to any good or useful purpose. The more they were coddled the later and more sterile they became—the fruit that did appear never showed soon enough to reach maturity. By leaving the trees to shift for themselves in all weathers, as we have done here for nearly twenty years, we seldom miss a good crop of Figs through August, September, or even October, no matter how severe the weather; the trees have no protection, and I never remember losing a branch excepting during the severe winter of 1859–60. The whole of the Figlets larger than a Kidney Bean are destroyed during severe winters, but several Figs are invariably developed on the terminal shoots—as many as from three to six, as a rule. Our system of treatment and training—or, rather, lack of training—is directed chiefly to the multiplication of terminal shoots. The trees are simply backed up against walls; as soon as they cover them, or during the process, numerous shoots are allowed to grow up from the walls. These, if too strong, are stopped, and forced to form two or three shoots of medium strength instead of one strong one. When a sufficiency of these heart-shoots are secured no more pinching, pruning, nor training is adopted—the trees are simply left to shift for themselves; and in this freedom of growth, and perfect liberty of form, we find the secret of continuous fertility. One thing more is needed, however. The roots must not be coddled any more than the tops. Our best Figs were thus planted:—Their only border is a paved yard, bounded on one side by a stable, and on the others by stokeholes and sheds for timber and coal. The yard is paved with boulder flints; across it over a hundred tons of coals, and many other things, are carted annually. A few flints were taken up here and there to enable the roots of small Figs in 10-inch pots to be inserted. The stones were again rammed in over the roots; and from that day to this the Fig-roots have been left to their fate. They have had no water but what falls on them from heaven, and most of that runs off. Neither have they had any dressing nor manure of any kind, and yet, for almost twenty or more years, they have hardly ever missed a crop. The hard treatment at top and bottom suits them well; the coddling of the tops and overfeeding of the roots of Figs are the great causes of the failure of Fig culture in the open air in England. I may add that some of the finest Pears I have ever seen have been produced under very similar conditions as far as their root-runs are concerned, though I must not be understood as advocating the same system for Pears. *D. T. Fish.*

Mulching.—I am glad to find so excellent a cultivator and so good an authority as Mr. D. T. Fish endorsing the principal part of my remarks on mulching, and to know that he agrees with me as to its great utility; but in regard to his statement respecting an incessant downpour of rain, I can only say that such has not been the case anywhere about here, neither have we had a heavier fall than to be beneficial to most crops, which—more especially all kinds of vegetables—are looking as well or better than I ever remember. Local storms attendant with smart showers I know there have been, and in districts so affected no doubt some hay has been spoiled and other damage done; but I question if the rain, by measure, during the past two months has been anything extraordinary, or much more than is usual for the period I refer to. As proof of the incessant wet, Mr. Fish mentions that his Peas have shot up so high as to require the aid of a ladder to gather the pods, but to enable them to attain such an altitude they must have attached themselves to some of the trees,



FIG. 58.—PLAZA MISTUR.L. (SEE P. 308.)

one of the likeliest modes of mitigating the power of the disease will be found in the shortening of the tops of the Potatoes. In the Magnum Bonum, Champion, and Early Rose we have thus been advancing backwards. The Champion tops especially have been enormous: in many cases and up to this date they seem all top, the tubers so late in not a few instances that the chances are they may not tuber at all.

In the Fens, notwithstanding the enormous tops, there seemed no attempt to pull them up or destroy them. There the huge masses lay rotting on the ground, poisoning the air and filling the earth full of innumerable spores of fungi. Where the crops were lifted the larger portion of them, that is in most cases the finest of the tubers, were left on the ground, adding to the vileness of the odour and to the probable increase of the disease next season. From this miserable picture I turned somewhat eagerly to the Blue Book, and while finding much information on points on which the pages of the *Gardeners' Chronicle* has made most of its readers familiar, I was certainly staggered to find conclusions and recommendations such as have received little or no support in your pages, and of which there is no proof; such, for

topped Radishes, Swedes, and Mangels. Most of our types of Potatoes, such as the Rose, Regent, Climax, Red-skinned Flourballs, Magnum Bonums, Champions, have far too much top; the leaves get too far away from their proper work—the building up of the tubers, and the long succulent stems only furnish the disease when it comes with tenfold energy and power. Neither are those long-shawed Potatoes profitable or suitable for garden culture.

Develop a race of earlier varieties, if possible, and by this I chiefly mean Potatoes that would complete their growth and mature the crop in less time from the start.

Shorten as much as possible the growing period of the Potato the moment the crop is fit. Grow also late varieties and plant them late. With careful preparation and storage the seed of late Potatoes may be kept till the end of May or even the beginning of June. Crops planted thus late would be finished by the beginning of October.

Thus the season of Potato harvesting might be extended from June to October, the earlier Potatoes being run in before the disease came, the latter after it had passed away. At any and every period the crops to

as here, although we grow Queens and others of the tall sorts, we have managed to pick ours without even ascending steps, or leaving the safe footing of *terra firma*. I remember in the days of my childhood being amazed at reading a story of "Jack and the Bean-stalk;" but after all that wonderfully exaggerated tale may not have been a fable, as now we hear of Peas towering up in the same manner, so that even matters in gardening, like history, repeat themselves, and we have the same prodigies to-day as of yore. *J. S.*

Clay's Fertiliser.—At the present day, when the horticultural field is flooded with plant novelties of all kinds, either for use or ornament, and alike beset with appliances and aids to assist in growing them, helped on by puffs and testimonials innumerable, it behoves those who wish well to the profession to be careful what they recommend. But it is possible to carry this too far in withholding favourable expression towards anything which appears possessing exceptional merit, such as the manure above mentioned. Considering the price and potency of soot, guano, and ordinary manures applied in a solid or fluid state, I fought shy of Clay's for a considerable time, under the impression that it was only one more of a number that could very well be done without for the simple reason that there was already enough and to spare of them. But after trying it upon a number of plants as varied in their nature as they well could be, and being witness to its influence on a great many more, I am really surprised at its effects, which are such as I have never seen follow the use of anything else in the shape of manure; even succulent plants like Agaves and Yuccas seem just as much invigorated by it as Fuchsias, Pelargoniums, and the host of similar quick-growing subjects. Its effect on Roses is very wonderful; old stunted plants on walls that for years had not made growth thicker than a quill by merely having the dirt removed from between the brick paving under which their roots had grown with the manure sprinkled on and washed down with plenty of water, have thrown up shoots 8 or 10 feet high, and as thick as one's finger. Applied to hybrid perpetuals and Tea varieties in beds after the first blooming, they have grown and flowered again more than double that of plants under similar conditions without the manure. All the makers have to do is to see that in time to come there is no falling off in quality, and I have no doubt that its use will continue to extend, especially as the price is such as to admit of its being used for ordinary outdoor crops. *T. Baines.*

The New Potato Disease.—Mr. Worthington Smith's discovery and description of the new form of disease which has manifested itself in the Irish grown Champions, comes rather too late to be of use for growers in English southern districts to be able to determine whether it is amongst our growths or not, but probably in northern districts the haulm is far from having died away. I trust it will, on further enquiry, prove to be strictly local in its operation, and perhaps may be found to have originated from causes confined to the land in question. Potato growers have already enough to fight against in the *Pero-nospora*, and do not aspire for other diseases to conquer. Almost our only green shaws now are those of Champion and Magnum Bonum, both very vigorous, although both fast losing leafage from fungus attacks. The former is not largely grown and late in tuberizing, and in some cases showing disease, the latter a wonderful crop and quite healthy. *A. D.*

Iris iberica and I. Susiana.—These are two grand Irises, but they appear to be difficult to manage. Having failed to grow them I should be pleased if some of your correspondents who have grown them successfully will give their experience with them. *Inquirer.*

Crawford's Early Peach.—I am inclined with Mr. Hinds "to think Crawford's Early one of the finest Peaches in cultivation," but not by any means one of the most reliable. In some situations and soils it is remarkably good, in others below mediocrity. Once I had a tree of Crawford's Early on a south wall in a good border, trained in a similar way to that which Mr. Hinds describes. The tree bore so badly and the fruit was so poor that I lifted it and gave it to a friend; with this gentleman the result was the direct opposite. Crawford's Early, with me the poor bearer and worthless, became with him a prodigious bearer, and of large size and good quality. I made enquiries about it, and found that some gardeners liked it immensely and others spoke of it as worthless. However, both in Scotland and England I have grown it very good. By all means plant Crawford's Early if the collection is intended to be a large or medium-sized one; if a meagre collection is intended Frogmore Golden and Golden Rathripe are nearly as good although much smaller in size, and as far as my knowledge extends most reliable. Frogmore Golden besides forces very well, and ripens its fruit in a longer

succession than any other Peach I know. It is curious how little Crawford's Late is known. This variety is well worth growing, as also is Desse Tardive; and yet scarcely either of them is known. I have also great hopes of another late Peach, Tardive d'Oullins. *W. Carmichael.*

The Bottle-Tree of North Australia.—In your journal of the 21st, on p. 232, there appeared some remarks upon a plant called *Delabechia rupestris*, or the Bottle-tree of North-eastern Australia. It mentions, that "if boiling water is placed upon shavings taken from the wood, a clear jelly is formed, which has no trace of starch in it." When in China I sent home shavings of a wood always used for making bandoline for the hair. I also sent over and got a good supply of it, some of which I gave to the late Mr. Daniel Hanbury, and which no doubt will be found in his collection, which is now the property of the Pharmaceutical Society. It will be interesting if the Curator of the museum of that Society can say if there is any analogy between the woods used in China and the Bottle-tree of North Australia. *Thos. Christy, Malvern House, Sydenham.*

Harpalum rigidum.—Although we have a long list of most useful and beautiful hardy plants which bloom through the spring and summer months, the list of those which bloom through the autumn months is not quite so long. To those who are fond of hardy plants, and who appreciate every one that blooms at this season, I can recommend the above as a most showy and useful subject. I saw some large patches of it the other day in a border mixed with *Salvia patens* and the old scarlet *Lobelia*, and the effect was very fine. This plant and some of the *Rudbeckias* resemble each other in some degree, and both deserve a place in most gardens, as they are useful to cut from. *J. C. F.*

Alternantheras for Winter Cutting.—There are few people now-a-days who are not at times hard pinched for cut flowers in winter. It is not so much an ordinary supply of flowers for sitting-rooms that is so difficult to furnish, as the enormous quantities that are required by some families for table decoration from November to Christmas. Last year being an unfavourable season for them I had a quantity lifted early in September and put into propagating boxes, my object being to have a good stock for propagating from for the present season. Early in the autumn the boxes containing the plants were set upon shelves near the glass in the plant stove, and no further notice was taken of them, except that the man in charge of the house had instructions to supply them with water as they required it. By-and-bye, however, the plants began to grow amazingly, and to develop qualities in the way of colour that soon attracted attention. Towards the end of November last year there was a large demand for flowers for table decoration, in which the *Alternantheras* played a conspicuous part. They were principally used for small glasses, with a frond or two of *Adiantum Capillus-Veneris* and a single spray of white *Bouvardia*, to show off their markings and to contrast with the green Fern. The effect was charming by gaslight, and I daresay few people would suspect that a plant that looked so miserable but two months before would develop such brilliant markings in the short space of two months under the agency of warmth and light. Colour is such an important and desirable thing to possess in November that I look upon these plants as being invaluable for the purposes indicated. Their habit is also so admirably adapted for the embellishment of small stands and glasses, such as I have alluded to, that nothing else can surpass them in point of utility and general effect. *Decorator.*

Drying the Flowers of the Water Lily.—These are amongst the most difficult flowers to dry. I have succeeded fairly well with them, by hanging them head downwards in a dry and cool place, for a few days previous to putting them between the papers. A great point is to gather the flowers without injury, as (like white Camellias) every bruise turns a brown colour. *W. H. Divers, Burghley.*

Frozen and Defoliated Vines.—Some months since I described in your columns the manner in which we had a house of young Muscat Vines killed by frost; I also mentioned that the Vines in a house of Black Hamburgs were injured and partially defoliated from the same cause. A few remarks respecting the growth the latter have made this season may not be uninteresting. It may not be remembered that the Vines were planted in April, 1879, and were frost-bitten in the following November. At pruning time they were shortened back to within 3 feet of the bottom of the rafters, and were assisted in March by gentle firing to break into growth, which they did so miserably as to cause me almost to despair of their being of any service; yet, as the season advanced, they surprised us by making strong rods to the

top of the house, which are now maturing satisfactorily and look very promising, their eyes being quite prominent. And there is another promising feature in the condition of the roots, which have completely netted the mulching of rotten dung with their lively feeders. Nevertheless the Vines are not without visible traces left of the injury which they received, for the laterals on the 3 feet of old wood are far from being as strong as we should like to see them; neither are we satisfied with the size and colour of the foliage. There is a marked contrast between this and that of Vines in adjoining houses, which were uninjured, and the foliage of which is large, leathery, and dark in colour, with foot-stalks short and thick enough to gladden the heart of the most enthusiastic Grape grower. *C.*

Gentiana Kurroo.—This rare species, which will shortly flower in Mr. Whitehead's garden at Bickley, will prove a most interesting plant; its long linear leaves very closely resemble some of our British Plantains; its flowering stems, which vary from 4 to 12 inches in length, are of procumbent habit, being furnished at intervals with oppositely placed leaflets; the calyx tube is twisted. The flower-buds, which for the most part are at the extremities of the stems, are large and well formed, some few, however, appearing in small buds in the axils of the small leaves encircling the stem. The colour is, I believe, of an intense indigo-blue, and of a lighter shade on nearing the tube, and distinctly mottled. Coming, as it does, from the Western Himalaya, and at a great elevation, I am afraid it will not be altogether hardy in England. *J.*

Consumption of Fuel.—Will some of your readers kindly give me an idea as to what they would consider a fair average consumption of coke per annum to heat the following garden structures, so that Grapes may be ready by May 15, Peaches by the same date, Cucumbers from March 1, Melons early in May, and Tomatos the end of April? We have 3420 square feet of glass in vineries, which are divided into five compartments, a succession of fruit being kept up from May till early in January. There are 837 square feet devoted to Cucumbers, Tomatos, &c., in one range, and 552 in another where early Potatos, Cucumbers, and Melons are grown; and a half-span range, containing 1380 square feet, divided into three compartments, one used as a greenhouse, one a fernery, the other a stove: in this range a constant supply of flowering plants is kept up throughout the year. The vineries are heated by three saddle boilers, but I only use two of them; and the greenhouse, stove, fernery, &c., by a saddle boiler. *X. Y. Z.*

Salvia patens and Victoria Asters.—I notice that "D. C." at p. 279 writes in praise of the above mixture, and of the Asters raising their heads among the spikes of *Salvia*. Either the *Salvia* must be very dwarf, or the Asters very tall indeed, to make the mixture effective. Surely a far more effective composite bed might be formed of the orange or yellow single *Dahlias* intermixed with *Salvia patens*. The juxtaposition of these two in a ribbon border here is very effective. The French Yellow *Marguerite* also promises to form a capital border for beds, groups or masses of *Salvia patens*, which is still the finest blue of all the garden. *D. T. Fish.*

Salvia patens for Bedding Purposes (see p. 279).—This probably looked very nice planted as "D. C." describes. A better combination in my opinion is the following, which I saw at Chatsworth, three years ago:—The groundwork of the bed was the variegated Cocksfoot-grass (*Dactylis glomerata variegata*); the *Salvia* was dotted in, and showed off its beautiful colour to perfection above the silvery carpet of grass. I am surprised that this plant is not more largely grown, supplying, as it does, a colour which is very rare among plants, and also very beautiful, and quite a treat to see after scarlet Pelargoniums or yellow Calceolarias. *W. H. Divers, Burghley.*

Disease in Lilies.—In reference to your notes on the disease in Lilies (see p. 273) may I explain my experience of it somewhat more fully than is done in the extract from my letter. My Lilies were attacked a month ago by a disease evidently the same as is described by Mr. Elwes in the Introduction to his *Monograph of the Genus Lilium*, under the name of "spot." The kind which suffered most was *L. Humboldtii*, the leaves and stalks of which became entirely rotten and withered before the flowering was finished. Next to them some clumps of *L. californicum* and *pardalinum* suffered worst. Many of the early flowering species, as *L. elegans* and its varieties, *L. Szovitzianum* and the Martagon tribe, escaped almost entirely. Of the kinds mentioned as attacked those clumps suffered most which had made the most luxuriant growth. They were planted for the most part three years ago in pure peat, and the soil was not manured, but in spring a top-dressing of leaf-mould and very rotten manure was given. *Lilium auratum*,

of which I sent no stalks, did not seem to be affected with spot, but a large proportion of 100 planted last autumn have gone off in a way peculiar to that species. The leaves turn yellow and drop off, beginning at the bottom of the stalk, just as the buds are developed; and lastly the buds drop off and the stalk dies. I attributed these symptoms to the bulbs having been gathered when the plant was in full growth. I have noticed that unmaturing bulbs of *Gladiolus* show much the same symptoms, withering before they complete their growth, in a different manner to the plants attacked by the Tacon, or *Gladiolus* disease. *C. Wolley Dod, Edge Hall, Malpas, Aug. 31.*

The Duneevan Oak.—Few specimens of large Oak trees with which I am acquainted can compare with one in Mr. McIntosh's garden at Duneevan, near Weybridge; it measures 24 feet round at girth—its huge branches spreading far and wide into the air, their great weight bearing them nearly to the ground and forming a dense canopy above one's head. The immense roots, twisted and knotted in all directions, have lifted themselves high above the surface. This is one of several fine specimens in the gardens at Duneevan, and is a most attractive tree. *W.*

Potato Brownell's Beauty.—"A. D.," in an article on Potatoes in your issue of the 28th, says that if the Irish had four such sorts as he there names that they would indeed be a "perfect Godsend." They would be undoubtedly, but there is a sort which he has not noticed, namely, Brownell's Beauty, which is second to no sort that I have grown here, and I have grown more than fifty of the leading kinds. I had one tuber which weighed just 2 lb., and of fairly good shape; and there is that peculiar roughness about the skin which betokens good cooking qualities, and upon trying them I found that they did not belie their appearance, for they were excellent. It is a sort which is fit to dig in the beginning of August, and has only a moderately strong haulm. Coming off at this time is a great advantage, especially to cottagers, as a good crop of Turnips or some kind of winter greens can be got off the ground afterwards, which could not be done with a sort like Champion. I think this is a sort that would suit the humid climate of Ireland far better than such a late-ripening kind as Champion; it would come off in good time, has a good constitution, is a first-rate cropper, and the quality is *A. I. Robert Lloyd, The Gardens, Brookwood Asylum, Woking, Surrey, Aug. 31.*

Second Growth on Forest Trees (p. 275).—I remember noticing this phenomenon in 1878 in the eastern part of Surrey. After a period of very bright and dry weather it occurred in a greater or less degree on several of the common deciduous trees, but was especially noticeable on the Lime and the common Elm (*Ulmus campestris*). I believe that it was caused then by a moist, growing temperature after a period of excessive drought. *W. H. Divers, Burghley.*

Dahlia coccinea.—I can confirm all that Mr. Hinds says in praise of this fine old single Dahlia (see p. 277). We have a row of it at the back of a ribbon border which is the admiration of everybody. A considerable proportion of the seeds have produced a yellow variety, rather taller, but in all other respects similar to the scarlet. I find there are also considerable differences in individual plants among the coccinea. In consequence of this we are now propagating a good stock of several of the more distinct strains, so as to have rows, beds and masses of each where we may desire them. A single cutting is put into an upright 2½-inch pot. They will be rooted in close but cold pits, and wintered in the same pots. This plan of storing small Dahlia roots in pots is well known to most Dahlia growers as a safe and easy one. There is one remark made by Mr. Hinds that I can hardly endorse, viz., that to have the Dahlia at its best it requires extra generous cultivation. On the contrary, I find that to have it covered with flowers of moderate height and compact growth—which conditions I consider the best—a moderately poor soil and a dry site are preferable to rich soil or manure, that is, generous treatment. We find the single Dahlias specially useful for cutting, while as border flowers they are far more effective, and fit in much better with the majority of border plants than the enormously large show and fancy varieties that are so massive and heavy, that almost each separate flower needs a stake to prevent it breaking its neck. *D. T. Fish.*

Rosa Brunonis.—This Rose seems almost extinct in gardens, and is very little met with, probably having been cast out of many gardens through its never having flowered, which is most likely to have resulted from the oft-repeated use of the knife. Flowering as it does at the very extreme points of its growth, which vary from 10 feet to 12 feet in length, it has doubtless become a too rampant grower. It is a very distinct species, and is a native of Nepal; its

flowers, which are of an ivory-white, are single and produced in clusters, and deliciously fragrant, especially in the early morn. Planted among shrubs, where it is allowed to ramble at leisure, it has been flowering luxuriantly in Mr. Macintosh's garden at Duneevan, and for naturalising in woods and wild gardens this Rose is most specially adapted. *W.*

Southwood Hardy Flower List: August 30, 1880:—

<i>Asteris maritimus</i>	<i>Hyacinthus candicans</i>
<i>Achillea</i> <i>egyptiaca</i>	<i>Hypericum reptans</i>
<i>Plumica</i> , fl.-pl.	<i>Isula ensifolia</i>
<i>Adenophora latifolia</i>	<i>Lachenophora Billardieri</i>
<i>Ethionema cordifolium</i>	<i>Lathyrus Turneri</i>
<i>Ajuga alpina</i>	<i>Leucanthemum arcticum</i>
<i>Anagallis Morrelli</i>	<i>giganteum</i>
<i>Androsace lanuginosa</i>	<i>Lilium tigrinum splendens</i>
<i>Asperula cynanchica</i>	<i>Kraetzleri</i>
<i>Asclepias tuberosa</i>	<i>lancifolium</i>
<i>Aster Amellus</i>	<i>Linaria alpina</i>
<i>bessarabicus</i>	<i>pilosa</i>
<i>cassubicus</i>	<i>reticulata</i>
<i>italicus</i>	<i>saxatilis</i>
<i>coccineus</i>	<i>Linum tauricum</i>
<i>discolor</i>	<i>campanulatum</i>
<i>dumosus</i>	<i>viscosum</i>
<i>Chapmanni</i>	<i>narbonense</i>
<i>Drummondii</i>	<i>Lophanthus anisatus</i>
<i>Roezli</i>	<i>Lippia nodosa</i>
<i>Tradescantii</i>	<i>Lychnis chalcidonica</i>
<i>spectabilis</i>	<i>Lithospermum petreum</i>
<i>longifolius</i> var. <i>formosus</i>	<i>Lysimachia clethroides</i>
<i>Shortii</i>	<i>Lythrum diffusum</i>
<i>Bahia lunata</i>	<i>flexuosum</i>
<i>Bellum minutum</i>	<i>Mazus Pumilio</i>
<i>Biotia commixta</i>	<i>Macroneria piperella</i>
<i>Borago laxifolia</i>	<i>Michauxia campanuloides</i>
<i>Calandrinia umbellata</i>	<i>Monarda fistulosa</i>
<i>Calcicaria scabiosifolia</i>	<i>Nierembergia rivularis</i>
<i>Campanula Barrelieri</i>	<i>Oenothera macrocarpa</i>
<i>fragilis</i>	<i>riparia</i>
<i>garganica</i>	<i>eximia</i>
<i>hirsuta alba</i>	<i>taraxacifolia</i>
<i>isophylla</i>	<i>speciosa</i>
<i>muralis</i>	<i>Omphalodes Lucilæ</i>
<i>Cardunculus mitissimus</i>	<i>Origanum pulchellum</i>
<i>Cedronella cana</i>	<i>Papaver alpinum</i> var.
<i>Catananche corulea</i> var.	<i>Farnassia palustris</i>
<i>Commelina celestis</i> var.	<i>Pentstemon pulchellus</i>
<i>Centaurea stricta</i>	<i>gracilis</i>
<i>macrocephala</i>	<i>barbatus</i>
<i>atropurpurea</i>	<i>Physostegia speciosa</i>
<i>Chelone obliqua</i>	<i>virginica</i>
<i>Convolvulus mauritanicus</i>	<i>Platycodon autumnale</i>
<i>Claytonia sibirica</i>	<i>Plumbago Larpenæ</i>
<i>Colchicum autumnale</i> var.	<i>Polemonium Richardsoni</i>
<i>speciosum</i>	<i>Polygonum capitatum</i>
<i>Coreopsis auriculata</i>	<i>Brunonis</i>
<i>Coronilla varia</i>	<i>vacciniifolium</i>
<i>iberica</i>	<i>Potentilla lupinoides</i>
<i>Cyananthus lobatus</i>	<i>Prunella pyrenaica</i>
<i>Dahlia gracilis perfecta</i>	<i>Pterocarpus Farnassi</i>
<i>mexicana</i>	<i>Rhexia virginica</i>
<i>Delphinium Barlowi</i>	<i>Rudbeckia hirta</i>
<i>Dianthus cruentus</i>	<i>intermedia</i>
<i>suavis</i>	<i>Neumannii</i>
<i>Draccephalum Ruyschianum</i>	<i>Satureia mutica</i>
<i>Echinacea angustifolia</i>	<i>Salvia coccinea</i>
<i>Edraianthus dalmaticus</i>	<i>glutinosa</i>
<i>Epilobium Dodonæi</i>	<i>Grahami</i>
<i>Fleischeri</i>	<i>lanigera</i>
<i>obcordatum</i>	<i>taraxacifolia</i>
<i>Erigeron plenus</i>	<i>patens</i>
<i>bellidifolius</i>	<i>Saponaria caucasica</i> pl.
<i>Erigeron racemosus</i>	<i>ocymoides</i>
<i>Erodium hymenodes</i>	<i>Saxifraga Hirculus major</i>
<i>macradenium</i>	<i>Scabiosa caucasica</i>
<i>petreum</i>	<i>graminifolia</i>
<i>cheilanthifolium</i>	<i>suaveolens</i>
<i>Reichardi</i>	<i>Scutellaria altaica</i>
<i>romanum</i>	<i>Sedum kamtschaticum</i>
<i>Manescavi</i>	<i>ibericum</i>
<i>Erpetion reniforme</i>	<i>Ewersii</i>
<i>Eryngium maritimum</i>	<i>Sidalcea malveflora</i>
<i>glomeratum</i>	<i>Silene quadridentata</i>
<i>Oliveri</i>	<i>Schottii</i>
<i>Eupatorium purpureum</i>	<i>fruticosa</i>
<i>Francoa appendiculata</i>	<i>Stachys marilandica</i>
<i>sonchifolia</i>	<i>Stachys corsica</i>
<i>Fuchsia microphylla</i>	<i>coccinea</i>
<i>procumbens</i>	<i>Statice Dodardii</i>
<i>Genista tinctoria</i>	<i>duriuscula</i>
<i>florida</i>	<i>virgata</i>
<i>Gentiana Kurroo</i>	<i>caspia</i>
<i>Geranium argenteum</i>	<i>latifolia</i>
<i>sanguineum</i>	<i>Limonium</i>
<i>cineurem</i>	<i>lychnidifolia</i>
<i>armeniaceum</i>	<i>minuta</i>
<i>nodosum</i>	<i>Tulbaghia violacea</i>
<i>striatum</i>	<i>Thymus striatum</i>
<i>Endressii</i>	<i>patavinus</i>
<i>Gladiolus ramosus</i>	<i>Trachelium coeruleum</i>
<i>Gypsophila Gmelini</i>	<i>Tritoma nobilis</i>
<i>paniculata</i>	<i>intermedia</i>
<i>dubia</i>	<i>Uvaria</i>
<i>repens</i>	<i>Tropæolum tuberosum</i>
<i>Harpallum rigidum</i>	<i>speciosum</i>
<i>Helium grandiflorum</i>	<i>Urospermum Dalechampii</i>
<i>Helianthus floribundus</i>	<i>Vernonia novboracensis</i>
<i>Houstonia cerulea</i>	<i>Veronica longifolia</i> subsp.

T. D. H.

"Wanted, an Enthusiast."—From an advertisement which appears in your issue of the 28th inst. it seems that an excellent opening exists in the county of Surrey for a young man "fond of flowers" and "enthusiastic in his work." In addition to the sentimental attractions of this place, he will have the opportunity of taking charge of a greenhouse and vinery, a Cucumber-house and stove, warm and cold frames (Qy., how many), lawn, shrubbery and kitchen garden; and, besides these benefits, he will have the munificent wages of 22s. 6d. weekly. Seriously speaking, it is a little too much to require so much

sentiment and hard work combined for something like half what an ordinary bricklayer or carpenter is paid, and where cultivation of the feelings is unnecessary. *W. Abraham.*

Lilium auratum.—In one of the cool plant houses at Possingworth, the seat of L. Huth, Esq., I recently saw some very finely flowered examples of this species. The examples in question are growing in 12-inch pots, each pot containing ten bulbs, and each stem carrying on an average about twenty-four blooms, these individually measuring fully 12 inches in diameter. *T. W. S., Uckfield.*

The New Holland Pitcher-plant, Cephalotis folicularis.—A fine pan of this charming little plant, with from twenty to thirty pitchers of various sizes, occupies a place on a shelf near the glass in company with a small collection of cool Orchids in a small house in Mr. Wilson's garden at Weybridge. The fact of this little gem being perfectly hardy is, I think, little known at present, illustrative of the fact of which is, that in the winter of 1875 and 1876 I wintered from thirty to forty small plants of it in a cold frame in company with *Dionæa muscipula*, *Sarracenia flava*, and other plants of a like character; and having withstood the severity of the frost, which I believe reached 22°, the plants the following year made some very fine pitchers. *E. Jenkins.*

Japanese Cyclamen(?)—A singular Cyclamen was noticed by a brother of mine while travelling in Japan last April. At the temple of Nikko, or rather in woods near it, at an elevation of 4000 feet, and about 90 miles from Jeddo, he observed a very conspicuous Cyclamen, of which the following is a rough description:—Blossoms, 2½ inches long, only one to each corm; depth of corm about 1 foot; foliage dark green spotted with olive, and in form more pointed than those in cultivation. *B. Piffard.* [There is no Cyclamen recorded from Japan. Can this possibly be an *Erythronium*? *Eds.*]

Omphalodes Lucilæ.—This is now flowering on the rock at Southwood, Bickley, and is in finer condition than is generally seen. This is a rare species, producing flowers of a sky-blue, and forming close caespitose tufts of leaves of a deep glaucous hue. This is one of the most charming alpine plants with which I am acquainted. It succeeds best in loamy peat, planted in a half-shady position, and raised somewhat above the ordinary level. Slugs are very fond of it; this generally happens in the case of the choicer alpine. It is not easily struck from cuttings, although it has been managed by some with success. Well-ripened cuttings, however, stripped off by the heel and inserted under a small handlight, are the best, when those that intend rooting will do so in about ten days. It seeds freely, but does not always come true. Many of the seedlings come with green leaves, instead of attaining their natural glaucous tint. The seeds should be sown as soon as ripe, otherwise they may lie in the soil for two years and then germinate. *J.*

Tacsonia exoniensis.—At p. 274 there is a note speaking in high terms of praise of the value of this species for cool conservatory decoration, and calling attention to the fine example in Mr. Wilson's garden at Heatherbank. When recently visiting in the Isle of Wight I saw a very large example of it growing in the cool conservatory at Apley Towers, the seat of Sir William Hutt. *T. W. S., Uckfield.*

Forestry.

PECULIAR ASPECTS.—On the authority of the wisest of men there is nothing new under the sun, yet there are constantly presented to us things that appear, and are to us essentially new. If in anything there could be uniform, regular, repeated order and succession, it might be thought to be found in the growth of forest trees. There are so many things connected with the growth and development of a tree, necessarily the same for successive years, and even ages, that it might reasonably be concluded that the growth itself would be perfectly regular and uniform. Any one, however, unaccustomed to observe and minutely examine the annual layers and growths of the wood of a tree will be surprised to find not only a want of uniformity of growth, but the greatest irregularity in every aspect. It may be of some interest to know what those influences are which are the same year after year, and what are different and produce the differences of growth. The position and situation of the tree may be said to be unchangeable—the soil, subsoil, atmosphere, and climate, so far unvarying as to constitute them also unchangeable. On the other hand, the roots of the tree are constantly year

by year altering their position, traversing as it were the whole area surrounding it in quest of food; and, as is well known, every stratum of soil is not equally rich in plant-food. Moisture also performs a very important part in the nourishing of trees, and all strata of soil the roots enter are not equally full of moisture, so that on the roots passing through one stratum the tree is well nourished, and on passing through another it is less liberally supplied. Atmospheric influences also materially affect the tree, and as these vary so the growth varies. Insects, too, do occasional injury to trees by eating or poisoning their foliage; and as the foliage is good and healthy or the reverse, so is the growth of the tree good or bad, for that or perhaps for succeeding seasons. On examining the annual layers of a great number of Scots Fir trees, blown down by the wind in Duthill Forest, Strathspey, about fifteen years ago, it was found that one inferior growth had taken place with all the trees at one particular time. The specially small growth referred to took place about 1830 as near as I can recollect, and the year's growth previous to that was almost as remarkable for its largeness as that for its smallness. Assuming the above date to be correct, the year 1829 was a remarkably favourable one, while that of 1830 was the extreme opposite. The impression I formed at the time, and which has since been confirmed, was that some atmospheric blight or frost had fallen upon the district, and caused the remarkably inferior growth referred to.

In 1846 a late spring frost occurred in the South of England, which did considerable damage to Spanish Chestnut and many other species of trees. In 1868 the growth of forest trees in Scotland was remarkably poor, the result of that memorable dry season. The Scots Fir makes its wood early in the season, principally in the months of May and June, and when these are dry months the growth of the Scots Fir is deficient for that year. The Larch, again, makes its wood chiefly in July or August, and according as these are warm or cold rather than dry or wet, so is its growth good or bad. The growth of the Scots Fir, however, is much more uniform than that of the Larch, owing to the circumstance that the former is less influenced by quality of soil than the latter, for the remark has passed into a proverb, that the Scots Fir will thrive in any soil however bad. Old trees of any species are less influenced by extremes of wet and dry or cold and warm than young trees are, for the obvious reason that the roots of the former extend over a much wider area than the latter, and consequently command more nourishment. The mellow, withered or falling leaf in early or mid summer is not always a sure indication of a diseased or unhealthy tree, indeed it is always more satisfactory to find a Pine or an evergreen tree of any kind shed its leaves freely on agitating the plant, than that they should tenaciously hold by the tree after they have become withered. It is always a more hopeful sign to see a Bay or Portugal, Laurel, &c., shed its foliage the season in which it has been planted than grow brown and the leaves remain on. The healthy or unhealthy condition of trees, as indicated by external appearances, is a subject of special and rare interest, and one which every forester should do his utmost to master. There are certain unmistakable external signs of vital disease in forest trees which no one can fail to recognise, such for example as bearing fruit. When any tree makes an exceptional effort to produce female flowers or fruit it is a certain indication of weakness of constitution shortly to be succeeded by death. Another indication of disease in a tree is the presence of the American bug. The Beech hedges were this season literally leprous with it, and fears were at one time entertained of their recovering. It is quite observable that when stagnation of growth takes place with trees of any kind they are very soon attacked by insects, and, as many people think, destroyed by them. To show that there is nothing vitally diseased about trees thus affected we have only to look at them immediately after a copious rain, when not only will the insects disappear, but the plants begin to push out fresh leaves and shoots. *C. Y. Michie, Cullen House, Cullen, Aug. 21.*

"ARBORETUM SEGREZIANUM."—We have received the first part of a series of quarto illustrations, accompanied by descriptive letterpress, of rare or interesting plants in the fine collection of M. Alphonse Lavallée of Segrez. We shall take an early opportunity of advertising to this splendid publication.

Reports of Societies.

Maidstone Horticultural: Aug. 25.—What is termed the annual floral fête of this Society took place at Maidstone on the above date. For some time past the committee have given up an outdoor show, and now hold their exhibitions in the spacious Corn Exchange, concert hall, and corridor, which is situated in the heart of the town. There was space enough for an effective grouping of the plants, and good passage-ways for the visitors, and as the morning proved wet it was a matter for congratulation that the show was not under canvas on wet grass. Locally the show was considered one of great excellence, and the extensive range of rooms was well stocked with plants and flowers, tempting fruit, and prime vegetables.

A few extra prizes were offered, which gave an added interest to the show. A handsome silver cup, given by Viscount Holmsdale for the best group of plants arranged for effect, 9 feet by 6 feet, brought a large competition, the valuable leading prize falling to the lot of Mr. Thomas Frost, Bower Nursery, Maidstone, for a very tasteful display, so arranged as that the individual characters of the plants were presented to view. Over-crowding was a leading defect in the groups, but Mr. Frost was careful not to fall into this mistake, and while the subjects were amply numerous, there was an entire absence of crowding and packing Palms, Caladiums, Crotons, Dracenas, Coleus, &c. R. Leigh, Esq., was 2d; and James Whatman, Esq., 3d. As it is not the practice at Maidstone to put the gardeners' names on the show-cards, we regret that we are unable to give them. The 2d prize group had highly meritorious features. A silver cup, given by the Members for the borough for the best collection of fruit in ten varieties fit for table, brought but one collection, from R. Leigh, Esq. There was a great want of taste in setting up this collection, indeed it was roughly done, and none of the fruit was named. It included Black Hamburg and Madresfield Court Grapes, Pine, Peaches, Nectarines, Apricots, &c.

In the subscribers' classes stove and greenhouse plants were poorly represented, and the competing collections did not contain a single subject worthy of notice. Fuchsias were quite poor. The best collections of six flowering Begonias came from F. Leney, Esq., and L. D. Wigan, Esq., the prizes being awarded in the order of their names. They were generally large and well grown and flowered plants of the older types, and they made an effective display. L. D. Wigan, Esq., had the 1st prize for rare good specimen plants of double Zonal Pelargoniums, the best being Henri Beurier, salmon; Député Berlet, white, margined with pink; J. C. Rodbard, pale orange-scarlet; Madame Thibaut, purple; Wonderful, scarlet; and Lucie Lemoine, pink. Mr. Wigan also had the best six single varieties.

Foliage plants made a much better display than those in flower. The best twelve came from G. A. Dodd, Esq., and comprised good specimens of *Dracena gloriosa*, *D. Baptistii*, *Croton variegatus*, *C. undulatus*, *C. Veitchii*, *Cocos Weddelliana*, *Erica crinita*, *Kentia canterburyana*, *Latania borbonica*, &c. 2d, Viscount Holmsdale, Linton Park (Mr. J. Groom, gr.), whose best subjects are *Maranta zebrina*, *Alcaesia metallica*, *Croton variegatus*, *C. interruptus*, *Latania borbonica*, &c. There were also smaller classes for foliage plants, but the subjects did not call for special remark. Some nice plants of *Coleus* were shown by L. D. Wigan, Esq., the varieties being Lord Falmouth, Pictus, Garnet, Royalty, Multicolor, and one other.

There were several collections of Ferns, the plants chiefly small, but in good condition, and they alternated in an agreeable manner with the more gaily-coloured flowering plants.

Of cut flowers there was a good display. The baskets of collections of these were a novel feature, the ordinary round basket of a nurseryman, painted dark green, being used, and first filled with damp moss in which the blooms were arranged. An arching handle was placed to each basket, and this was clothed with twining plants and flowers. Such large baskets admitted of unlimited collections, and where a tasteful arrangement was in combination with good flowers, the effect was remarkably good. The 1st prize consisted of an Indian carved sandal casket, and this was won by Lady Howard de Walden, The Mole, Maidstone; the Misses Jones being 2d, and Captain Stacy 3d. One basket had the handle covered with *Cissus discolor*, and red and white *Lapagerias* intermingled, another with various-coloured *Clematises*.

The best stand of twelve Roses came from F. Ward, Esq., and comprised very good blooms of Madame Victor Verdier, Souvenir d'Elise, Alfred Colomb, Madame Bravy, Duke of Edinburgh, Marie Cointet, Marie Baumann, Catherine Mermet, Star of Waltham, Captain Christy, Baron de Bonstetten, and Bouquet d'Or. 2d, John Hollingsworth, Esq. In addition, Mr. Hollingsworth staged a charming lot of Tea Roses, not for competition. Other cut flowers were represented by Dahlias, shown in stands of twelve, six, and three blooms; double Zinnias, superbly good, large, clean, and handsome flowers; Phloxes in good variety, very fine African Marigolds, flat-petalled and quilled Asters, &c.

Indoor and hardy fruits made a good display, the latter especially. We regret our inability to give much information about these, as the names of the exhibitors were placed on the collections late in the day, and many of the collections were not named. In the classes for black Grapes there were fine Black Hamburg, Alicante, and Madresfield Court; of white Grapes, Muscat, Buckland Sweetwater, and Foster's Seedling.

Of dessert and culinary Apples there was a good display. The leading varieties were Red Astrachan, Duchess of Oldenburg, which Dr. Hogg describes as a first-rate early dessert Apple, and which is very handsome in appearance; Cellini Pippin, Summer Julien, Red Quarrenden, and Keswick Codlin. A very good-looking dessert Apple, named Russian White Transparent, was shown by Mr. L. A. Killick, which he said was quite new and distinct. Culinary Apples, which were very fine, were represented by New Hawthornden, Lord Suffield, Stone's Pippin, very fine indeed; Dutch Codlin, Blenheim Orange, Nelson's Glory, and others: dessert Pears by the Jargonelle, Williams' Bon Chrétien, Windsor, and Fondante d'Antonne. Plums were numerous and very good; among purple varieties there were excellent examples of Prince Englebert, Kirke's, Orleans, Prince of Wales, Victoria, Black Diamond, and Magnum Bonum; yellow Plums by Washington, Jefferson, and Green Gage. Morello Cherries were marvellously fine; indeed this seems to be true of the crop in all parts of the country this season.

Vegetables were overflowing in point of numbers, and their quality was uncommonly high. Strange to say, Potatoes, so good this season, were generally large in size and rough. Unlimited collections of vegetables were of enormous extent and great variety. In one of these, which one would have thought must have exhausted the kitchen garden, we saw Veitch's Autumn Giant Cauliflower, Globe Artichokes, red Savoy and Colewort Cabbage, All the Year Round and Paris Cos Lettuce, Schoolmaster, Beauty of Hebron, Ashleaf, and two or three other Potatoes; Scarlet Runners and Canadian Wonder Beans, Crimson Beet, Hathaway's Excelsior Tomato, White Spanish Onion, James' Intermediate Carrot, solid red and incomparable dwarf white Celery, Snowball and Veitch's Purple Globe Turnips, Scorzonera, Salsify, Cucumber, Vegetable Marrow, Leeks, Peas, Rhubarb, &c. The task of judging was a very onerous one indeed.

Messrs. George Bunyard & Co., nurserymen, Maidstone, staged a very interesting lot of plants and cut flowers; among the former were excellent specimens of *Hydrangea paniculata* from the open ground, and a fine lot of cut Roses of such leading varieties as Dr. Andry-Ferdinand de Lesseps, Dupuy Jamin, Tea Madame Hip, polye de Jamin, Madame Gabrielle Lanzelles, Tea Marie Goubert, Marie Baumann, Alfred Colomb, Star of Waltham, Teas Jean Pernet, Amazon, Perle de Lyon, and other fine blooms. There were also cut blooms of Zonal Pelargoniums, Gladioli, a collection of Potatoes, and some dozen varieties of Carrots from their seed trial grounds. Mr. W. Seale, nurseryman, Sevenoaks, sent a large collection of cut flowers of Dahlias, many of the blooms being very fine.

Atherstone Horticultural: Aug. 25.—This Society held its first exhibition in Merivale Park, the seat of W. S. Dugdale, Esq., the President of the Society, who kindly placed his grand park, which stands second to none in the Midland Counties, at the disposal of the committee. The committee and their hon. secretary, Mr. Alfred Sale, worked together with a will, and the result was that a grand collection of plants, flowers, fruit, and vegetables, was brought together. There were over 1000 entries, and the judges had a hard day's work before them, especially as the competition in some classes was remarkably keen. In the first class for the best collection of plants arranged for effect, there were six entries, the space allotted to each competitor being 18 feet by 12 feet, arranged crescent-shaped against the side of the tent; here the judges had a difficult task to decide the 1st prize, and a third opinion had to be called in; ultimately the collection shown by Mr. Wm. Brown, gr. to W. S. Dugdale, Esq., of Merivale Hall, and Mr. J. Parker, of the Victoria Nurseries, Rugby, were declared equal, and the 1st and 2d prizes were consequently divided between them; the 3d prize was awarded to Mr. E. Holmes, nurseryman, Lichfield, and the fine collections of Mr. A. Waters, of Coventry, and Messrs. R. & F. Allum, of Tamworth, were highly commended. The collection by Mr. G. J. Sale was also commended, but the deficiency of colour precluded it from taking a prize although it included several very high-class specimens. The judging was conducted on the principles laid down and recommended in the *Gardeners' Chronicle*, for April 3, 1880, p. 426. In the classes for plants in pots there were some grand exhibits, and the competition was again very keen, Mr. A. Waters, of Coventry, carrying off no less than seven 1st and four 2d prizes. In the classes for cut flowers, Mr. Kimberley of Stoke Nurseries, Coventry, was eminently successful, and succeeded in taking six 1st prizes, four 2ds, and one 3d. The classes for fruit were also well filled, Mr. Hanson Sale carrying off both 1st prizes for black and white Grapes—Mr. Forsey, gr. to Sir George Chetwynd, Bart., taking both 2ds in the same classes.

The roots and vegetables were also far above the average, and the cottagers' classes were on the whole well filled, and the exhibits wonderfully good. There was also an exhibition of butter and eggs, which was one of the great features of the show—Mr. Choyce, of Pinwall, took the 1st prize for butter, and the Marchioness of Hastings the 1st prize for eggs. Three dishes of ground eggs, exhibited by Mr. Webb, of Hinckley, although far finer in size and appearance to all others were ignored by the judges, probably on account of their staleness, as they were very deficient in weight. It is seldom that a society meets with such a marked success on a first attempt, and the committee may be congratulated upon having brought together such well known nurserymen and florists as Messrs. Parker and Bryant, of Rugby, Messrs. Waters and Kimberley, of Coventry, Mr. Holmes, of Lichfield, and Messrs. Allum, of Tamworth. *From a Correspondent.*

High Wycombe Horticultural: Aug. 25.—The first show in connection with this newly formed Association was held in Wycombe Abbey Park on Wednesday, August 25, and, being the first exhibition that has been held there for a considerable time, was naturally looked forward to with more than ordinary interest both by intending exhibitors and the inhabitants at large. Now that the results are manifest, we have not only the pleasure to congratulate the committee and secretaries on the very efficient manner in which it was conducted and arranged, but also on its success, financially considered. This will encourage a further extension of its operations on future occasions, and we shall hope to see liberal prizes offered such as will induce others besides local growers to bring productions of a choicer character to its exhibitions. No apprehension need for one moment exist as to vegetable products not being shown here in abundance, as this town possesses advantages in the way of allotment gardens in its immediate vicinity which it may fearlessly be asserted no other town of the same size in the United Kingdom can surpass, there being over 800 of these, the areas varying in size from 10 to 40 poles each, most of them being cultivated by persons of the artisan and cottager class, and in the most creditable way. These considerations induced the committee to encourage this class of gardeners, and they accordingly on this occasion offered the chief of the prizes for vegetable products, which were abundantly contributed, as may be gathered from the fact that no less than 211 dishes of Potatoes, 37 of Onions, 48 of Cabbages, 40 of Carrots, 30 of Parsnips, 26 of Turnips, 29 of Vegetable Marrows, 36 of Peas, 24 of French Beans, 35 of Scarlet Runners, 21 collections of six varieties of vegetables, and other subjects in similar proportions were staged.

In the fruit classes there were staged—Green Gages, 20 dishes; Plums, 22 dishes; culinary Apples, 23 dishes; dessert ditto, 13 dishes; and numerous others of other kinds. A good display was made by the exhibits in the classes of wild flowers, cut flowers, vases of flowers, and nosegays. Altogether the whole of the contributions filled a very large tent, and being effectively arranged by the introduction of some specimen Palms and other plants from Wycombe Abbey Gardens, the display collectively met with general approval and admiration. The prizes were presented to the successful exhibitors in the afternoon by Lord Carington. *G. T. Miles.*

Bournemouth Horticultural: Aug. 26.—This Society held its annual exhibition on the 26th ult., and the display of plants, fruits, flowers and vegetables, was admitted by one and all to have quite eclipsed any of its predecessors. The day was beautifully fine, and the show being fully a fortnight later than last year, insured a better attendance than if it had been held at an earlier date, owing to the influx of visitors that usually takes place at this season, to enjoy the salubrious air and genial climate of this well-known watering-place. Bournemouth enjoys the reputation of having two seasons, one beginning in August, and the other commencing with the advent of winter. Under these happy and advantageous circumstances it seems incredible that so enterprising a secretary and committee should only have one exhibition in a whole season when other places of far less importance succeed in holding from two to three. So far the exhibitions have been held in the winter gardens inside the large conservatory, the centre dome of which is one of the most imposing sights in the vicinity of the town. This would be a charming place to hold a winter exhibition of Chrysanthemums and fruits, and would be enjoyed by visitors and residents much more than the summer exhibition held in the same place. As a friend of horticulture and a well wisher of the Society, I ventured to criticise some weak points in the management last year, and it speaks well for the supporters of the show to find how readily they acquiesced in some of the suggestions I ventured to submit to them as being worthy of their consideration in the interests of exhibitors. Nothing reasonable was left undone by the committee that was likely to contribute to the comfort of both exhibitors and patrons of the show. Still, I submit it is a mistake financially or otherwise to hold a summer exhibition under glass where it is possible to do otherwise. Let any one canvas the young ladies of Bournemouth—ay, and the mammas, too—and they will soon discover how much canvas and the greensward is preferred to any building, however good accommodation it may afford. I am not writing from conjecture, but from actual experience of both systems in the case of exhibitions with which I have been intimately acquainted.

With reference to the exhibits, there were several good collections of flowering plants, contributed respectively by Mr. Swaffield, of the Exotic Nurseries, and Mr. Enoch White, F.R.H.S.; and there were also some fair collections staged by private growers for competition, the most notable examples being a grand specimen of the Scarborough Lily (*Vallota purpurea*) from the Rev. A. Hopkins (W. Horne, gr.), and a plant of *Eucharis amazonica*, bearing nearly a hundred flowers, from Mr. Earp, gr. to J. Saloo, Esq. A new feature in the plant department of this exhibition was the introduction of a class for groups of plants not to exceed 50 feet space, arranged for effect; and, as usual, the plants were far too crowded to be effective. Nearly all the exhibitors ignored anything like a "ground-work;" and as a whole the groups were neither well-proportioned according to space, nor well-balanced in arrangement.

The cut flower department was well represented in Dahlias and Roses by Messrs. Keynes & Co., of Salisbury, and by some amateur exhibitors, the latter of course being a long way in the rear of Messrs. Keynes, whose Dahlias especially were superb.

Wild flowers were shown in large quantities and in

great variety, as they always are in this neighbourhood; some of the devices were, however, rather clumsy and inartistic. Some beautiful bunches of *Gladiolus ramosus* and *The Bride* so attracted my attention that I was curious to know something of their history, and I ultimately discovered that they belonged to the Rev. G. Pinder, of Bournemouth. This gentleman assured me that both varieties are nearly hardy if planted in a dry situation, and I would strongly advise all who read these remarks to use their note-books, and in purchasing their bulbs this autumn not to forget to order a few of those gems for the hardy garden or mixed border. There was a capital show of hardy fruit with just a sprinkling of French Pears, called English for the occasion! Hothouse fruits were well shown by Mr. Earp and Mr. Macfarlane, the former having fine Hamburg, and the latter beautifully finished Golden Champion Grapes, without spot or blemish, a very creditable exhibit indeed. The fruiterers, however, make the finest display at Bournemouth, Mr. Wareham, of Wallington Terrace, and Mr. May having a splendid selection of choice English and foreign fruits tastefully arranged in conjunction with ornamental plants and flowers. Vegetables were extensively shown by amateurs and cottagers, and were, generally speaking, of excellent quality. There was a spirited competition in nearly all the classes, and altogether the exhibition was a great success, and under the present management is likely to go on improving. *Visitor.*

Cheadle Poral and Horticultural: Aug. 27 and 28.—The thirteenth annual exhibition of the above Society took place under very favourable conditions. The weather was all that could have been desired, and the character of the exhibits was, on the whole, good, whilst the attendance of visitors was unusually large. These three points doubtless cheered the heart of the hon. sec. and his committee; for if hard work, perseverance, and enthusiasm deserve success, certainly Mr. E. D. Stone, in whom these characteristics are combined in a large degree, may now feel a satisfying pleasure in the very successful issue that has attended the labour and work of himself and his able assistants. In a large field, placed at the service of the Society by Dr. Godson, four large tents were filled with a very varied, but at the same time highly meritorious collection of plants, fruits, vegetables, and bouquets, cut flowers being likewise numerous and good. Over 100 classes were specified in the schedule, in some cases four and five prizes being offered in a class; in many, however, two prizes only were offered, and in a few cases only a 1st prize was given. Above 680 entries were made, a larger number than any previous year, covering a wider district than has been represented heretofore at the Society's show. In the open class for stem and greenhouse plants, Mrs. E. Cole & Sons were awarded the premier prize, their collection containing, besides some fine-foliage plants, good flowering specimen of *Erica marnockiana*, *E. eweriana* superba, and *Allamanda Wardleana*; Mrs. Tambaci (gr., J. Wilkes) was placed 2d. In the corresponding class for amateurs, J. Rylands, Esq. (gr., G. Smith), was awarded the 1st prize, in whose collection we observed an immense plant in grand condition of *Alocasia Lowii*; a fine fresh plant of *Phenocoma prolifera* Barnesii, and good *Allamandas*. The same gentleman was 1st for six stove and greenhouse plants, and was equal 1st for six fine-foliage plants with H. Samson, Esq. (W. Lingard, gr.), both collections being very creditable, containing among other things *Croton Weissmanni* and *majesticus*, *Nepenthes Hookeri*, and a *Cocos Weddelliana*, 8 feet high, prominent and good. These classes were well filled, and the centre of a large tent was entirely taken up with them—H. Samson, Esq., D. Adamson, Esq. (J. Brierley, gr.), Lord Howard, and Mrs. Tambaci being the principal competitors. Some fine *Fuchsias* were staged, H. Schill, Esq., being successful with these, who also was 1st with four *Achimenes* and plants for dinner-table decoration. *Lilium auratum* and *L. speciosum* were numerous and good, D. Maclure, Esq., being 1st, Mrs. Sykes 2d. Prizes were offered for groups of plants in pots not exceeding 10 inches, to be arranged in a circle of 10 feet in diameter, no staging provided, the circle being marked on the grass. For these a number entered, and five groups were staged, the 1st prize falling to Mrs. Tambaci (J. Wilkes, gr.). The whole of the groups were good, the advantage that either possessed over its fellow was not great, at the same time the 1st prize group was well arranged, and contained a quantity of clean and showy plants: Mrs. Sykes was 2d, D. Adamson, Esq., 3d. Mrs. Tambaci was likewise 1st for twenty leading plants, a class in which a number of collections were staged; D. Adamson, Esq., was 2d; D. Maclure, Esq., and R. Robson, Esq., were equal 3d. *Petunias* and *Verbenas* in pots were well done, Mrs. Tambaci in both classes coming well to the front. *Celosia pyramidalis plumosa* was well shown by W. J. Legh, Esq., M.P., and Captain Turner, the latter gentleman also showing very fine *Cockscombs*. A large assortment of plants was staged by Mrs. E. Cole & Sons, consisting of useful things of an ornamental and decorative character. Mr. J. Hooley also staged a quantity of things of a miscellaneous character, among which were a quantity of plants of *Bouvardias* nicely in flower. W. Barron & Sons, Elvaston Nurseries, exhibited a collection of choice *Coniferæ* in pots, also a quantity of *Yucca filamentosa variegata*. G. Hardy, Esq., Timperley Lodge, staged a very choice group, containing, among other good things, a nice plant of *Lælia elegans* and *Oncidium incurvum*, with a number of spikes of bloom. Lady Watts, Abney Hall (R. Mackellar, gr.), sent a number of plants of *Eucharis amazonica*, bearing from twelve to eighteen spikes of bloom each.

Fruit was numerous and good, especially the black Grapes from J. Rylands, Esq., and O. H. Hutchinson,

Esq., and the Muscats from Abney Hall, which were placed 1st in their respective classes. For six dishes of fruit J. Rylands, Esq., was 1st. For Pine, Peaches, Nectarines, Scarlet-fleshed Melon, Cherries, and dessert Apples, F. R. Leyland, Esq., Woolton Hall, Liverpool (F. Faulkner, gr.), was awarded 1st in every class. The same gentleman was successful also with twelve bunches of cut blooms of stove and greenhouse plants.

The vegetables from amateurs and cottagers were very plentiful and good. Bouquets, Dahlias, Roses, *Gladiolus*, &c., were well represented, and added much to the brightness and pleasure of the exhibition. A large number of deserving objects are necessarily omitted, the time at our disposal being very limited. *W. S.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, SEPT. 1, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						HYGROMETRI- CAL DEDUCTIONS from Glaisher's Tables 6th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.				Degree of Humidity.	Average Direction.
Aug.	In.	In.	.	.	.	.	.	.	.	S. E.	In.
26	29.75	-0.09	71.5	57.5	14.0	61.6	+ 3.0	60.2	89	S. E.	0.00
27	29.99	+0.14	68.1	56.9	11.2	61.0	+ 0.7	58.6	92	E. N. E.	0.00
28	30.01	+0.16	81.7	57.4	24.3	69.6	+ 3.1	61.2	86	S. E.	0.00
29	29.81	-0.04	77.5	56.0	21.5	66.1	+ 4.1	57.3	78	S. S. E.	0.02
30	29.79	-0.09	70.5	54.7	15.8	61.8	+ 1.8	54.8	78	E. N. E.	0.00
31	29.90	+0.02	75.7	54.5	21.2	63.5	+ 3.7	57.1	79	E. N. W.	0.00
Sept											
1	30.09	+0.21	75.8	52.2	23.6	63.1	+ 3.7	55.5	77	WNW W.	0.00
Mean	29.91	+0.04	74.3	55.6	18.7	63.4	+ 3.3	58.0	83	variable	sum 0.02

- Aug. 26.—A dull morning, fine and bright afterwards. Warm, Cloudless at night.
- 27.—A dull overcast day. Warm and close.
- 28.—Dull till 10 A.M. Very fine and bright afterwards. (The hottest day since May 26, 1830.)
- 29.—A very fine warm day. Bright. Smart shower suddenly at 9.30 P.M. Vivid lightning at night.
- 30.—Fine till 10 A.M., then dull till evening; fine, but cloudy afterwards. Lightning and slight shower at 10 P.M.
- 31.—A fine bright warm day, rather gloomy. Cloudless at night.
- Sept. 1.—A very fine, bright, warm day. Cloudless at night.

LONDON: Barometer.—During the week ending Saturday, August 28, in the vicinity of the metropolis, the reading of the barometer at the level of the sea decreased from 30.09 inches at the beginning of the week to 29.91 inches by the morning of the 26th, increased to 30.23 inches by the morning of the 28th, and was 30.18 inches at the end of the week. The mean reading for the week at sea level was 30.06 inches, being 0.03 inch below that of the preceding week, and 0.05 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 81° on the 28th to 64° on the 25th; the mean value for the week was 71°. The lowest temperatures of the air observed by night varied from 50° on the 24th to 57° both on the 26th and 28th; the mean value for the week was 54°. The mean daily range of temperature in the week was 16°, the greatest range in the day being 24° on the 28th, and the least 11°, on the 27th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—22d, 62°.4, + 1°.7; 23d, 58°.1, - 2°.6; 24th, 58°.5, - 2°.1; 25th, 58°.1, - 2°.5; 26th, 63°.6, + 3°.0; 27th, 61°.0, + 0°.7; 28th, 66°.3, + 6°.1. The mean temperature of the air for the week was 61°.1, being 0°.6 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 140° on the 28th, 112° on the 22d, and 101° on the 26th; on the other days of the week the highest readings were between 70° and 80°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 44° on the 23d, 46° on the 22d, and 48° on the 24th; the mean of the seven lowest readings was 50°.

Wind.—The direction of the wind was N.E., and its strength strong at times.

The weather during the week was generally dull, but warm. The sky was very cloudy. Very little sunshine was observed, except on the 22d and 28th. On the 23d, 25th, and 27th the sun was not seen at all.

Rain fell on the 25th; the amount measured was 0.10 inch.

ENGLAND: *Temperature*.—During the week ending Saturday, August 28, the highest temperatures of the air observed by day were above 81° at both London and Cambridge, and below 73° at Plymouth, Wolverhampton, Sheffield, Hull, and Sunderland; the mean value from all stations was 75½°. The lowest temperatures of the air observed by night were below 47° at Truro, Cambridge, and Wolverhampton, and above 56° at Brighton and Plymouth; the general mean from all places was 51½°. The extreme range of temperature in the week was above 31° at London, Cambridge, and Truro, and below 19° at Plymouth, Hull, and Sunderland; the mean range of temperature from all stations was 23½°.

The mean of the seven high day temperatures was above 71° at Truro, Cambridge, and Brighton; and below 67° at Wolverhampton, Sheffield, and Leeds; the mean value from all places was 69½°. The mean of the seven low night temperatures was below 55° at Cambridge, Wolverhampton, and London, and above 58° at Brighton and Plymouth; the mean from all stations was 55½°. The mean daily range of temperature in the week was below 11° at Plymouth and Sheffield, and above 16° at London and Cambridge; the mean daily range of temperature from all places was 13½°.

The mean temperature of the air for the week from all stations was 60½°, being 3¼° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 62° at Truro, Plymouth, Brighton, and Cambridge, and below 60° at Wolverhampton, Sheffield, Bradford, and Leeds.

Rain.—Rain fell on one or two days at most places, but the amounts were small. The falls varied from 0.46 inch at Cambridge, and 0.40 inch at Brighton, to 0.01 inch at Leicester. At Wolverhampton, Nottingham, and Liverpool no rain was measured. The average fall over the country was about one-tenth of an inch.

The weather during the week was warm, but generally dull, with very little sunshine.

Slight thunderstorms occurred at some places.

SCOTLAND: *Temperature*.—During the week ending Saturday, August 28, the highest temperatures of the air observed by day varied from 75° at Glasgow to 68° at Leith; the general mean from all stations was 71½°. The lowest temperatures of the air observed by night varied from 46° at Paisley to 52½° at Dundee and Greenock; the mean value from all places was 49½°. The mean range of temperature from all places was 22½°.

The mean temperature of the air for the week from all stations was 59½°, being 3° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 60° at Glasgow, Dundee, and Greenock, and below 58° at Paisley.

Rain.—The amount of rain measured at Dundee and Aberdeen was two-tenths of an inch, and at Edinburgh and Leith one-tenth of an inch fell. At Glasgow, Perth, Greenock, and Paisley no rain fell; the average fall over the country was 0.07 inch.

DUBLIN.—The highest temperature of the air was 72½°, the lowest 47½°, the extreme range 25°, the mean 59°, and the fall of rain 0.14 inch.

JAMES GLAISHER, F.R.S.

Obituary.

ANOTHER of the past generation of florists, Mr. JOHN READ, formerly of Market Rasen, and latterly of Lincoln, has just passed away, at the age of seventy-three years. For some time past his health failed him, but it is only within the past few months that he was deprived of the pleasure of tending the flowers he loved so well.

Mr. Read was born at Great Grimsby on Oct. 21, 1809. It was not till he was settled in business as a brewer at Market Rasen that he became widely known as a florist, and a cultivator of Tulips, Auriculas, Polyanthus, Ranunculuses, &c. The best of his successes with his favourite flowers he duly chronicled in the pages of the *Midland Florist*, and to *Gossip of the Garden*, to which he was a frequent contributor, under the signature of "Dera," formed by a transposition of the letters forming his surname. He contributed also to the *Florists' Guide* and *The Gardener*, and probably to *The Florist*. He was an excellent correspondent, and exchanged ideas frequently with Peter Cunningham, George Lightbody, Richard Headley, Campbell, Dr. Horner, and many others; and this correspondence was to him a source of great gratification. Up to the summer of 1879 I had the pleasure of receiving several letters from him relating to Auriculas, a flower to the culture of which he was much devoted—Tulips, Polyanthus, &c.; and they were always replete with interesting information and

valuable experience. Of late years he turned his attention to raising seedling Auriculas, crossing with great care and judgment, and always with a view of securing definite results, keeping a faithful record of all his crosses. He was the raiser of Dr. Horner, The Czar, and Sultan, grey edges; and Cleopatra and Acme, white edges; some, if not all of which were distributed by Mr. J. Booth, Faisworth, Manchester. Some three or four years ago he left Market Rasen and went to live at Lincoln, disposing of the bulk of his Auriculas, &c., reserving only a few special favourites for seedling and crossing purposes. There are not a few persons who will learn with regret that John Read is no more. A peaceful death closed a life that was not only useful and well spent, but exalted by the exhibition of virtues that underlie true manliness. R. D.

—We have to record the death, at The Hollies Broughty Ferry, on August 30, of Mr. DANIEL URQUHART, of the late firm of Messrs. Wm. Urquhart & Sons, nurserymen and seedsmen, Dundee.

—We learn, as we are going to press, of the death, on the 28th ult., of the well-known Orchid grower, F. B. KRAMER, in his seventy-sixth year. Herr Kramer was for forty years head gardener to Senator Jenisch, of Hamburg, and was one of the first to grow Orchids in North Germany. We shall advert at greater length to his career in our next issue.

Enquiries.

He that questioneth much shall learn much.—BACON.

MEXICAN TORCH THISTLE.—Is it possible to obtain seed of the Mexican Torch Thistle, *Erythrolaena conspicua*? I have looked through many seed-lists, home and foreign, but cannot find it. D. N.

OAK-LEAVED GERANIUM.—Can any of your readers inform me where I could get cuttings of what ladies call the old Rose-scented Oak-leaf Geranium? G. Merritt, Kington Hoo Gardens, Weydon.

Answers to Correspondents.

BOOKS: A. W. *The Grape Vine*, by Mr. William Thomson (Blackwood).

CORN-FLOWER: J. G. *Mitchinson*. The flowers sold under this name in Covent Garden are those of *Centaurea Cyanus*, sometimes also popularly called the Blue-blau, Blue-bottle, Blawort, and Corn-bottle.

CUCUMBER HOUSE: A *Constant Reader*. See our advertising columns.

EPILOBIUM SALICARIA: H. M. E. We do not know this; probably *Lythrum* is intended.

ERRATUM.—Page 266, col. 3, line 2, for "south" read "north."

FLÜGGEE: W. T. At present there are two Flüggeas in the field, one *Euphorbiaceae*, the other an *Ophiopogon*. Your plant belongs to the latter. Which of the two is destined to survive we cannot tell you.

GALLS ON TANSY: O. The galls are certainly the work of a dipterous insect, probably a *Trypeta*. T. stigma is recorded as causing a similar formation in *Achillea*. R. McL.

HOLLY HEDGE: Ajax. Very doubtful. May is the best month to transplant.

INDIAN FOREST SERVICE: B. J. H. Write to the India Office, Forest Department.

NAMES OF FRUIT: G. G. Probably Sack and Sugar. —W. Francis. *Plum*: Washington. Apples: 1, Cellini; 2 and 3, not recognised—specimens not fully developed; 4, Mère de Ménage.

NAMES OF PLANTS: T. Davies. *Achillea* *Parnassia* flore-pleno, and *Gypsophila* *paniculata*.—*Forcettiana*. 1, *Ailanthus glandulosa*; 2, *Æsculus macrostachya*.—S. A. S. *Symphitum asperum*, and *Petasites vulgaris*.—*Royston*. *Funkia subcordata*.—M. Ballymena. 1, *Spiraea callosa*; 2, *Pelargonium odoratissimum*; 3, *Daphne Mezereum*.—C. E. F. 3, *Anaphalis margaritacea*; 4, *Salix caprea pendula* (the Kilmarnock Willow); 5, *Salix purpurea pendula*. Send 1, 2, and 6 again in a month's time.—O. C. The Yellow Sweet Sultan, *Centaurea suaveolens*.—E. C. *Eria floribunda*.—S. B. 1, *Oncidium Lanceanum*; 2, *Epidendrum raniferum*; 3 and 4, send again when in flower. J. Silvia. If wild, it is the Stinking Gladwyn (*Iris fetidissima*).—E. W. H. *Momordica Charantia*.—G. P. C. 1, *Platycodon alcinorum*; 2, *Oenothera japonicum*; 3, *Asplenium Fabianum*; 4, *Polystichum angulare*; 5, *Athyrium Filix-femina*, crested variety; 6, A. F. diffusum; 7, A. F. f. Fieldiae; 8, *Pteris tremula*; 9, *Pteris cretica* ab-indeat; 10, *Pteris argyrea*; 11, *Davallia*, not in fruit; 12, *Pteris cretica*; 1, 2, and 3 are not, strictly speaking, hardy, though No. 2 would probably survive the winter outdoors in a favourable situation. —E. G. H. *Tropaeolum minus*, a very pretty annual, and a very old inhabitant of our gardens.—J. Gould. *Astrantia major*.—A. Nesbitt. *Nymphaea odorata*, and *N. odorata minor*.—*Common*

& Reid. *Stachys coccinea*.—X. Y. Z. *Viburnum opulus*.—E. K. *Centaurea nigra* (Knapweed).—C. W. D. The material sent is insufficient for determination.—F. C. B. *Tritolium agrarium*.—H. C. 1, *Dampiera stricta*, *Gonolobaceae*; 2, *Xanthosia pilosa*, *Umbelliferae*; 4, *Billardiera scandens*, *Pittosporae*; 5, *Pumelia hirsutifolia*, *Thymelaeae*; 6, *Chloanthus strobilatus*, *Verbenaceae*. The only approach to a list of genera, giving their natural orders, is Steudel's *Nomenclator Botanicus*, an expensive book, now out of date, and Bentham and Hooker's *Genera Plantarum*, which is only complete to the end of the Dicotyledons. In all probability the *Treasury of Botany* gives as much information as would suit your purpose.—A *Constant Reader*. *Scuticaria Steeli*. The Mushroom is only a variety of the common *Agaricus campestris*, deformed.

PEA: R. F. A very fine-looking, large-podded Pea, of the Prizetaker class.

PEACHES DISEASED: F. A. D. The sections arrived in a condition totally unfit for doing anything with. Could you not send a fruit or two not quite ripe?

RED-SPIDER ON VINES: M. M. Now that the Grapes are ripe, very little can be done to arrest the progress of red-spider. Wherever possible without injuring the fruit, syringe the leaves, or wash them with a sponge. Water is the best remedy, and must be used unsparingly. Try the Fir-tree Oil, which you will see advertised. Red-spider is the offspring of dryness—a dry, arid atmosphere—or dryness at the roots will cause them to flourish; and moisture is the antidote. They can be cleaned in winter by the same means. It is a question of management entirely.

SARRACENIAS, ETC.: T. S. See the notes at pp. 274, 306. Mr. Williams deals with both subjects in vol. ii. of his *Stove and Greenhouse Plants*. The *Dendrobium* is flowering out of season, and in an unusual manner.

TEA OR COFFEE GARDENS: Try. Write to the Curator of the Royal Gardens, Kew.

TREFOIL: Stratton. It is the Hop Trefoil (*Trifolium procumbens*).

CATALOGUES RECEIVED:—Thomas Kennedy & Co. (Dumfries), Catalogue of Select Dutch Flower Roots. —James Cocker & Sons (82, Union Street, Aberdeen), Catalogue of Dutch Flowering Roots. —Charles Turner (Slough), Catalogue of Hyacinths, Narcissus, Tulips, and other Choice Bulbous Roots. —Samuel Yates (Old Millgate, Manchester), Illustrated Catalogue of Dutch, French, and German Flowering Bulbs. —William Caudwell (The Ives, Wantage), List of New and Very Select Roses; List of Old-fashioned Florists' Flowers. —The General Horticultural Company (Warwick House, Regent Street, W.), Catalogue of Hyacinths, Tulips, and other Bulbous Roots.

COMMUNICATIONS RECEIVED.—R. L.—C. D. S.—H. G.—W. S. (thanks).—G. D.—H. R.—G. W.—J. D.—W. E. (next week).—J. M. T.—A. D.—J. S.—H. G. Rchb.—F. L. S.—A. S.—L. G.—J. C.—J. K. K.

Markets.

COVENT GARDEN, September 2.

The supply of hothouse Peaches is now almost over, but the demand is no better in consequence. A fair quantity of orchard fruit is arriving, but realising very low prices. Trade at a standstill. *James Webber, Wholesale Apple Market.*

FRUIT.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	.. 2 0-3 0	Lemons, per 100	.. 6 0-10 0
Apricots, per box	.. 1 0-1 6	Melons, each	.. 2 0-5 0
Cherries, per ½-sieve	6 0-12 0	Oranges, per 100	.. 6 0-12 0
Currants, black,		Peaches, per doz.	.. 4 0-8 0
½-sieve	.. 9 0-11 0	Pine-apples, per lb.	1 6-4 0
Gooseberries, per		Raspberries, per lb.	0 3-0 0
½-sieve	.. 2 3-3 6	Strawberries, per lb.	0 6-1 0
Grapes, per lb.	.. 1 0-4 0		

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,		Horse Radish, p. bun.	4 0-..
per doz.	.. 4 0-6 0	Lettuces, Cabbage,	
Aubergines, per doz.	3 0-..	per doz.	.. 0 6-1 6
Beans, French, p. lb.	0 6-..	Mint, green, bunch.	0 4-..
Beet, per doz.	1 6-2 6	Mushrooms, p. basket	1 6-2 0
Cabbages, per doz.	1 0-2 0	Onions, per bushel.	5 0-..
Carrots, new, bunch	4 0-6 0	— Spring, per bun.	0 6-..
Cauliflowers, Eng-		Parsley, per bunch.	0 4-..
lish, each	.. 0 3-0 6	Peas, English, per qt.	1 6-..
Celery, per bundle	1 6-2 0	Radishes, per bun.	0 2-..
Chilis, per 100	3 0-..	Small salad, pun	0 4-..
Cucumbers, per doz.	6 0-9 0	Spinach, per bushel	8 6-..
Endive, per doz.	1 6-3 0	Tomatos, per lb.	0 9-1 0
Garlic, per lb.	1 0-..	Tun tips, new, bunch.	0 4-..
Herbs, per bunch	0 2-4 0	Veg. Marrows, doz.	2 0-..

Potatos are all much lower, and prices down all round from 1s. to 4s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	3 0-6 0	Foliage Plants, vari-	
Balsams, per dozen	3 0-6 0	ous each	.. 2 0-10 0
Begonias, per doz.	4 0-12 0	Fuchsias, per dozen	3 0-0 0
Bouvardias, per doz.	12 0-24 0	Lilium auratum, doz.	18 0-43 0
Calceolarias, per doz.	4 0-12 0	— various, per doz.	9 0-18 0
Chrysanth., per doz.	6 0-12 0	Lobelia, per dozen	3 0-6 0
Cockscombs, p. doz.	3 0-6 0	Mignonette, per doz.	4 0-12 0
Coleus, per dozen	3 0-9 0	Myrtles, per doz.	6 0-12 0
Cyperus, per dozen	4 0-9 0	Nasturtiums, dozen	3 0-6 0
Dracena terminalis	30 0-60 0	Palms in var., each	3 6-21 0
— viridis, per doz.	12 0-24 0	Pelargoniums, dozen	9 0-24 0
Eunymus, various,		— Ivy-leaved, doz.	4 0-8 0
per dozen	.. 6 0-18 0	— Tricolor	.. 4 0-12 0
Ferns, in variety, per		— scarlet, per doz.	2 0-6 0
dozen	.. 4 0-18 0	Rhodanthe, per doz.	6 0-9 0
Ficus elasticus, each	1 6-7 6	Solanums, per dozen	6 0-18 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3-0 6	Heliotropes, 12 sp. . .	0 6-1 0
Asters, 12 bunches . .	3 6-6 0	Mignonette, 12 bun. .	2 0-6 0
Bouvardias, per bun.	1 0-4 0	Pelargoniums, 12	
Calceolaria, p. bunch	0 0-1 0	sprays	0 6-1 0
Carnations, 12 bun.	3 0-0 0	— zonal, 12 sprays	0 3-0 6
Cornflower, per doz.	2 0-4 0	Phlox, 12 bunches . .	6 0-12 0
Eschscholtzia, 12 bun.	2 0-4 0	Primula, double, per	
Eucharis, per doz. . .	3 0-6 0	bunch	1 0-1 6
Feverfew, 12 bun. . .	4 0-6 0	Roses (indoor), doz.	1 0-6 0
Forget-me-not, 12		— outdoor, 12 bun.	3 0-0 0
bunches	3 0-9 0	Stephanotis, 12 spr.	3 0-0 0
Gardenias, 12 blms. . .	3 0-6 0	Tropaeolum, 12 bun.	1 0-3 0
Gladioli, 12 spikes . .	1 0-3 0	Tuberose, per dozen	1 0-2 0

SEEDS.

LONDON: Sept. 1.—The seed market to-day was moderately attended, with a quiet business doing. Only those seeds required for immediate sowing meet with attention. Trifolium, being all but exhausted, and being in eager demand, is again considerably dearer. The total advance in value now established from the lowest point this season is upwards of 40 per cent. Naturally the supply on the spot keeps very small, nobody desiring to hold stock at the dangerously extravagant rates which at present prevail. Winter Tares have opened at a moderate range; the new samples show most satisfactory quality. Good sowing Rye is rather scarce. Advices from America describe the Clover market there as exceedingly firm. Accounts just received from some parts of England speak less hopefully of the red Clover seed; it is said that the excessive rains produced such a heavy growth of the second crop that some is being cut for hay. Rape seed is 2s. higher. No change in Mustard. Hemp seed maintains the late rise of 1s. per quarter. Canary steady. Perennial Rye-grasses are hardening in value. The new English blue boiling Peas come well and sell freely. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane, on Monday, the trade in new Wheat was slow, and prices were somewhat irregular; old Wheat sold slowly at barely late rates. Foreign Wheat was in good supply, and former prices were with difficulty supported. The trade in Barley was slow at about late rates. Malt presented no important feature. No material change took place in prices for Indian Corn. In Oats business was done at the prices of Monday se'night. Beans and Peas were in slow request, but no material change took place in their value. The flour trade was dull at fully the late reduction in prices.—Business on Wednesday was very dull. Wheat was not worth so much as on Monday, but in the absence of business no material change was noted. For new English prices varied considerably. Barley was without change. Malt was neglected. Oats were not much sought after. In Maize prices showed no great change from Monday. Beans and Peas were steady in value. Flour was dull on barely former terms.—Average prices of corn for the week ending Aug. 28:—Wheat, 44s. 1d.; Barley, 33s. 8d.; Oats, 24s. 8d. For the corresponding period last year:—Wheat, 48s. 1d.; Barley, 29s. 7d.; Oats, 24s. 9d.

CATTLE.

At Copenhagen Fields on Monday trade in beasts was very dull, and the top quotation was only obtained for choicest qualities; inferior were difficult to dispose of. Choicest qualities in sheep sold fairly, but other kinds were lower, and several lots remained unsold. The lamb season is drawing to a close, and only choice qualities are saleable. There was a large number of inferior calves, which sold at a low price. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 5s. 10d.; sheep, 5s. to 5s. 8d., and 6s. 4d. to 7s.; lambs, 6s. 8d. to 7s. 6d.; pigs, 4s. 4d. to 5s. 4d.—Thursday's trade, though not active, was firm in tone. The supply was about an average for a Thursday. Both beasts and sheep realised full prices. With a fair inquiry, lambs were steady. Prices for calves tended upwards.

HAY.

Tuesday's Whitechapel market report states that the supply of fodder was large, but trade dull. Meadow hay was rather easier. Prices:—Prime Clover, 100s. to 142s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 110s.; inferior, 30s. to 70s.; and straw, 30s. to 42s. per load.—Cumberland Market quotations:—Superior meadow hay, 100s. to 112s.; inferior, 50s. to 90s.; superior Clover, 130s. to 140s.; inferior, 80s. to 115s.; and straw, 36s. to 42s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that fair supplies are on sale, but a large proportion comes in a blighted condition. The demand is very limited at the following prices.—Regents, 4s. to 5s.; kidneys, 6s.; ditto, Jerseys, 6s. to 7s. per cwt.—The imports into Southampton from the Channel Islands continue moderate, but into London last week the arrivals consisted of 137 bags from Hamburg, and 330 bushels from Stettin.

COALS.

The following are the prices current at market during the week:—Last Wylam, 14s. 6d.; Ravensworth West Hartley, 14s. 3d.; Walls Lnd.—Hetton, 15s.; Hetton Lyons, 13s. 6d.; Lambton, 14s. 6d.; Wear, 15s. 6d.; Chilton Tees, 14s. 6d.; Thornley, 14s. 6d.; Harton, 13s. 6d.; Hawthorns, 13s. 9d.; South Hetton, 15s.; Tees, 14s. 9d.; Radford Navigation, 15s. 9d.

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HYACINTHS, TULIPS, and other EARLY SPRING BLOOMING BULBS of the very best quality,

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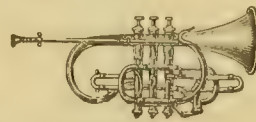
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PIANOFORTES, by Bord, Roensch, Collard, Broadwood, Erard, and Knabe, from 20 to 300 Guineas.

BLACK and GOLD PIANETTES, from 25 Guineas.



VIOLINS. From Half a Guinea to Twenty Guineas and upwards. (Small size, from 15s.)

VIOLONCELLOS. From One Guinea to Twenty Guineas and upwards.

FLUTES. From Half a Guinea to Seven Guineas and upwards.

CLARIONETTES. From One Guinea to Eighteen Guineas.

BASSOONS. From Eight Guineas to Seventeen Guineas.

CORNETS. From One and a Half Guineas to Nine Guineas.

EUPHONIUMS. From Four Guineas to Eight Guineas.

TROMBONES. From One and a Half Guineas to Four Guineas.

OPHICLEIDES. From Four Guineas and upwards.

FRENCH HORNS. From Four Guineas and upwards.

BUGLES. From One Guinea to Twenty Guineas.

HUNTING and POST HORNS. From Five Shillings.

BICYCLE HORNS. From Three Shillings.

ZITHERS. From Two Guineas.

MUSICAL BOXES. From Five Shillings.

MAIL HORNS. From Half a Guinea. (In solid Silver, at 25s. per ounce.)

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BASS DRUMS. From Five Shillings.

CYMBALS. From Two Guineas.

GONGS. From Three Guineas.

TRIANGLES. From Five Shillings.

GUITARS. From One Guinea to Ten Guineas.

HARPS. From Fifteen Guineas.

ENGLISH CONCERTINAS. From Three Guineas.

TUNING FORKS. From Two Shillings.

METRONOMES. From One Guinea.

CASANETS. From Five Shillings.

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Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1,000. Package free. Extra plants for carriage. Cash from unknown correspondents.
H. J. HARDY, F.R.H.S., Stour Valley Seed Grounds, Bures, Suffolk.

Bulbs, Orchids, Hellebores, &c.

THOS. S. WARE'S BULB GUIDE for the present season is now ready, and contains, in addition to a grand assortment of Miscellaneous Bulbs, full and complete Collections of Liliums, Narcissus, and Gladioli; fine selections of Hardy Orchids, Primula Sieboldii and Helleborus; also Climbing Plants, Bamboos, Aquatics, and Herbs; selections of such Perennials and Hardy Florists' Flowers as are adapted for planting at this season. Gratis and post-free on application.
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LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 25s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
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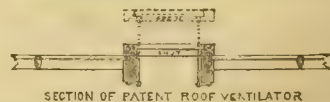
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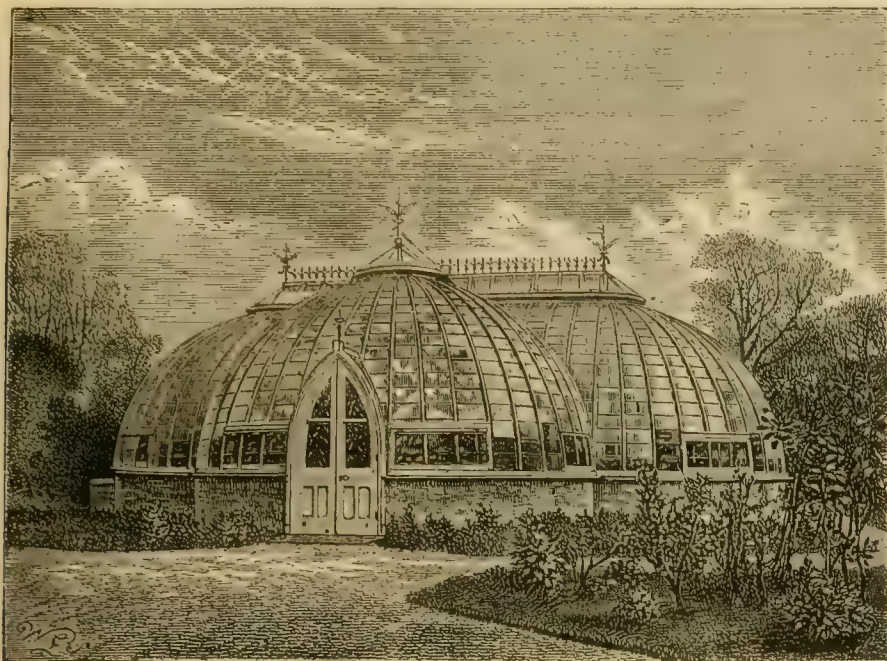
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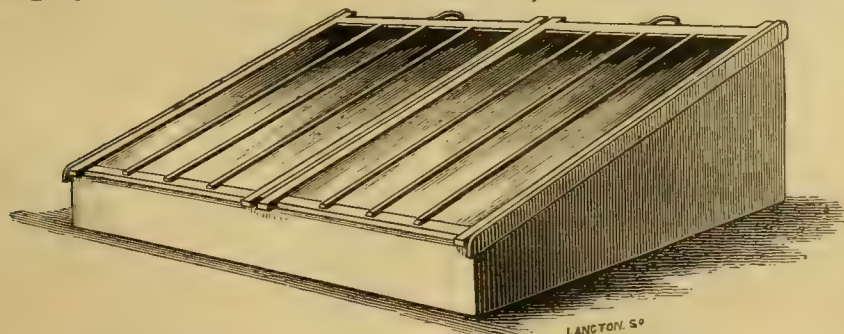
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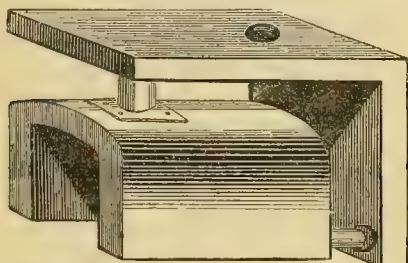
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24 "	24 "	24 "	700	12	0	0
24 "	24 "	30 "	850	14	0	0
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10 1/2	8 1/2	to	10	10 1/2	10 1/2	11 1/2	11 1/2	12 1/2	12 1/2	12 1/2	12 1/2
15	10	to	10	12	11 1/2	12 1/2	12 1/2	13 1/2	14 1/2	14 1/2	14 1/2
20	12	to	10	16	11 1/2	12 1/2	12 1/2	13 1/2	14 1/2	14 1/2	14 1/2
20	17	to	10	18	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	16 1/2	16 1/2
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21-OZ.	or Cutting up,	34 1/2	4 1/2	to	42 1/2	6 1/2	5 1/2	per	300	feet	case.
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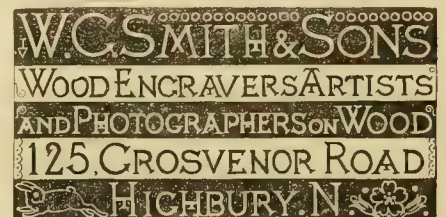
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TESTIMONIALS.—"J. A." who advertised
for a "Head Working Gardener" in the *Gardeners'*
Chronicle of July 31, is earnestly entreated to return to
applicants any ORIGINAL TESTIMONIALS he may have received;
and especially in this request preferred in the case of those sent
by a Gardener, who applied for the situation from Berkhamstead.

To Head Gardeners or Nursery Foremen.

PARTNER WANTED.—The Freeholder of
a Nursery, near a Fashionable Town, is willing to take
a pushing man, with small capital, as Partner. It has been
very much neglected for the last five or six years. There is a
fair stock to commence with.—FREEHOLD, *Gardeners'*
Chronicle Office, W.C.

WANTED, a PARTNER, to still further
extend a large and rapidly increasing Nursery and
Seed Business. Amount of capital not so much an object as
a man of first-rate business ability. Full particulars given and
expected.—D. E., *Gardeners' Chronicle* Office, W.C.

PARTNER WANTED.—A Nurseryman and
Seedsmen, who has a large and valuable Business, is
prepared to take a Partner, who must be capable of Managing
a Department. Capital required, from £2000 to £3000.—Particu-
lars on application to NURSERYMAN, *Gardeners' Chronicle*
Office, W.C.

WANTED, a good working steady energetic
and practical MAN, to take the lead on some Land
being bought in for Market purposes. Must be a good Pruner,
thoroughly acquainted with Bush and other Fruits, also Straw-
berries. Will be expected to take an interest in the work, and
such an one will have good opportunities to raise his position.
Wages, including good cottage and vegetables, 21s. weekly, to
be raised to 24s. at Lady-day, and to 30s. at Michaelmas next
if he can show favourable results.—JOHN EDWARDS, Park
House, Bishop's Waltham, Hants.

Superintendent of Greenwich Cemetery.

SHOOTER'S HILL, KENT.

THE BURIAL BOARD for GREENWICH are prepared to receive Applications (in own writing) for the situation of SUPERINTENDENT of the CEMETERY. The applicant must be a married man, without inebriation, and between 35 and 45 years of age. He will be required to Superintend all Funerals, and, when necessary, assist at the same. All Registers and Accounts at the Cemetery will be kept by him in books provided for the purpose. It is important he shall be thoroughly experienced in the Propagation and Cultivation of all Greenhouse Stock, as also in Ornamental Gardening. The salary paid is £2 5s. per week, with free occupation of the Lodge. Applications with testimonials from last situation to be addressed to the Clerk of the Burial Board, 3, Blue Stile, Greenwich, S.E., on or before Friday, September 10 next.

By order, **GEORGE CARPENTER**, Clerk.
N.B.—Applicants who have filled a similar position preferred.
August 29, 1880.

WANTED, a MAN and WIFE (no encumbrances), the Man as GARDENER, and to be generally useful; the Wife a good Landdress. Good wages, house, and firing. Good characters indispensable. State ages and all particulars.—Address S. 493, Sell's Advertising Office, Bolt Court, Fleet Street, E.C.

WANTED, at Michaelmas, a WORKING FOREMAN, or BAILIFF. Must have good character for industry, sobriety, and ability, and understand Stock. Wife to take charge of Poultry. Farm 50 acres grass and 50 acres arable. Cottage, firing, and 22s. per week.—**MR. SATTERTHWAITE**, Kingsfield, Dartford Heath, Kent.

WANTED, on an extensive Fruit and Vegetable Farm in Kent, an active trustworthy FOREMAN.—Reply, stating wages required, to R. Wansunt Farm, Crayford, S.E.

WANTED, a YOUTH, who has had some experience in Nursery Work, in the Houses.—**GEORGE EDWARDS**, Balham Nursery, London, S.W.

WANTED, Respectable YOUTHS, in a large London Seed Establishment. Good writing indispensable.—Apply, in own handwriting, stating age and all particulars, to D. M. D., *Gardeners' Chronicle* Office, W.C.

WANTED, an experienced SHOPMAN.—Application by letter, addressed "B" stating age, salary, and experience, to King's Street, Covent Garden, W.C.

To Lady Florists.

WANTED, for a Leading Firm in Scotland, a thoroughly qualified LADY BOUQUETIST, possessing an intimate knowledge of the trade, and expert at Bouquet-making and Dinner-table Decorations.—Apply, with all particulars, to F. GARCIA, Centre Avenue, Covent Garden, W.C.

WANT PLACES.

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DOWNIE and LAIRD can at present recommend with every confidence several first-rate SCOTCH GARDENERS, whose character and abilities may be thoroughly depended upon, either for Large Establishments or Single-handed Situations; also FOREMEN, UNDER GARDENERS, and FARM BAILIFFS.—17, Frederick Street, Edinburgh.

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GARDENER (HEAD), where two or more are kept.—Age 34, married; seven years and nine months good character. Life total abstainer.—J. W., 5, Albert Road, Walthamstow.

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GARDENER (HEAD).—In the prime of life, married, no family; energetic and trustworthy. Great experience in Forcing Flowers, Fruits, and Vegetables, and the routine of a large Garden. Good Manager of Men. Most trustworthy references.—**ARKLIE**, *Gardeners' Chronicle* Office, W.C.

GARDENER (HEAD); Scotch.—**JAMES GALBRAITH**, thirteen years Head Gardener to Sir Wm. Parker, Bart., Melford Hall, Suffolk, is at liberty to engage with any Lady or Gentleman requiring the service of a thorough practical man. Has lived in first-class establishments in Scotland and England. Character will bear the strictest investigation.

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GARDENER (HEAD, WORKING), to any Lady or Gentleman requiring the services of a good Gardener in all branches, where two or more are kept.—Age 26, married when suited. Good character from present and last situation.—R. R., Horsenden House, Princes Risborough, Bucks.

GARDENER (HEAD, WORKING).—Age 35, married; good experience in all branches. Good character.—A. R., Herne Road, Ditton Hill, Surbiton, Surrey.

GARDENER (HEAD, WORKING), where one or two others are kept.—Age 29; understands Gardening in all its branches. Good character.—C., 1, Hill Side Stables, Brighton Road, Sutton, Surrey.

GARDENER (HEAD, WORKING), where one or two more are kept.—Age 29, married, two children; three years' good personal character. Fourteen years' experience.—W. D., Milton Court Lodge, Dorking.

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GARDENER (HEAD, WORKING); age 32.—J. SIMMONS, three years Gardener to J. S. Wheatley, Esq., Calverton Hall, Notts, wishes to treat with any Lady or Gentleman, as above.—44, Leam Terrace East, Leamington.

To Nurserymen and Gardeners.

GARDENER (HEAD, WORKING); age 32.—£5 Bonus to any one assisting advertiser to a good place as above. First-class references.—**ALPHA**, 44, Leam Terrace East, Leamington.

GARDENER (HEAD, WORKING).—Age 40, married; well up in the Management of Vines, Pines, Peaches, Strawberries, Cucumbers, Melons, Figs, and Plant Growing, &c., also Kitchen and Flower Gardening. Highly recommended.—H. B., Ibstone, Stokenchurch, Oxon.

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GARDENER (SECOND), in a Nobleman's Garden or a Nursery.—Age 19; good experience.—E. HOLICK, Florist, Allesley, near Coventry.

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GARDENER (UNDER), in a good establishment.—Age 24; five years' experience inside and out. Total abstainer. Three years' good character from present situation.—State wages, &c., to G. LAY, Headington Rise, Oxford.

FOREMAN, in a good private establishment.—Age 28, single; can be highly recommended.—M., The Gardens, Hillingdon Court, Uxbridge.

FOREMAN, in a private establishment.—Age 25; has had great experience in Grape Growing. Excellent character.—**GARDENER**, Mr. Morgan, Bookseller, Catford, S.E.

FOREMAN.—To Grow Stove and Greenhouse Plants, Ferns, Cut Flowers, &c., for Sale or Market. Good references.—A. B., Gloster Lodge, North End, Fulham, S.W.

To the Trade.

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To the Trade.

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To the Seed Trade.

SHOPMAN.—Age 20; five and a half years' experience in the Kitchen Garden and Flower Seed Trade. Most satisfactory references.—J. R., 82, George Street, Edinburgh.

CLERK, or BOOK-KEEPER.—Age 22; seven years' experience. Can be highly recommended.—C. J., *Gardeners' Chronicle* Office, W.C.

TO THE SEED TRADE.—Wanted a situation in the above by a young man, age 24. Good Book-keeper. Eight years' experience in Wholesale and Retail Trade in London and Country.—E. P., 21, Ashmead Road, New Cross, London, S.E.

BAILIFF (WORKING).—Age 50; had great experience in Sheep Rearing and Fattening, Killing Pigs and Sheep, and Castrating; Heavy and Light Land, Keeping Accounts, Land Measuring and Rough Fencing. Wife Plain Cook, or Dairy and Poultry. Good character.—A. G., Byhurst, Chessington, Kingston-on-Thames.

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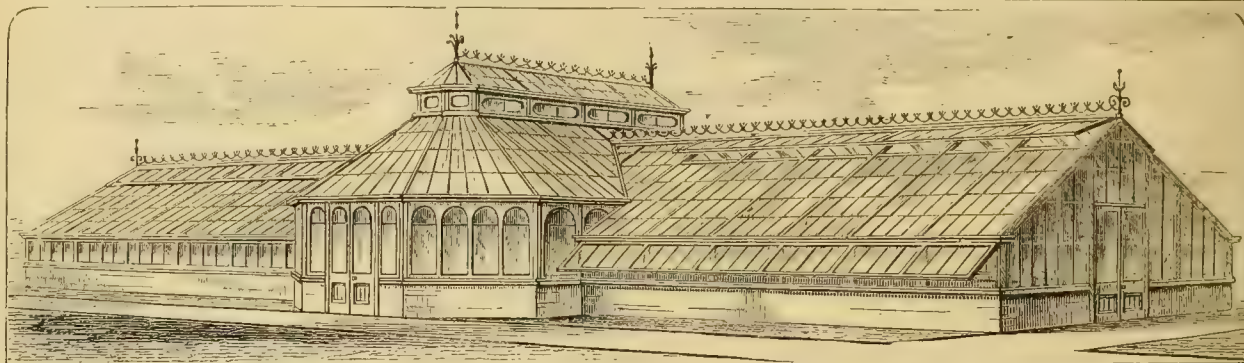
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NOTICE.—Will shortly be published with the "Gardeners' Chronicle," a Double-page Plate of NARCISSUS. Full particulars will be duly announced.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M., GENERAL MEETING at 3 P.M., on TUESDAY NEXT, September 14. Admission 1s.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
DATES OF THE MEETINGS OF THE FRUIT AND FLORAL COMMITTEES, EXHIBITIONS, AND EVENING FETE in 1881:
FRUIT AND FLORAL COMMITTEES, TUESDAYS.—January 11, February 8, March 8 and 22, April 12 and 26, May 10 and 24, June 14 and 28, July 12 and 26, August 9 and 23, September 13, October 11, November 8, December 13.
GREAT SUMMER SHOW.—Friday, June 3; Saturday, June 4; Whit Monday, June 6; and Tuesday, June 7.
ROSE AND PELARGONIUM SOCIETY'S SHOW.—Tuesday, June 28, and Wednesday, June 29.
EXHIBITION OF BRITISH BEE-KEEPERS' ASSOCIATION.—Tuesday, July 26, to Monday, August 1.
ARTISANS and COTTAGERS' SHOW.—Monday, Aug. 1.
EVENING FETE.—Tuesday, June 28.

THE INTERNATIONAL POTATO SHOW will be held at the Crystal Palace, Sydenham, S.E., on SEPTEMBER 22 and 23. The Exhibition will be opened by the President, the Right Hon. the Lord Mayor of London. Last day of entry, September 24. Schedules and all particulars to be obtained of J. A. MCKENZIE, Tower Chambers, Moorgate, London, E.C.

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Primulas—Primulas.
CHINENSIS FIMBRIATA, ALBA, ROSEA, and VARIEGATED—all good, strong plants, well packed, at 1s. 4d. per dozen, 8s. per 100.
Post-free, cash with all orders.
T. FLETCHER AND SON, Florists, &c., Chesterfield.

Begonias.
JOHN LAING AND CO.'S unrivalled Gold Medal Collection is now in bloom. Inspection invited. Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out. LISTS free on application.
The Nurseries, Forest Hill, London, S.E.

STRAWBERRIES.
Strong Roots for Fruiting next year, 4s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

STRAWBERRIES.—Strong and well-rooted Runners for fruiting next season.
Descriptive LIST with Prices on application.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. **MANUAL ON STRAWBERRY CULTURE,** with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

Strawberries.
CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice.
The Royal Nurseries, Slough.

DRACÆNAS for SALE, or EXCHANGE for NEW PLANTS.
E. WILLS, The Firs, Bassett, Southampton.

WANTED, PEACHES, &c.
Prompt returns and moderate commission.
WISE AND RIDES, 3, Tavistock Court, Covent Garden, W.C.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Christmas Roses.
BUDDENBORG BROS., BULB GROWERS, Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.

NEW ROSES in Pots.—Tea and Noisette ROSES in Pots.—CLEMATIS in Pots.
INFALLIBLE MILDEW COMPOSITION.
Special LISTS, with full particulars, now ready, gratis and post-free.
EWING AND CO., EATON, NORWICH.

EWING AND CO.'S Magnificent Collection of ROSES is NOW in FULL BLOOM. Intending purchasers are specially invited to inspect the stock. The Nurseries are open to the Public on Week-days. CATALOGUES of Roses and General Nursery Stock gratis and post-free.
The Royal Norfolk Nurseries, Eaton, near Norwich.

Christmas Roses.
F. C. HEINEMANN'S Splendid Hybrids.
Very moderate prices of strong Plants and New Seeds given on application.—F. C. HEINEMANN, Nurseryman and Seedsman, Erfurt, Germany.

Vines for Present Planting.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vines.
CATALOGUES free. The Trade supplied.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 2s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

Potentillas (Double and Single-flowered) in Pots.
ROBERT PARKER begs to announce that he can supply the above-named by the dozen or 100, in 40 named varieties, from 9s. per dozen upwards. Priced LISTS with New General CATALOGUE of Hardy, Greenhouse, and Stove Plants, forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this."
Two Cuttings, post-free, for 1s. 2d.
One Plant, post-free, 1s. 6d.
The Home for Flowers, Swanley, Kent.

LILY of the VALLEY.—Fine strong Crowns for forcing, the best quality, as known in use many years; 40s. per 1000; by taking at least 5000, at 38s. per 1000, for cash, carriage free to Hamburg. By taking at least 10,000, and cash with order, carriage free to London. Early orders requested.
ROBERT NEUMANN, Erfurt, Germany.

Deutzia gracilis.
WILLIAM FLETCHER has a fine stock of the above to offer. Fine bushy plants, with from 10 to 20 branches, price 21s. per 100, £10 per 1000.
Otterhaw Nurseries, Chertsey.

To the Trade only.
E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN AND FLORISTS, Haarlem, Holland.
The Wholesale CATALOGUE (No. 347A) of Dutch Flower Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants, for 1880-81, is now ready, and may be had free on pre-paid application, by Nurserymen, Florists and Seedsmen.

PHEASANT-EYED NARCIS-SUS.—Bulbs of this sweet-scented Narcissus, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narcissus, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—J. E. ALDERSON, Bell Farm, Hersham, near Walton-on-Thames, Surrey.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST OF FERNS," free on application.

ROYAL FERNS.—Parties wishing a cheap quotation of Royal Ferns (OSMUNDA REGALIS), by the dozen, hundred, or thousand, apply to
JAMES ANDERSON, Nurseryman and Valuer, Meadowbank, Uddingston, Glasgow.

To the Trade.
FINE NEW ENGLISH SOWING RAPE SEED and WHITE MUSTARD.

H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application.
Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will **SELL** by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every **MONDAY, WEDNESDAY, and SATURDAY**, during September, at half-past 12 o'clock precisely each day, consignments of **DUTCH BULBS** arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the morning of Sale, and Catalogues had.

Dutch Bulbs—Special Trade Sale.

MESSRS. PROTHEROE AND MORRIS will **SELL** by AUCTION, at the Mart, Tokenhouse Yard, E.C., on **MONDAY NEXT**, at half past 11 o'clock precisely, an extensive consignment of first-class **HYACINTHS, TULIPS, CROCUS, NARCISSUS**, and various **BULBS** from Holland, specially lotted to suit the Trade and other wholesale buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Clapham, S.W.

Adjoining the Clapham Road Station.

MESSRS. PROTHEROE AND MORRIS will **SELL** by AUCTION, on the Premises, The Royal Nursery, High Street, Clapham, S.W., on **THURSDAY**, September 16, at 12 o'clock, by order of Mr. T. C. Paget, 4000 Winter-flowering **HEATHS**, in good condition, 2000 well-berried **SOLANUMS**, 1000 **AZALEAS**, including several large specimen plants of **INDICA ALBA**; 2000 **PALMS**, including 500 **COCOS WODELLIANA**; 2000 **GREENHOUSE FERNS**, 500 **EPHYLLUMS**, 500 named **CARNATIONS** and **PICOTEES**, 100 **CAMELLIAS**, 500 **CYCLAMENS**, a few lots of **ODONTOGLOSSUM ALEXANDRAE**, and other Established **ORCHIDS**, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Lee, S.E.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Gregory & Evans (who are removing to new premises at Sidcup) to **SELL** by AUCTION, at the Effingham Nursery, Effingham Road, Lee, on **FRIDAY**, September 17, at 1 o'clock precisely, 16,000 well grown Winter-blooming **HEATHS**, including 3000 Erica hyemalis, in 48's, 24's, and 40's; 7000 E. Wilmorea and gracilis, showing a profusion of flower; 5000 **ERICAS** in thumbs and stores; 5000 **SOLANUMS** in 48's well furnished with berries; 1000 **BOUVARDIA HOGARTHII** and **VRELANDII** in 48's and 32's; and a quantity of other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. On the removal of the Firm to Sidcup, the beneficial interest in the **LEE NURSERY** will be **DISPOSED OF**. Rent only £50. Full particulars of the Auctioneers.

Lee, S.E.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. B. Maller to **SELL** by AUCTION, on the Premises, the Burnt Ash Nursery, Lee, S.E., on **TUESDAY**, September 27, 17,000 **HYEMALIS** and other Winter-blooming **HEATHS**, in 48's, 40's, 24's and 20's, unsurpassed in the trade; 10,000 **ERICA HYEMALIS** and others in 60-pots; 5000 **SOLANUMS**, beautifully berried; 5000 remarkably fine **ADIANTUM CUNEATUM**, 3000 **CYCLAMEN PERSICUM**, 5000 **CYTHUS RACEMOSUS**, and other Stock.

N.B.—Intending purchasers are invited to inspect the Stock, which is in splendid condition.

Lea Bridge Nurseries, Leyton, E.

TENTH ANNUAL TRADE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to **SELL** by AUCTION, on the Premises as above, on **WEDNESDAY**, September 22, at 11 o'clock precisely (there being nearly 900 lots), 20,000 Winter-blooming **HEATHS**, remarkably well grown, and including 8000 **HYEMALIS**, 5000 **WILMOREA**, 2000 **GRACILIS**, and quantities of other varieties; 1500 unusually fine **CYCLAMEN PERSICUM**, 1000 **GENISTA FRAGRANS**, a great quantity of well grown Tea-scented and Noisette **ROSES**, in pots, **LAPAGERIA ALBA** and **ROSEA**, 1500 **AZALEAS**, full of bloom-buds, 1000 Early-flowering **CHRYSANTHEMUMS**, 300 **MARCHEL NIEL ROSES**, in pots, from 7 to 10 feet, 1500 fine strong Plants **AMPELOPSIS VEITCHII**, and other Stock.

May be viewed. Catalogue had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Tottenham.

GREAT ANNUAL TRADE SALE OF STOVE and GREENHOUSE PLANTS. To commence punctually at 11 o'clock, there being upwards of 1200 Lots.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Maller to **SELL** by AUCTION, on **THURSDAY**, September 23, 20,000 Winter-blooming **HEATHS**, beautifully grown and abundantly set with flower-buds, including **HYEMALIS**, **GRACILIS**, **WILMOREA**, and other approved kinds; 10,000 remarkably well berried **SOLANUM CAPSICATUM**, unsurpassed in the trade; 3000 particularly well-grown **CYCLAMEN**, 2000 **TUBEROSUS**-rooted and other **BEGONIAS**, 1000 handsome **PALMS**, 500 well-furnished **ADIANTUM CUNEATUM**, 500 **FICUS**, 500 **CINERARIAS**, 2000 **TREE CARNATIONS**, 4000 **BOUVARDIAS**, 2000 **CAMELLIAS** and **AZALEAS**, including large plants for cutting from; 1500 **GENISTAS**, 2000 **MYRTLES**, 500 **EPHYLLUMS**, 500 **GREVILLEA ROUSTA**, 600 **DOUBLE WHITE PRIMULAS**, and other attractive Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

The Westbourne Nursery, Harrow Road, N.W.,

Close to Westbourne Park Station.

UNRESERVED SALE OF SURPLUS STOCK OF WINTER and SPRING-FLOWERING PLANTS, including 10,000 **Double PRIMULAS**, 2000 good bushy **GENISTAS**, 2000 **CHRYSANTHEMUMS**, 1000 **BOUVARDIAS**, 2000 strong **POINSETTIAS**, 1500 well-berried **SOLANUMS**, **PALMS**, &c.

MESSRS. PROTHEROE AND MORRIS will **SELL** the above, on the Premises, on **WEDNESDAY**, September 29, by order of Messrs. Woolf & Son. Catalogues on the Premises; and of the Auctioneers, 89, Gracechurch Street, E.C., and Leytonstone, E.

Freehold Land, and extensive, valuable, and lucrative Gardener's, Florist's, Fruiterer's, Nurseryman's, and Seedsman's Business, as a going concern, in the county of Cumberland, for Sale.

MR. C. P. HARDY has been instructed to **SELL** by AUCTION, on **MONDAY**, September 20, at the County Hotel, Carlisle, at 3 o'clock in the afternoon, the entire **BUSINESS**, as a going concern, of the late Mr. Thomas Hamilton, of Botcherby. The Estate comprises 12a. 1r. 22p. of superior Freehold Land, on which are erected extensive Vineries, Conservatories, Cucumber and Propagating Houses, Greenhouses, Dwelling House, with Out-offices, Stables, Coach House, Barns, Byres, Piggeries, Potting and Packing Sheds, Boiler and Forcing Houses, Cottage, Strawberry Forum, &c., &c. The Glass Houses, which are mostly in splendid condition, are filled with the choicest Vines, Cucumbers, Melons, &c., the whole of which have been intelligently cultivated, and the adaptation of the best mode of heating and ventilating at the least cost is very demonstrable. A large portion of the area is covered with fine Forest and Fruit Trees, in all stages of their early growth, for which large orders can be promptly executed. In addition to the foregoing are beautiful varieties of all kinds of Decorative Shrubs and Plants, large Fruit and Vegetable Gardens, and the celebrated Botcherby Strawberry Beds. Besides these are the growing produce of several fields in the immediate vicinity, held under lease, the goodwill of which will be included in the transfer. Botcherby Gardens are situate 1½ mile from the Citadel Station, Carlisle, and are an intensely popular institution. Messrs. Hamilton, the owners, will show the property, which embraces magnificent building sites. Descriptive Catalogues are published, and may be had, with further particulars, at the offices of Messrs. DOBSON and WATSON, Solicitors, 47, Lowther Street, Carlisle.

Aldenham Abbey, Watford, Herts.

Important Sale of Stove and Greenhouse Plants

MESSRS. HUMBERT AND SONS will **SELL** by AUCTION, by direction of Charles Durham, Esq., on the Premises at Aldenham Abbey, on **WEDNESDAY** and **THURSDAY**, October 6 and 7, at 12 o'clock precisely each day, the whole of the valuable collection of **STOVE and GREENHOUSE PLANTS**, and **FERNS**, comprising splendid specimens, some of 6 feet to 10 feet and 12 feet high, of *Chamaerops Fortunei*, *Phoenix dactylifera*, *Scaevola elegans*, *Asplenium excelsa*, *Cyathea dealbata*, *Dicksonia squarrosa*, *Dicksonia antarctica*, *Cycas revoluta*, *Rynchospermum jasminoides*, *Bougainvillea glabra*, *Coleogyne cristata*, *Crotons*, &c.; also of *Azaleas*, *Camellias*, *Ericas*, *Adiantum farleyense*, *Davallia Mooreana*, *Gymnogramma chrysophylla*, *Genetilis*, *Eriostemon*, *Statice*, &c. a fine lot of *Calanthe Veitchii*, also *Primulas*, *Chrysanthemums*, *Liliums*, *Amaryllids*, *Cyclamens*, *Cinerarias*, *Geraniums*, *Achimenes*, *Ferns*, and half-hardy bedding plants for stock, *Deutzias*, *Spiraeas*, &c.

May be viewed two days preceding the Sale. Catalogues may be had (free by post) of Messrs. HUMBERT AND SONS, Land Agents and Surveyors, Watford, Herts, and 88, St. James's Street, S.W.

The late Mr. John Verschaffelt.

THE NURSERY at LEDEBERG,

near Ghent, lately conducted by

MR. JEAN NUYTENS VERSCHAFFELT,

IS FOR SALE,

ON ADVANTAGEOUS TERMS,

And with Special Facilities for Payment to a Suitable Purchaser.

Apply to

MADAME NUYTENS VERSCHAFFELT,

CHAUSSEE DE BRUXELLES, 134,

LEDEBERG LEZ GAND, BELGIUM.

FOR SALE, a great Bargain, with immediate possession, the LEASE of most convenient NURSERYMAN'S PREMISES, consisting of three extensive Forcing Houses, thoroughly Heated with Hot Water, and full of Stock. Well stocked Garden, good Stabling and Cart Sheds, and House with Shop Window in main thoroughfare. All in first-rate order. Full particulars on application to HENRY CONISBEE, Madras Cottages, Southgate.

TO BE DISPOSED OF, the GOODWILL, STOCK IN TRADE, HOTHOUSES, and GROWING CROPS of a large MARKET GARDEN, within 4 miles of Manchester. The grounds comprise about 13 acres of very productive land, including 30,000 square feet of Glass. Very favourable terms will be allowed to an immediate purchaser. Apply to SAMUEL SIMPSON, Esq., Solicitor, King Street West, Manchester.

To Gardeners.

TO BE LET, a good COTTAGE, with every convenience, and 1 acre of Garden Ground, wherein is large Peach-house, well stocked Cucumber-house, and small Stove and Conservatory. The Garden well stocked with Trees. Rent 25 guineas. Close to a good Market Town, and within 22 miles of London. Fruit will well pay rent. Application to be made to A. B., 28, Great James Street, Bedford Row, London, W.C.

AUTUMN-GROWN FULHAM CABBAGE PLANTS, for Sale, cheap, in large or small quantities. Apply, THORNTON AND CO. (late A. Dancer), Nurserymen, &c., Fulham.

LARGE CAMELLIAS for SALE.—The Subscribers have to offer seven very fine Camellias, well set, viz.:—3 Double Whites, 12 feet by 8 feet, 11 feet by 6 feet, 7 feet by 7½ feet; Countess of Orkney, 11 feet by 4 feet; Monarch, 11 feet by 4 feet; Dark Crimson, 9 feet by 3 feet; Bright Pink, semi-double, 9 feet by 6 feet. Also one *ARAU-CARIA EXCELSA*, 9 feet high. Prices and particulars on application to DICKSON, BROWN AND TAIT, Seed Merchants, Manchester.

Primula, Calceolaria, and Cineraria.

CHOICEST STRAINS.

W. J. CROSS (late ALFRED HAMMOND), Salisbury, is now prepared to send out his splendid strain of Red and White **PRIMULA**, either in separate colours or mixed, at 2s. per packet. Per Packet.—s. d.
PRIMULA, commoner kind 1 0
CINERARIA, choice strain 2 0
CALCEOLARIA, herbaceous, 1s. 6d. and 2 6
 Post-free.
BULB CATALOGUE on application.

Bulbs for the Season.

CHARLES TURNER'S consignments of the above have arrived in splendid condition. The roots are remarkably sound and good this season. Early orders are most respectfully solicited. **CATALOGUE** post-free on application. The Royal Nurseries, Slough.

STRAWBERRIES IN POTS.

Crop at once.
 Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 3s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
 H. CANNELL, Swanley, Kent.

To the Trade Only.

DOUBLE FRENCH RANUNCULUS.

LEONARD ROOZEN AND SONS' superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)
LEONARD ROOZEN AND SONS, Bulb Growers, Overveen, near Haarlem, Holland.

Autumn, Winter, and Spring Flowering Plants.

F. AND A. SMITH offer well-grown stockly examples of the following, well set for bloom:—

1,000 <i>Acacia armata</i>	1,000 <i>Epiphyllum truncatum</i>
5,000 <i>Azalea indica</i>	20,000 <i>Ericas</i> , various
4,000 <i>Bouvardias</i>	5,000 <i>Epacris</i>
5,000 <i>Camellias</i>	10,000 <i>Pelargoniums</i>
11,000 <i>Cinerarias</i>	5,000 <i>Primula chinensis</i>
4,000 <i>Cytisus</i>	5,000 <i>Solanums</i> , in berry
5,000 <i>Chrysanthemums</i>	10,000 <i>Zonals</i> , various

Also large stocks of *DEUTZIA*, *CALADIUMS*, *TREE CARNATIONS*, *CLEMATIS*, *CROTONS*, *CYCLAMEN*, *DAPHNE*, *DRACENAS*, *PERNS*, *FICUS*, *GLOXINIA*, *BEGONIAS*, *SPIRAEAS*, *PALMS*, *PENTSTEMONS*, *PHLOXES*, *PYRETHRUMS*.

The above are mostly in 4½-inch pots, strong, and well-established. The *Pelargoniums* and *Zonals* are chiefly early sorts, prepared for forcing. The *Cinerarias* are also very strong, and will be in bloom in November.

VINES in pots, for planting and fruiting, &c.
 30,000 *PELARGONIUMS*, in 2½ and 3-inch pots, for potting on for spring flowering, in all the best decorative varieties.

Prices on application, and inspection invited.

WEST DULWICH NURSERIES, LONDON, S.E.

SPECIAL TRADE OFFER OF FOREST TREE SEEDLINGS, &c.

APPLE, Crabs, 1-yr., very fine, 3s. 6d. per 100
PEARS, Stocks, 1-yr., very fine, 4s. per 100
ACACIA, 1-yr., fine, 2s. per 1000
ALDER, 1-yr., fine, 2s. 6d.; 2-yr., fine, 3s. per 1000
ASH, 1-yr., fine, 2s.; 2-yr., fine, 4s. per 1000
BEECH, 1-yr., very fine, 3s. per 1000
BIRCH, 1-yr., 3s.; 2-yr., 5s. per 1000
BRIER, Sweet, 1-yr., 4s. per 1000
BROOM, 1-yr., strong, 2s. 6d. per 1000
CHESTNUT, Horse, 2-yr., 10s. per 1000
 Spanish, 1-yr., 4s. 6d.; 2-yr., 7s. 6d. per 1000
ELM, Scotch, 1-yr., fine, 3s. 6d.; 2-yr., fine, 6s. per 1000
HAZEL, 2-yr., drilled, 9 to 12 inches, 10s. per 1000
HOLLY, 1-yr., good, 3s. 6d.; 2-yr., good, 6s. per 1000
LABURNUM, 1-yr., extra strong, 3s. per 1000
OAK, 1-yr., fine, 4s. 6d.; 2-yr., fine, drilled, 7s. 6d. per 1000
SYCAMORE, 1-yr., fine, 3s.; 2-yr., 5s. per 1000
THORN, or **QUICK**, 1-yr., 3s.; 2-yr., 5s. per 1000
PINE, Austrian, 1-yr., 2s.; 2-yr., 5s. per 1000
 Corsican, 1-yr., 2s. 6d.; 2-yr., 5s. per 1000
LARCH, 1-yr., very fine, 4s. per 1000, 2-yr., with leaders, 6s. per 1000, or 4s. 2s. per 1000, 300
PINE, Finaster, 1-yr., 2s. 6d. per 1000
ELM, Scots, true Native, 2-yr., scarce, 6s.; 2-yr. 2-yr., 9 to 15 inches, 17s. 6d. per 1000
SPRUCE, Norway, 1-yr., 1s. 6d.; 2-yr., 2s. 6d. per 1000
JUNIPER, 3-yr., 6 to 12 inches, 10s. per 1000
 Samples of any of the above per post free.

We can also offer a splendid general stock of transplanted **NURSERY STUFF**, including Larches, 2½ to 3½ feet; Scots Fir and Spruce, 9 to 15 inches; Austrian Pine, Finaster Pine, and nearly all kinds of Hardwoods, and will be glad to send samples and quote prices to intending buyers.

PETER S. ROBERTSON & CO.,

TRINITY NURSERIES, EDINBURGH.

CH. VUYLSTEKE,

NURSERYMAN,

LOOCHRISTI, near GHENT, BELGIUM,

Begs to call attention to his exquisite

STOCK OF PLANTS,

Offered at Extra Low Prices,

VIZ:—

AZALEA INDICA, **AZALEA MOLLIS**,
CAMELLIAS, **HARDY GHENT AZALEAS**,
KALMIA LATIFOLIA,
PALMS, **FERNS**, **FICUS**, **AMARYLLIS**,
SPIRAEAS, &c.,

As detailed in his CATALOGUE, which may be had gratis of

Messrs. R. SILBERRAD AND SON,

25, Savage Gardens, Crutched Friars, London, E.C.

AUTUMN PLANTING.

SEEDLING and TRANSPLANTED FOREST TREES.

PLANTS FOR GAME COVERTS,

ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.

The immense stock of the above is this season in splendid condition, and special offers for future delivery will be made on application.

THE LAWSON SEED and NURSERY COMPANY (LIMITED),
EDINBURGH.

DUTCH FLOWER ROOTS.



B. S. WILLIAMS

BEGS TO ANNOUNCE THAT HE HAS RECEIVED HIS ANNUAL IMPORTATION OF

HYACINTHS, TULIPS, CROCUS, NARCISSUS,

Also other BULBOUS ROOTS, in fine condition.

ALSO FOR EARLY FORCING,

ROMAN HYACINTH, Paper White and Double Roman NARCISS.

Early Orders are respectfully solicited,

CATALOGUES containing a Select List of the above are now ready; also of New Plants, Fruit Trees, Roses, &c., Gratis and Post-free to all applicants.

VICTORIA and PARADISE NURSERIES, UPPER HOLLOWAY, N.

THE GENERAL HORTICULTURAL COMPANY
(JOHN WILLS, Limited).

Central Offices: Warwick House, 142 & 144, Regent Street, W.

The Company having made large purchases from the leading Bulb Gardens of Holland and France, are now prepared to supply HYACINTHS, TULIPS, NARCISSI, CROCUSES, and all other BULBS for Autumn Planting, at low prices, and with a large discount to Shareholders; Non-shareholders will be treated with on the most liberal terms.

The Company also supplies all kinds of NEW and RARE PLANTS, Ferns, Fine Foliaged, New Holland Plants, Standard and Dwarf Roses, and all kinds of Fruit and Forest Trees, Evergreens, &c., GARDEN SEEDS for Autumn Sowing, FARM SEEDS, HARDY PLANTS for Winter and Spring Gardening, PLANTS for FORCING, &c., MUSHROOM SPAWN, and all kinds of GARDEN IMPLEMENTS and REQUISITES, at the lowest prices.

FRUIT, BOUQUETS, FESTIVE and MEMORIAL WREATHS, FLORAL CROSSES, DRIED FLOWERS, &c., sent to all parts of the country on receipt of letter or telegram.

The General Manager may be consulted as to the re-arrangement of Gardens, Laying-out of Grounds, and General Landscape Work, also for the Erection of Conservatories, Greenhouses, Forcing Houses, &c., and will attend at any part of the country for these purposes.

Catalogues on application. Early Orders are respectfully solicited.

JOHN WILLS, General Manager.

DUTCH BULBS, &c.

WM. CUTBUSH & SON,

Who have so many years held the highest position in supplying

HYACINTHS, TULIPS, and other EARLY SPRING
BLOOMING BULBS of the very best quality,

Are happy to be able to announce that their supply for the present season
has arrived, and advise their Patrons to order early.

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THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 11, 1880.

CRAGSIDE.

DURING a visit to one of the most delightful spots in Northumberland, situated on the Croquet, a river without a rival, I visited the pre-eminently pretty residence of Sir William G. Armstrong, C.B., named from its situation Crag-side. It is well placed in, but nearly at the end of, the deep gorge where the little stream called the Debdon joins the Croquet. A view bounded by the steep crags of a moorland burn may be very pretty, but it must be rather limited, and the genius which raised the noble house of Crag-side placed it very happily near the junction of the streams, where a second valley opens to the view commanding distant prospects, with the village in the foreground, and its picturesque bridge and church tower guarded by the frowning peaks of a lofty ridge of hills. In the distance, further to the right, there are still loftier hills belonging to the same unbroken moorlands from which Crag-side itself has been reclaimed; and looking up the little valley of Debdon Burn, still further to the right, there are Sir William's lakes, where a large surface of the brightest water glitters in the sun on a fine day, and is forced—for something besides the picturesque is required for the comfort of the dwelling—by a hydraulic ram into the house. The house stands on the steep declivity of the stream rather nearer to its purling waters than to the top of the ridge behind, and the Debdon makes summer music for the family audible to an attentive ear from the windows, and the swollen Croquet contributes its roar in winter. It may be said, "Northumberland in winter?" The answer is "Certainly; Rothbury is a sheltered, dry, and very pleasant spot in winter." If you follow the long zigzag walks which lead to the top of the ridge, you will find that the black lump of something on the ridge which looks like a hut in the distance is a huge boulder fringed with Heather and bracken. The view from this erratic block, named the Sea-stone, is bounded eastward by the German Ocean.

The house of Crag-side has sprung up, and the gardens and grounds have grown into their present beauty, within the short space of eighteen years. I had driven 12 miles across the moors from Alnwick thinking that the landscape, beautiful as the blossoming Heather is in August, might be improved by timber, and that Scotch Fir would grow well on such land, when presently the unplanted part of the moor came to an end, and the remaining mile of road to Rothbury lay through scores of acres of bushy Scotch Fir, blue in the morning sun, young and vigorous. These are the plantations of Sir William Armstrong, and presently the house of the same improver came in view. The whole of the site he now occupies is at the end of the moor. "Look upon this picture and on that!" Sir William seems to have acquired a bit of the very moor for his improvements; pity

he could not acquire the whole, whether by force of law or of his own artillery one would not care, so that he would improve it by planting Scotch Fir.

Some small owners near Alnwick have got hold of allotments of the moor, and are growing corn upon it, trusting to the few years' supply of vegetable mould in the surface, and not, I fear, to the growth of ameliorating crops—Turnips fed on by sheep and by cattle eating oilcake, and so making large quantities of valuable manure.

They will bring their poor moorland to such poverty as the sands of Sahara cannot exceed, unless they comply with the law of compensation and bring on more than they carry off. In the case of dry sands there are two methods of improvement, that by means of high farming with a capital of not less than £20 per acre, and by means of Nature's own instrument, the Scotch Fir, to forage in the soil with its searching roots and collect from the atmosphere with its myriad leaves.

After fulfilling an errand at Rothbury, we walked to the principal entrance of Crag-side on the Alnwick Road, where the model lodge—a perfect building of its kind—is occupied by Mr. Bertram, the general manager. Crag-side is open to the public on Thursdays. The ground rises on the left hand, and the exquisite borders of shrubs and flowers lie advantageously high on more than one level, and we passed gradually upwards from garden to garden, through several conservatories, till we reached the nook on which stands a gem of a cottage, occupied by Mr. Hudson, the gardener, whose clever hand has been the immediate instrument in the creation of a perfect paradise around his dwelling, which he seems thoroughly to enjoy. That same hand planted, I believe, every Fern in the prettiest fernery I have ever entered. In commendation of Mr. Hudson's skill and taste, I would use that single word inscribed in memorial of the architect of St. Paul's, *Circumspice*. The fernery is built like a natural grotto, or series of grottos, formed of the sandstone dug on the spot. It looks like Nature's own work, and as you wander through it you might suppose that it was Nature's hand not Mr. Hudson's that had planted it, setting the larger number of a most interesting collection in their proper places, and placing the smaller ones on the ledges of the rock, peeping from every nook and cranny. Among them I noticed, in passing, the Filmy Fern, *Hymenophyllum tunbridgense*; the crested Hart's-tongue, the Royal Fern, Parsley Fern, the delicate Maidenhair, and the Spleen-worts, *Pteris tremula*, *Platycerium alcornone* (Stag's-horn), *Alsophila excelsa*, *Trichomanes radicans* (the Killarney Fern), and *Pleopeltis glauca*. Among the most ornamental of the lesser Ferns are those two dark-foliaged, vigorous, finely-cut-leaved New Zealand Ferns, *Todea superba* and *T. pellucida*. With all respect for any fernist who may not approve of such comparisons, I think the exquisite foliage of these two Ferns quite as beautiful as that of the common Carrot, or a nice spray of Parsley.

I have departed here from the order of events, for before entering the fernery we passed through the Italian garden and admired the perfect health of some tender shrubs which have enjoyed the protection of unroofed glass, portions of the garden having been surrounded with glass walls, within which you may wander among tender specimens, or admire them from the outside, looking through the wall. Here, in great beauty, are some lovely Lilies—*L. giganteum*, 12 feet high, among them; *Spiræa palmata* and *S. japonica*, *Biota semperæurea* and *B. elegantissima*, *Retinospora pisifera aurea*, *Salisburia adiantifolia*, some Palms, and other plants of equally sub-tropical aspect, and several of the best sorts of Clematis. Having retraced our steps to notice a few among the many flourishing plants which ornament this part of the grounds, I saw not one unhealthy

specimen injured by the winter or rough weather. We paid a brief visit to a well-filled conservatory, and another to an orchard-house, and then ascended towards the clock tower, which is the culminating point in this part of the grounds. In passing the fernery and elsewhere an alpine, the *Lithospermum prostratum*, with deep blue flowers, fixed attention as a pretty trailer for the margins of walks, to break a formal line of edging tiles, or to clamber over walls, and partly cover the base of buildings. The *Cotoneasters* are employed here with much taste for the same purpose—*C. rupestris*, *C. magnifica*, and *C. microphylla*, with a number of alpine, common or more rare. Mr. Hudson's house, built of stone of pleasing colour, is ornamented with the following creepers:—*Ampelopsis Veitchii*, *Tropæolum speciosum* (which refuses to cover southern walls, unfortunately), *Euonymus radicans* fol. variegatis, *Escallonia macrantha*, and a handsome *Clematis*. The narrow border, edged with stone relieved with *Aubrietia*, is planted with *Pelargoniums*, *Phloxes*, and other well-chosen plants of properly contrasting colour, and not too large.

The open grounds around the house and several chosen parts of the glen are planted with specimen Firs and carpeted with *Rhododendrons*, *Kalmias*, *Ledums*, *Ericas*, *Menziesias*, and other dwarf shrubs, interspersed with sheets of natural Heath in bloom. A bed of the light rose-coloured *Polygonum Brunonis* was in the full beauty of its blossom. Among a great variety of Conifers thriving in the grounds I observed several mixed groups of large specimens—*Abies Douglasii*, 45 feet high, with heavy drooping foliage; *Wellingtonia gigantea*, 35 feet high; *Picea Nordmanniana*, *Araucaria imbricata*, 30 feet; *Picea Pinsapo*, and many other sorts. There are very many acres of steep river banks (crag-sides) planted with thousands upon thousands of shrubs and Scotch Firs, and these romantic portions of the grounds are made accessible by zigzag walks running through them. No wonder that a local poet should have burst into rhyme extolling Crag-side in the following verse:—

“And on yon brown and rocky hill
See princely ‘Crag-side’ lies;
Where boundless wealth and perfect taste
Have made a paradise.”

Paradise, I believe, is the Persian word for a garden, and Crag-side being so fair a paradise, and something more, Sir William Armstrong has inscribed on marble and placed in his dining-room this legend—“East or west, home is best.” *H. E.*

New Garden Plants.

BULBOPHYLLUM BECCARII, *Rchb. f. (supra)*, 1879, January 14; 1880, August 28).

A great stir has been caused by the unexpected flowering of this remarkable plant; we had not expected to see it so soon in such a state. When I obtained the case containing the inflorescence at hand I smelt the most hideous stench of old fish that can be imagined. This had been observed by Odoardo Beccari, who wrote: “*I fiori sono fetidi come Arum Dracunculus*.” After having made my sketches of the whitish and whitish ochre-purple spotted flowers quite independently, I have now the high satisfaction to state their minute agreement with the careful representations made in Borneo by the keen traveller.

It is known to all Orchidists, at least of Great Britain, that Messrs. E. G. Henderson & Son were so successful as to flower the plant. I felt very interested to know how the result had been obtained. Mr. James O'Brien wrote me kindly the following particulars:—

“Length of rhizome of flowering plant, 20 inches. Number of leaves, three. Length of rhizome between each leaf, 6 inches. Size of each leaf, 2½ inches in length, 18 inches across. All the plants are on long blocks, and are growing most vigorously. The flowers proceed from a rhizome at the base of the leaf (just below the small pseudobulb), and immediately turn downwards. On receiving these plants I made a critical examination of them, and seeing the immense size of the leaves and the smallness of the pseudobulbs, I

inferred that they would require a different place of treatment to an ordinary Orchid-house; I therefore hung them up in the Nepenthes-house; in which there is a tank for the aquatics. The flowering and perfect vigorous growth is the result. B. Beccarii wants any amount of heat and moisture; these given, it is not difficult to grow.” So far Mr. O'Brien.

Our Hamburg plants, which were obtained from Mr. W. Bull and also from Messrs. Veitch, are doing well, and the fresh rhizomes develop well in the Victoria-house, where Mr. Donat has given them a good place on mossy blocks. *H. G. Rchb. f.*

GRAMMATOPHYLLUM ELLISII (Lindl.) DAYANUM, *n. var.*

This is a surprising and totally unexpected novelty, and might at first sight be regarded as a new species. I should have liked much to have done so, but it cannot be done reasonably, notwithstanding the widely distinct appearance. The flowers are just as short as all my wild-grown and garden specimens of the old *Grammatophyllum Ellisii*, not so extended as they are in the beautiful representation in the *Botanical Magazine*, 5179, where, too, the green colour of the leaves does not suggest that glaucous appearance which we are used to see. Our plant has flowers which are quite free from those transverse bars or lines we are so much accustomed to see in the genuine plant. There are alternating zones, the ones of sepia-brown including numerous small gamboge-coloured spots, the others consisting of myriads of the smallest sepia-brown points, including numerous small gamboge-coloured areas. One zone before the apical one is entirely gamboge-coloured.

I named this in honour of my excellent indefatigable correspondent, who kindly sent me part of the inflorescence he had in flower. I did so with great satisfaction. A letter obtained this moment tells me it was obtained at a sale at Mr. Stevens of September 4, 1878, having been collected by Mr. Römpler's (of Nancy) excellent friend, Mr. Leon Humblot. Now then comes the question whether all Mr. Humblot's plants are this one, whether both known varieties are mixed, or whether there is a large quantity of varieties. As to Mr. Leon Humblot, I will avail myself of an opportunity to fix his name in the company of Orchids, an attention he deserves so well. *H. G. Rchb. f.*

*CALANTHE PETRI, n. sp.**

Quite like *Calanthe veratrifolia*, R. Br., but bearing leaves a little narrower and a system of five curious sulcate yellowish calli on the base of the lip without the single lamella and teeth which are proper to the first-named species. It was introduced from Polynesia to the Veitchian Royal Exotic Nursery by Mr. P. C. M. Veitch. *H. G. Rchb. f.*

STANHOPEA INSIGNIS VAR. *FLAVA*, Lodd.

This fine variety has never come previously within my reach. It is now at hand from Messrs. Haage & Schmidt, of Erfurt, very diligent importers of Orchids, to whom the Hamburg Botanic Garden is indebted for many rare things. It is very fine. The lip and column have all those parts, which the genuine species shows, white coloured tinged with the nicest light yellow. The flower, too, is very large, making one think of a *Stanhopea tigrina*. The broad column, compared by Dr. Lindley with a battledore, is quite gorgeous. *H. G. Rchb. f.*

THE LIFE OF PLANTS.

(Continued from p. 244.)

ELABORATION OF THE FOOD.

THE point of departure is known to us: we see that the carbonic acid is decomposed in the chlorophyll cells of the leaves, we see that the roots draw from the soil nitrates, phosphates, ammoniacal salts, and salts of potash. The point of destination is equally well known to us: the plant includes, besides the cellulose of which its tissues consist, sugar, glucose, starch, fatty substances, acids, albuminoids, alkaloids. It is the mode of elaboration of these complex substances with the simple elements which serve as food for the plant, which we require to know. This part of the science is but little advanced, but, however, it must be acknowledged that even if this department is only slightly investigated, it was largely treated on twenty-five years ago by the excellent synthetic work of M. Berthelot. When the eminent Professor of the College of France commenced his researches, it was never thought possible to reproduce in the laboratory the products elaborated by the vegetable cells. It was well known, it is true, how

* *Calanthe Petri*, n. sp. — Omnino *Calanthe veratrifolia*, R. Br.; sed folia paulo augustiora et calli in labelli basi tumidi transverse multi sulcati sulphurei. Polynesia. Coll. P. C. M. Veitch. *H. G. Rchb. f.*

to eliminate from a compound material borrowed from the plant the most simple substances. Starch or sugar was oxidised, and according to the methods employed formic or oxalic acid was obtained, but it was not considered possible to obtain these same products from the simple substances which constitute them. It was not considered possible to execute artificially that which the plant performs every day under our eyes. M. Berthelot has shown that we had an incorrect notion of the power of chemistry, and that it is not only possible but easy to produce artificially these vegetable bodies. He prepared formic acid with oxide of carbon and water, oxalic acid by oxidising acetylene. He proceeded by successive stages to the formation of materials more and more complex. This power of chemistry, of which M. Berthelot has given so many proofs, however, encounters an obstacle which we do not know how to surmount. In studying the conditions under which the materials pass one into another, in bringing skillfully into play the forces in combination, we shall, no doubt, succeed in reproducing artificially such organic matters as sugar, oil, alkaloids, quinine, &c., but chemistry stops before the organised material. It knows very well that there is a limit beyond which it cannot penetrate.

RESPIRATION.

To this formation of the immediate principles of a plant is united the long neglected study of a function very interesting to follow through all its stages—respiration. With the exception of a small group of inferior beings, studied with much sagacity by the eminent physiologist, M. Pasteur, all living things consume oxygen and give out carbonic acid. Plants having chlorophyll are, like animals, consumers of oxygen, and give out carbonic acid. They are therefore the subjects of two opposite phenomena, one continuous respiration, the other intermittent, the assimilation of carbon according to the presence or absence of light. In darkness or in diffused light the disengagement of carbonic acid is easily proved, even in the organs containing chlorophyll, but as soon as sunlight appears, the reverse phenomenon takes place to such a degree, that a few minutes of exposure to the sun are sufficient for the plant to regain all the carbon it had lost by respiration during the long hours of darkness. The plant, therefore, is above all an admirable example of a reducing agent which stores up with the carbon the vital force derived from the sun. In separating the carbon from the oxygen with which it is united in our tissues or in our fuel, in restoring to it the power of combustion, in elaborating the organic combustible material, it assures the continuance of animal life on the earth. But it is only when exposed to the light that the plant exercises this power (complementary to that of animals) which so struck our predecessors. As soon as the sun sets plants show, on the contrary, very close relationships to animals, relationships which formed the subject of the remarkable lectures delivered here by the illustrious Claude Bernard. A plant cannot live without oxygen any more than an animal, and not only do the aerial organs perish when this gas is wanting, but even the roots cannot perform their duties in a soil insufficiently aerated, and according to our illustrious dean, M. Chevreul, one of the advantages of the drainage of impervious soils is to insure the free access of atmospheric oxygen. Nevertheless when the plant is maintained in an inert gas, it does not always die immediately but submits to a great change; its cells, deprived of the free oxygen, continue to give out the carbonic acid which they produce, whilst the hydro-carbon which they contain is doubled, and at the same time they elaborate alcohol. MM. Lechartier and Bellamy have proved this in fruit, M. Muntz in the entire plant, M. Bréal in the seeds. In an animal the respiratory function is the origin of heat and movement. We know, and it will be one of the glories of the nineteenth century to have established it, that the forces of Nature are reciprocally interchangeable, and that the work that is performed by an animal proceeds from the change in a part of the heat generated by the act of respiration, and that this work represents energy so much the greater as the respiratory act is itself more perfect. We are, however, far from having such a precise idea of the functions of the respiration of vegetables.

Since there is a consumption of oxygen and a disengagement of carbonic acid, there is necessarily heat

evolved, but the plant only gives out feeble heat, and then only under exceptional conditions. Moreover, it is immovable: it does not expend as a cold-blooded animal would do in work, the heat which is produced in its tissues; consequently, it is necessary that the heat evolved be utilised in interior work. Is it employed in the elaboration of the complex principles which are formed in its cells? I have held this hypothesis for several years already. We will discuss the reasons in its favour. This study will enable us to consider the influence of the several rays of the solar spectrum on the respiratory function. While these, the most luminous rays, further the chlorophyll function and the decomposition of carbonic acid; the others, the chemical and heat-giving rays, exercise an opposite influence. The leaves which are exposed to them respire more freely, and this difference in action will enable us to understand how it was that for a long time experimenters failed in their attempts to obtain the decomposition of carbonic acid under artificial light, and how, on the contrary, they succeeded in absorbing in their passage part of the calorific rays emanating from the lamps used in the laboratory. The influence of the different rays of the spectrum on plants has been the object of much study, and notably of those of Prof. P. Bert. *From M. Dehérain's Lecture.*

(To be continued.)

HEATHER BANK.

A VISIT to these gardens by any lover of hardy plants would be well repaid at almost any season of the year, and especially so at the present season. Innumerable quantities of herbaceous and alpine plants are to be met with, and a difficulty it would be indeed to visit these gardens at any time without meeting something both attractive and interesting, one great feature being its rich collection of Lilies and other bulbous plants, which former at the present time are making a fine display. *Lilium auratum*, planted in the Rhododendron beds, and left undisturbed year after year, has been very fine. *Lilium tigrinum* and its varieties occupy round beds to themselves, as also does *Lilium superbum* and many others. *Lilium Krameri* here is extraordinarily strong, and growing luxuriantly to a height of nearly 4 feet. *L. auratum* in clumps is very fine; of this there appears two very distinct and widely different forms, the one forming short stout stems about 2 feet high, and flowering very early in the season, and with generally better formed flowers and of greater substance than the second form, which generally attains the height of from 4 to 8 feet. This latter is admirably adapted for shrubby planting, or a back row plant for the mixed border in a half shady situation.

Most noticeable among North American shrubs were *Gaultheria procumbens*, a plant seldom seen in good condition. Here, together with *Gaultheria Shallon*, and the beautiful *Linnaea borealis*, it is succeeding well, as are also *Skimmia japonica*, *Azalea mollis* and its varieties, and *Abelia floribunda*, small plants of which were flowering. In a cold frame, sheltered with trees, are some fine examples of the species of *Primula*, including *P. Munroi*; *P. marginata*, a very fine variety, with longer and broader leaves than usual; *P. helvetica*, *Omphalodes Luciliae*, *Mazus Pumilio*, &c. In the wild garden are to be seen an endless variety of rare plants. *Tropaeolum speciosum* is producing in grand profusion its bright scarlet blossoms. Some fine masses of *Lilium umbellatum*, which are now past, have been very fine. A fine plant of *Lilium giganteum*, some 9 feet 6 inches high, and having borne seventeen flowers, seems to tower far above all others in defiant grandeur; while close upon the ground, and side by side are *Epigæa repens*—a North American shrub of prostrate habit, with small creamy-white bell-shaped flowers, which it produces in abundance in early spring—and *Goodyera Menziesii*, a plant closely resembling the *Anætochilus* family.

Here are also to be met some nice tufts of the rarer species of Saxifrages, viz., *S. Bursariana*, *S. Fortunei*, a remarkably fine species with white flowers, produced late in autumn on a closely pyramidal spike; *S. peltata*, a large growing deciduous species from California, bearing in early spring on a stout stem, 2 feet high, large heads of rose-coloured flowers, and which, when well established, will grow to a height of 4 feet; a good representative of the plant is the specimen here, which is a mass about 5 feet by 4 feet. This is one of the most suitable plants with which I

am acquainted for thriving in a moist boggy situation. Here also *Primula japonica* is growing in galore, and the rarely flowered *Xerophyllum* (*Helonias*) *asphodeloides*, which has just completed its flowering, is a North American plant, and grows to the height of 2 feet, producing a spike of whitish flowers; this plant is rarely met with in private gardens, and is still rarer in nurseries. The largest quantity of plants I have ever seen of this species flowered in the Newton Nurseries, Chester, in 1879, when there were from eight to twelve plants in flower; these were grown principally in loam, though it is supposed by some that it will only exist in pure sand and peat.

Fabiana imbricata, though much injured by last winter's frosts, is gradually recovering. Very striking ornaments in the wild garden are *Leucanthemum maximum*, the largest and showiest of this group and also one of the best autumn flowering perennials, beside which stands a fine plant of *Achillea Eupatorium*, with a densely set head of bright golden-yellow flowers. *Meconopsis nepalensis*, a yellow flowered species, had passed its flower, and *M. Wallichiana* was just giving out its last flowers. *Adiantum pedatum*, the "Canadian Maidenhair," which so many doubt the hardy qualities of, is represented here in a fine clump; and having stood out for several winters, leaves not the question of a further doubt remaining. *Hypolepis distans* is also an attractive and effective Fern, equally hardy. Among other good and useful border plants may be mentioned *Anemone japonica* and *alba*, both very useful; *Helianthus* (*Helianthus rigidum*, *Gentiana asclepiadea*, and its white variety, *G. Andrewsii* (the closed *Gentian*), *Helianthus multiflorus* pl., &c.

In a cold house grown in pots are some rare and beautiful Lilies, conspicuous among them being *Lilium speciosum album*, *L. speciosum punctatum*, and *L. speciosum rubrum*, *L. pardalinum*, *L. canadense*, and *L. longiflorum eximium*. *L. Washingtonianum* was past, and promised to produce a fine batch of seed; *L. tigrinum splendens* and *L. tigrinum fl.-pl.* were very fine; *Hyacinthus candicans* was just opening its last flowers, and an endless variety of other plants occupied suitable places in the garden. It is only to be hoped that many others will take the example set by Mr. Wilson of growing hardy plants, which with close attention and careful labour would soon become a most interesting and delightful enterprise.

Meconopsis Wallichiana, the Blue Poppy, the handsomest of all the group, has been flowering remarkably fine. The plant, which is nearly 6 feet high, has been one continuous spike of lavender-blue flowers, having flowered to within 12 inches of the ground. Those who are acquainted with this truly noble plant can form some idea of what it was in full flower, which must have been simply magnificent; and to those who do not know this Poppy I would urge them to procure plants at once, and flower it themselves, when I feel sure they would be only too delighted with the results: its individual flowers measure from 3 to 4 inches in diameter. 7.

THE LATE MR. KRAMER.

WE announced briefly the decease of this well-known cultivator in our last issue, and now supplement that announcement with a slight sketch of his life career, for which we are indebted to Professor Reichenbach. Few men in Germany have held so high a place in the esteem and respect of their fellow workers as Herr F. B. Kramer. As is generally known, he was head gardener at the beautiful park of Klein Flottbeck, near the picturesque village of Blankensee, on the Elbe. The park is situated on a hill overlooking the great high-road between Great Britain, Scandinavia, Russia, and the old Hanse Town of Hamburgh. Here Herr Kramer lived for more than forty years as the faithful and trusted servant of Herr Senator Jenisch, an excellent Hamburgh patrician, and a great lover of horticulture and the fine arts. This gentleman derived a love for Orchids from his relative, Sigismund Rucker, an Englishman of German descent. He, and Hofrath Kreysig, of Dresden, appear to have been the first to have cultivated these plants in Germany. Herr F. B. Kramer was very successful in this work (as has often been stated in these columns), so much so that in Central Germany he was looked upon as a magician possessed of secrets or philtres to promote the growth of Orchids. The chief secret lay, however, in his wonderful love for the plants, and in his sagacious

observation of their requirements. With the death of his "Herr Senator," as he always called his employer, one of the greatest pleasures of his life ceased, that of pleasing his patron, who was as experienced a judge as Kramer was a skilful grower. "Herr Senator" took pleasure in comparing his flowers with the best English illustrations, thus having an advantage over those amateurs who only join in the sport for the sake of exciting the curiosity and admiration of others. Senator Jenisch, who belonged to a family that was not only rich, but knew how to keep riches, showed, by the framing of his will, that he felt as much pride in his garden as in his gardener, for he ordered the garden to be kept up, with Herr Kramer as head gardener, and his eldest son, Francis Kramer, as his assistant. The latter is now in the service of Mr. Rucker, the lucky possessor of these beautiful grounds. It is honourable to the memory of the late Herr Ohlendorff, the head gardener of Hamburg Botanic Garden, to note that he was the master and teacher of young Kramer; Professor Lehmann, the director, also did his best to assist the promising young man. Kramer leaves a widow, his helpmate for forty years, two married daughters, and two sons, both gardeners—one his assistant and successor at Klein Flottbeck, and the other well known as a Japanese traveller, and now gardener to one of those two famous Orchid growers of Belgium, M. Massange, of Louvrex.

Herr Kramer, known, as his sons grew up, as "Der alte Kramer," had much influence in the horticultural world, not only for his talents, but for his philanthropy in establishing and presiding over an institution for helping the widows and orphans of gardeners. He was not very accessible, but whoever showed proofs of zeal and honesty was sure of a hearty welcome. The desire to help on scientific investigation was a fine quality in the character of Kramer. When his "Herr Senator" gave me full permission to make use of the treasures of Klein Flottbeck, Herr Kramer was exceedingly kind in sending to me at Leipzig as long ago as 1852 boxes of fine flowers, and later on, when I came to Hamburg, he was equally attentive to my requirements. It will be a great satisfaction to his friends, pupils, and admirers, to learn through your columns that the funeral of Herr Kramer took place on one of the finest days of the year, amid every mark of respect for the memory of the deceased and sympathy with the survivors. He was interred in the distant and beautiful cemetery of Nieustadter. Many lovers of horticulture were present, and it was pleasing to see these earnest men following the hearse by hundreds. The coffin was thickly strewn with fronds of Palms, Cycads, and wreaths, which many brought themselves as last tributes to his memory. On the road to the cemetery there was hardly a single villa, house, or cottage where some last token of esteem was not shown. The memory of this self-made man will always be held in grateful respect. May his success be a stimulus to young gardeners who, with zeal and love coupled with industry and skill, follow a career which, if not remunerative from a worldly point of view, is yet one of the most satisfactory lives possible. *H. G. Rehb. fl.*

THE GARDENS AT DUNEEVAN.

FEW gardens in spring can present more pleasing features than that of Mr. McIntosh. The house itself is delightfully situate overlooking meadows and cornfields stretching away towards the Thames, and on a clear day the eye can readily define the building of Windsor Castle, in the distance. One great feature of these gardens is the finely massed beds of Rhododendrons growing in the greatest luxuriance. Azaleas of the mollis section do equally well, these being intermingled with the Rhododendrons, which are planted in beds on the various banks and slopes which abound here, and which gives to the whole a most picturesque appearance. Alternately planted in these beds are Japanese and Californian Lilies, which are all doing well, conspicuous among them being *L. auratum*, of which there are some remarkably fine clumps, averaging from twenty to sixty finely developed flowers in a clump: these are generally planted at the corners of the Rhododendron beds, catching the eye at every turn and scenting the immediate vicinity with their delicious fragrance. *L. pardalinum*, *L. Brownii*, and *L. superbum* are doing equally well. In a circular bed of *Lilium giganteum* three very fine specimens have been flowering, the tallest nearly attaining

a height of 10 feet; its radical leaves are exceptionally large, measuring 16 inches wide by 19 inches in length. These plants are producing some fine seed-pods, which, with the aid of a few weeks' sun, will no doubt ripen a goodly batch of seed.

Conspicuous among the *Liliums* here may be mentioned one exceedingly fine clump of *L. auratum* which is upwards of 9 feet 6 inches high; this is an extremely late variety, not having on the day of my visit (August 20) one single flower open; the buds, of which there were from sixty to eighty, promise to make a fine display in about a week. It is rather fortunate that in the blooming of this plant there is such a succession, as those who possess them in quantity can have a profusion of flowers for some weeks. Flowering in pots in a cool-house are some good examples of *Lilium tigrinum japonicum* and *tigrinum Fortunei* fl.-pl., and the varieties of *L. speciosum*. The more rarely flowered *Lilium neilgherrense* is a handsome Lily, growing about 3 feet high, and bearing long white and soft yellow trumpet-shaped flowers from 8 to 10 inches in length. Highly ornamental on the lawns are some exceptionally fine Conifers, &c. A fine *Wellingtonia gigantea*, some 45 feet high, well furnished down to the turf, with scarcely a point injured, and occupying a central position on the lawn, forms a unique specimen. *Abies Albertiana* is also a very fine specimen here, upwards of 40 feet high; *Picea magnifica*, and a large and well furnished plant of unusual size of *Cupressus macrocarpa*; a large and small form of Weeping Birch (*Betula pendula*), *Picea nobilis*, *P. Nordmanniana*, and many others of good quality. Conspicuous among the Rhododendron beds are some short standards of *Acer Negundo* variegatum arranged at intervals, which tend to improve the appearance of the mass of the plants below.

The fruit and vegetable departments of the establishment are not by any means a small feature, there being ranges of Cucumber and Melon-houses well stocked respectively, also vineries and Peach-houses: these latter are nearly new. The vineries are planted with choice canes of all the leading varieties, including Black Alicante, Golden Queen, Foster's Seedling, Buckland Sweetwater, Black Hamburg, and others, which promise to do well.

Two very distinct single Dahlias, both free and abundant bloomers, are *D. lutea*, a bright golden yellow, and *D. Paragon*, reddish-brown with a broad band of dark velvet down the centre of each petal; these two I strongly recommend to the readers of the *Gardeners' Chronicle*, who make choice of such plants as these for bedding purposes. Two other varieties equally good are *D. coccinea* and *D. Cervantesi*, the former a good scarlet, the latter a reddish-orange colour. A series of beds on the lawns adjoining the house are well filled with choice bedding plants, and when these are done they are replaced by Hyacinths and Tulips, which make a fine display in early spring.

An exceedingly fine specimen of *Cupressus Lawsoniana erecta viridis* forms a pleasing plant on the lawn. It is supposed on very good authority to be the largest existing specimen at the present time; it is about 20 feet high, of neat clean compact growth. Some idea of the growth of two of these plants may be formed from the fact, that when they were planted, the one on a gravelly soil and the other on clay, plants of similar size were used, viz., small plants about 2 feet 6 inches high, and while the former has only reached the height of about 12 feet, and is of much shorter and sturdier growth, the latter has reached the height above noted. *J.*

CONSERVATORY AT DOLDOWLOD.

THE illustrations (figs. 59, 60) which accompany this note show the exterior and interior of the new conservatory at Doldowlod, near Rhayader, central Wales. The present proprietor, in whose family the property has been about a hundred years, is J. W. Gibson Watt, Esq., a great-grandson of the celebrated James Watt, whose name is inseparably associated with the invention of the steam engine. Doldowlod is one of the prettiest and most charmingly situated estates in Radnorshire. The beautiful river Wye runs through it for a distance of about six miles, and it is surrounded by delightful and varied scenery. It embraces the celebrated mineral wells of Llandrindod, and the squire has given the best of these springs to the public. The park and grounds are extensive and picturesque, and contain many noble trees and shrubs, notably some very fine Oaks, Beeches, and Conifers. The pleasure-grounds and lawns are very attractive, and have been greatly improved by the gardener Mr.

Walter Weir, under whose directions the lawns have been considerably enlarged and a splendid terrace formed. The pleasure-grounds are bounded on the north by a well-wooded mountain, whose sides, clothed with exquisite foliage, slopes down on to the lawn.

The mansion, which is a modern one, built about 1850, in the Elizabethan style of architecture, and enlarged in 1878, is of very massive construction, and is noteworthy for the great excellence of its oak-work and fine staircase. It stands at a distance of not more than 10 or 12 feet from the foot of the before-mentioned mountain, and no conservatory was contemplated or provided for in the design. The consequence was that, when the proprietor first thought of building a large conservatory, it was found that it was impossible to build it attached to the house without shutting out one of the fine surrounding views. Nay, more, it was found to be most difficult to find a site, anywhere near the house, which would not spoil the views and curtail the lawns. Of course, if a conservatory had been meditated at the time the house was being built, a splendid site could have been found by keeping the house further back from the hill, and placing the conservatory between them; but this was now out of the question, and the first idea of attaching the conservatory to the house was abandoned. Where, then, was it to be put, as Mr. Watts was determined not to sacrifice any of his views? After much consultation and discussion, it was decided that the only possible site under these circumstances was occupied by the mountain side, and it was actually contemplated to cut away the hill side, at an immense cost of labour, and form a large level plateau on which to build the conservatory. At this juncture Mr. Watts called in the assistance of Messrs. J. Weeks & Co., of Chelsea, and one of their firm went down to see the site. It was suggested by this gentleman that instead of spending an immense amount of labour in cutting away the hill, the proper course to pursue would be to build the conservatory in terraces on the side of the hill, thus utilising the natural formation of the ground for the introduction of a strikingly picturesque and novel feature in the building. The idea pleased Mr. Watts. Plans were prepared, and the building which is the subject of our views was erected, and forms an appropriate, elegant, and harmonious object in the landscape. It will be seen that the lower roof is of a circular form, and has that pleasing effect which always accompanies curved glass, while at some height above rise the gables of the series of roofs covering the higher portion of the main building, which also have a very pretty appearance.

The arrangement of the interior is very novel, the back part being, as will be seen by the section, considerably higher than the front, in fact a terrace garden formed on the side of the hill, and approached by a handsome flight of stone steps exactly opposite the main entrance to the conservatory. The higher and lower portions are divided by a screen of ornamental iron columns with brackets and hanging baskets. Vases of flowers stand about in appropriate positions. Cut flowers being in great request here, almost all the contents are of a flowering nature, and the effect of the whole, whether viewed from below or above, is very bright and attractive. We may mention that not far from the conservatory there is a small mountain rill, about 3 feet wide by 3 inches deep in summer, but widening in winter to as much as 10 feet by 12 inches deep. It is suggested at some future time to divert this rill into the conservatory, so as to form a real cascade, and, perhaps, make one or more fountains, and we have no doubt this would have a charming effect. What an opportunity, too, for the introduction of the electric light, with plenty of continuous and never failing water-power ready to hand. We trust the proprietor may be induced to make the experiment at no distant date.

The conservatory was designed and entirely constructed by Messrs. J. Weeks & Co., and is heated by one of their patent upright tubular boilers. There is a nice kitchen garden at Doldowlod. The walls are well furnished with Peach, Plum, Apricot, Pear, and Cherry trees, and there is a splendid crop of Grapes in the vinery.

DR. CH. FLAHAULT, of Paris, whose interesting essay on the influence of the surrounding media on vegetation we have recently noticed, is now at Kew, studying the plants of Nova Zembla.

THE PARKS OF LONDON.

THESE, as a whole, present a very attractive and pleasing feature this year, illustrating in a variety of ways the best methods of carpet-bedding, sub-tropical bedding, mixed borders, and shrubbery planting.

VICTORIA PARK.

On entering the Park from the Great Eastern Railway, the first bed to meet the eye is a design known as the Prince of Wales' feathers, which consists of thirty-eight beds most ingeniously arranged. Along the front line are four large circular beds filled with *Alternanthera magnifica*, with the Gibraltar Mint for groundwork, and scrolls of *Coleus* in small batches, the whole being edged with *Echeveria secunda*. At the two ends of this design are two long beds with convex sides edged with *Echeveria*, with a groundwork of the Gibraltar Mint; at the four corners are small circles planted with *Echeveria*, *Alternanthera magnifica*, and a single plant in the centre of *Pachyphytum bracteatum*. The centres of

pleasing feature, the most noticeable being *Dahlia lutea*, a bright yellow; *Mexicana*, bright orange-red, a large and effective flower; and *Paragon*, a dark crimson velvet and brown, probably the most distinct and telling of the single Dahlias. Other beds of these Dahlias occur at intervals in the Park, and everywhere form a unique mass. A mixed bed of *Cannas* in variety, *Erythrina*s, *Ficus elastica*, *Aralia Sieboldi*, *Dracena congesta*, and *Abutilon Boule de Neige*, is looking well. Some fine varieties of the pyramidal Cockscombs, *Celosia pyramidalis*, form a bed by themselves, some *Wigandias* with their noble foliage forming a good bed behind, in company with some bed of *Tobacco*, *Nicotiana atropurpurea*. Near this spot is a crescent-shaped bank clothed with *Antennaria tomentosa*, and very naturally dotted with *Aloes*, *Sempervivums*, many varieties of crustaceous *Saxifrages*, *Sedums*, &c.

Very effective near the Crown Gate entrance is one long serpentine bed, about 2 feet 6 inches wide, and in its winding course about 120 feet long, tastefully laid down on a groundwork of Gibraltar Mint. Here and there are raised mounds of *Coleus Verschaffeltii* edged

along one entire side of the Park. This was evidently planted for the purpose of having the border gay at all seasons of the year, from the variety of plants which it contains, and it has undoubtedly proved a great success. It contains fine clumps of the single and double Sunflower, *Helianthus multiflorus* and *H. multiflorus fl.-pl.*; *Phloxes* of the decussata or late-flowering group, double-flowered *Pyrethrums*, which no herbaceous border can be complete without; *Spiraea Filipendula fl.-pl.*, *Tritoma Uvaria*, *Veronica longifolia* vars., *Geranium sanguineum*, *Ranunculus acris fl.-pl.*, the Bachelor's Button, *Delphinium* in variety, *Irises* of the germanica group, *Spiderworts*, *Tradescantia virginica*, *Lilium umbellatum*, *Iberis saxatilis*, *Verbena venosa*; the Day Lily, *Hemerocallis Kwamso*; the double Soapwort, *Saponaria officinalis fl.-pl.*, and a host of others equally good. Suffice it to say that, on the whole, this Park presents a very gay appearance, and great praise is due to those whose labours have been rewarded with such good results.

BATTERSEA PARK.

Throughout, the bedding in this Park is generally



FIG. 59.—EXTERIOR VIEW OF THE CONSERVATORY AT DOLDOWLOD. (SEE P. 328.)

these beds are doubly raised, first by a long bed with sharp points, widening considerably at the centre, and second, by a circular bed to form the centre; all being planted to match the groundwork and edgings below, the other large beds being filled with *Centaurea candidissima* and *Purple King Verbena*, edged with *Coleus Verschaffeltii*, and *Ageratums*, *Pelargoniums*, *Dell's Crimson Beet*, edged with *Golden Feather*. Conspicuous among the *Pelargoniums* is a variety named *Nimrod*, with salmon-scarlet flowers and an exceedingly fine truss. Two very effective beds were planted with *Pelargonium Princess Alexandra* and intermixed with *Viola Bluebell*. On the left of this is a large circular bed with sloping sides, the top and centre of which is filled with a variety of *Aloes*, *Cacti*, *Chamaepeuce diacantha*, and others, on a groundwork of *Herniaria glabra*. Outside this comes an octagon shape with a groundwork of *Sedum glaucum*, dotted with *Sempervivum tabulaforme* and *Pachyphytum bracteatum*. Outside this, in panels, on a groundwork of Gibraltar Mint, are raised small circular beds, edged with *Echeveria*, *Pyrethrum* and *Alternanthera amoena* occupying the centre.

On entering the sub-tropical bedding ground the eye first rests on a bed of single Dahlias which form a very

with small *Echeveria secunda*, and planted in opposite pairs at equal distances are *Sempervivum tabulaforme*, *Alternanthera magnifica*, with *Echeveria* edging, and scrolls of *Alternanthera* edged with *Mesembryanthemum cordifolium variegatum*. At the two extremes of this bed are circular beds with *Herniaria glabra* for groundwork with a star of small *Echeveria*, planted with *Pyrethrum* and *Alternanthera amoena*; at the extremes of the star points are small ovals planted with *Echeveria* and *Alternanthera*; and between the points are alternately anchor-and-spade shaped designs, of *Echeveria*, *Alternanthera*, *Mesembryanthemum*, &c. At the opposite extremity from this point are some beds of mixed *Hollies*, at the base of which are planted in a circle small plants of *Aucuba japonica* about 1 foot high, next which comes a band of *Perilla nankinensis*, *Centaurea candidissima*, and *Coleus Verschaffeltii*, following in order; while the remaining portion is filled with *Pelargoniums* in variety, arranged with good effect, and sloping down to the lawn: it is banded and circled with *Alternanthera magnifica*, *Pyrethrum* and *Echeveria*, and forms a very attractive bed on the whole.

One of the most interesting features of this Park is its mixed herbaceous border, extending over half a mile,

good, carpet bedding being carried out on a more extended scale than in Victoria Park. Many pleasing and well arranged beds and groups are to be seen, some of the best of the carpet-beds being those nearest the sub-tropical department, being composed of *Sedum acre variegatum*, with two bands of *Golden Feather*, with a groundwork of Gibraltar Mint, and filled in with *Alternanthera amoena*, and *A. versicolor grandiflora*. Grouped about under *Poplars* and other trees are some examples of *Phormium tenax*, also *Palms* and *Cycads*, *Tree Ferns*, *Anthurium regale*, *Zamia horrida*, the stemless *Pothos*, *Platyceerium alciorne*, *Dracena fragrans*, and many others. A circular bed is occupied near with *Dracena Veitchii* on a groundwork of Gibraltar Mint. Some huge mounds, whose sides are topped are clothed with *Antennaria tomentosa*, look remarkably well, the lower portions being planted with small *Palms*, *Sedums* in variety, *Crassula arborescens*, *Sempervivums*, *Yuccas*, *Dasyliirions*, *Thalictrums*, *Acanthus spinosissimus*, and a singular looking Thistle-like plant called *Galactites tomentosa*; these are all placed on a groundwork of *Mitella diphylla*. Passing along we come to a fine batch of the Blue Gum of Australia, *Eucalyptus globulus*, in a serpentine bed,

which are looking very picturesque just now. Here also is a very fine specimen of *Gunnera scabra*, a handsome foliage plant, but which has suffered much in many parts from the last two severe winters; the plant in question seems luckily to have escaped injury. Near this are some fine beds of mixed herbaceous Phloxes, interspersed with *Gladioli*, *Phormiums*, *Lobelia cardinalis*, &c. Here and there are also fine examples of *Agave filifera nana*, and at various intervals are some fine specimens of the giant *Polygonum sachalinense*, a stately foliage plant growing from 6 to 8 feet high, with stout erect stems, and bearing racemes of small whitish flowers. *Brugmansia Knightii* filled one or two beds, and was full of flower-buds. Some good plants of *Pandanus Veitchii* are planted on the lawn. Some groups of *Cannas* and *Dahlias* are very effective. Sub-tropical Ferns, good specimens of *Areca lutescens*, and *A. Verschaffeltii*, *Dicksonias*, *Platycerium alcinorne*, &c., are very striking. *Pyrethrum Tchihatchewii*, which is used as a groundwork, a very useful plant for forming a dense carpet of green on hot dry sunny banks, under trees, or in damp shady situations; in fact, it is a plant at home almost anywhere, in spite of its name, which is peculiar to Russia. On a border, near the main entrance, were quantities of mixed annuals, very conspicuous amongst them being some of the double yellow *Chrysanthemums* and *Mari-golds* in the same border, which was edged with *Lobelia*; and next to this a line of the variegated *Cocksfoot-grass*, *Dactylis glomerata elegantissima*, also *Gazanias* and *Calceolarias*, which made a most pleasing bed. Great labour and attention are bestowed on the beds in this Park, which altogether are highly satisfactory.

FINSBURY PARK.

This Park during the past few years has undergone many alterations. A long avenue of *Poplars* reaches along the full extent of the Park, and will in a few years make one of the finest avenues our London Parks can boast of. The bedding, though not of so extensive a nature, is very good, and carried out with good effect. The dwarf yellow *Lobelia*, *L. lutea*, is flowering very freely under some *Abutilons* in an oblong bed; in a circular bed was *Veronica incana* as a centre, with *Alternanthera amœna*, *Gibraltar Mint*, and *Echeveria secunda* as an edging. Then comes a bed of *Sunray Fuchsia*, interspersed with *Pansy Cliveden Blue*. Next to this is a circular bed edged with *Echeveria*, with *Mentha*, *Sedum glaucum*, and *Leucophyton Brownii* forming a central design, with *Sempervivum arboreum* dotted here and there. On the lawn, where the principal bedding is done, near to the lake, are noticeable several large beds, six large circular beds of *Cannas* and *Ageratums* in full flower being very effective. Along the front line are alternate oblong and circular beds, and between these are planted good specimens of *Dracœna australis*. A mixed bed of *Centaurea candidissima* and *Verbena venosa*, edged with *Iresine Lindenii*, is looking well. *Coleus Verschaffeltii*, of which there are some good beds, seems better coloured than usual. Here and there on the lawn are nice plants of *Latania borbonica* and *Areca Verschaffeltii*, and in a somewhat secluded spot in the lower part of the Park Mr. Cochrane has had erected a temporary house, 100 feet long and 12 feet 6 inches wide, for the purpose of exhibiting his *Chrysanthemums* when in flower, and of which he has a very creditable lot of plants which promise well at present. This is quite a new feature on this side of London, and I hope will be attended with success; due notice will, however, be given of the show.

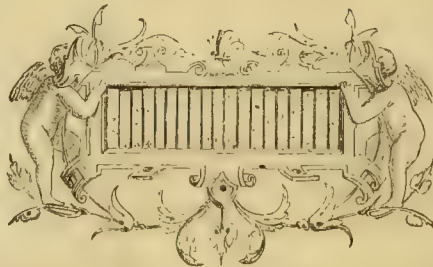
HYDE PARK.

The present period is much too late to see this Park at its best. Some few beds are, however, still worthy of notice—one in particular, which is the largest circular bed in which carpet-bedding is done in any of the London Parks. This bed is 30 feet in diameter, the centre being raised some 3 feet 6 inches above the level of the lawn. It is edged with *Echeveria secunda*, inside which, on a groundwork of *Gibraltar Mint*, are alternately planted *Dracœna Draco* and *Chamaepeuce Casabonæ*; inside this are acutely-pointed ovals, edged with *Echeveria*, *Golden Feather* next, *Gnaphalium lanatum*, *Iresine Lindenii*, and *Mesembryanthemum cordifolium* fol. var. for centre and groundwork. Inside this is a large octagonal design planted with *Gibraltar Mint*, *Pachyphytum bracteatum*, *Alternanthera amœna*, and *Sedum glaucum*, *Chamaepeuce diacantha* occupying the corners. Inside this octagon is another of smaller size, planted with *Alternanthera amœna*, *Mesembryanthemum*, *Gibraltar Mint*, and *Antennaria tomentosa*. Inside this, and arranged in a circular bed and planted in lines, are *Echeveria*, *Mentha*, *Alternanthera amœna*, *Sedum acre variegatum*, the raised centre being planted with *Abutilons*, *Fuchsias*, &c., a tall plant of *Dracœna lineatum* occupying the centre. This is without doubt a most pleasing, attractive, and well-arranged bed; it is placed near to the Albert Gate. On the Park Lane side the beds for the most part are filled with *Pelargoniums*, edged with

Lobelia pumila magnifica and others. Dr. Rawson is a striking *Pelargonium* for a bedder, and in another bed are *Iresine Lindenii* and *Pelargonium Princess Alexandra* in alternate lines. A small horse-shoe design is planted with *Pachyphytum bracteatum*, *Mentha*, *Echeveria secunda*, *Mesembryanthemum*, *Alternanthera amœna*, and *Kleinia repens* in the order given. An oblong bed with three divisions, the two ends to match, is planted with *Echeveria*, *Alternanthera*, *Pyrethrum*, *Veronica incana* and *Kleinia repens*. On the whole it is still quite noticeable, considering the recent hot weather these plants have had to withstand,

REGENT'S PARK.

The bedding in this Park is not extensive, but still some few of the beds are very good, particularly in the sub-tropical part, where are some good beds of *Eucalyptus globulus* and *Castor-oil* plants, *Ricinus Gibsonii*, also a pair of beds to match of *Dracœna congesta*. These are planted to match a similar section of beds on the opposite side, and are all looking well. Some large vases are filled with *Fuchsias*, and flowering profusely, as also are those filled with *Pelargoniums*. A pair of circular beds, one on either side a broad walk, are edged with *Echeveria*, with a ground-work of *Sedum glaucum*, with small circles and scrolls of *Alternanthera*, *Pyrethrum* and *Alternanthera magnifica*, the scrolls running in a transverse direction. Next this are five circular beds, varying in size from 5 feet to 15 feet, planted on a ground-work of *Saxifraga Stansfieldii* with *Sedum glaucum*, and edged with *Mesembryanthemum cordifolium* fol. var. Another is planted with *Gibraltar Mint* for a ground-work, with succulents in variety; in another, edged with *Echeveria*, are *Antennaria tomentosa*, *Thymus citridorus* fol. marginatis, with *Alternanthera* and *Mesembryanthemum*. On the opposite side of this are five long beds transversely cut and planted with *Coleus* and *Iresine Lindenii*, alternately edged with *Pelargonium Princess Alexandra*, *Lobelia*, *Alternanthera amœna*, and *Antennaria tomentosa*. Two beds of *Dracœna congesta*, with *Coleus pictus* under their foliage, make a rather unusual but desirable change. Altogether this Park is looking very well. The avenue of Chestnuts seem to be slightly affected by the drought of the last three weeks, and are already losing their foliage; the trees and shrubs generally are, however, looking fairly well. 7.



Notices of Books.

English Trees and Tree-Planting. By William Ablett. Smith, Elder & Co. (8vo., pp. 434.)
Arboriculture for Amateurs. Same author.
Bazaar Office.

Our first impression of these books was that the author had said at once too much and too little. If intended for amateurs, and those interested in tree lore, there was too much practical detail and not enough literary matter; if intended for practical use, there was a disproportionate amount of mere gossip. As we read on we came to the conclusion that this impression was not altogether well founded, but that it was due to the unworkmanlike way in which the author has put his work together. The *Farnesina Gardens*, at Rome, are in both books adverted to with but scanty justification, the physic garden at Chelsea with no greater warranty, so far as the reader is concerned. In like manner we pass in a jerky manner, in the same chapter, from the "first principles of planting" to Palm Sunday in Italy, the Biblical descriptions of the Cedars of Lebanon, then back to the principles of the fertility of the soil, and a long account of Jethro Tull and William Cobbett. There is no objection to be raised to the introduction of such matter in the proper place, provided it is complete so far as it goes; but it is not so in the present case. The history of the Cedars of Lebanon, for instance, is given in but meagre fashion, and nothing is said of recent discoveries on Lebanon itself, in Cyprus, nor of the relationship between the Atlantic, Lebanon, and Himalaya Cedars. Nor are the practical details more thor-

roughly entered into. Thus, under the head of the transplantation of large trees, we have references to Evelyn and to Sir Henry Stewart; and then, when the reader might fairly expect a concise history of the transplanting machines now in use, their construction and mode of employment, with details as to cost, and the like, he is treated, without so much as the insertion of a head-line, to a paragraph on the extinction and restoration of the capercaillie.

The smaller of the two books—the one mentioned in the second place at the head of this article—seems pretty much a mere condensation from the larger one, and in some respects it is improved in the process; but in the main the same remarks apply to it as to the larger volume. In both the botany is considerably at fault. While the books, as a whole, are somewhat disappointing, it must be admitted that some portions of them are greatly better and fuller than others. The account of the Osiers grown on the banks of the Thames, and of the general mode of managing the Osier beds, as given in *English Trees and Tree-Planting*, is fuller than in any work we remember. As the information is likely to be very serviceable, we propose to reproduce a considerable portion of the chapter devoted to that subject, in a future issue.

Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie.
Herausgegeben von A. Engler. Leipzig: Verlag von Wilhelm Engelmann. Williams & Norgate.

This new serial, devoted to systematic, historical and geographical botany, has made a good start, and under Professor Engler's able and energetic editorship it is likely to have a good future. Its scope has been wisely limited to the branches named; and it is to be published in parts of unequal size, at irregular intervals, but the size will be from four to six sheets octavo, and the intervals three to six months. Six parts will form a volume. Original articles will be published in German, French or English, whichever is most convenient to the writer. The first part contains articles on the history of the Ginkgo, or *Salisburia*-like trees, from their earliest appearance in the carboniferous period up to the present time, by Oswald Heer; a glance at the evolution of botanical literature and the difficulties attending descriptions arising from the method of the nomenclature of the organs, by Alphonse de Candolle; on some recently acquired data concerning the flora of Greenland, by Eugène Warming; contributions to the phytography of the Malayan Archipelago, by O. Beccari; diagnoses of some new *Burseraceæ* and *Anacardiaceæ*, by the Editor; and a review of the more important and comprehensive publications of 1879 relating to systematic, historical, and geographical botany, by the Editor. The second part is entirely taken up with original articles relating to *Rubus* (Focke), *Juncaceæ* (Buchenau), *Lythraceæ* (Koehne), and *Araceæ* (Engler). We wish Editor and publisher good luck in their undertaking.

Foreign Correspondence.

NATAL AND ZULULAND.—Now that our war is over and Zululand settled in some fashion, I may be allowed to relate a little of what I saw in the above country and this colony whilst on service in the late campaign. Having joined a corps raised in Port Elizabeth we left that place in a coasting steamer, and arrived at Durban in the beginning of February, 1879. The coast on the way up varied a good deal—huge sand hills, or grassy slopes with clumps of bush and forest, and after passing the Umzimvulu, a sugar mill here and there with fields of green cane. On landing, the vegetation at once told us we were in a warm moist climate. Growing on the flat of white sand which Durban stands on were dense thickets of the *Castor-oil* plant; a Composite 10 to 20 feet high, with large Oak-like leaves, and scented white flowers; a huge *Ficus*, with great spread of limb and strangely twisted trunks; a *Hibiscus* with yellow flowers, planted as a shade tree; and thickets of the native *Palm* and *Natal Plum*, *Carissa* sp. Behind the town rises the Berea, a long ridge of red sand 200 feet high, and covered with dense forest. *Mimosæ* abound, and a very handsome leguminous tree 50 to 80 feet, with red and black seeds. *Gardenia globosa* and an *Oncoba* are beautiful when in flower—sheets of white bloom. A fragrant white *Jasmine* is common, and so are two handsome

species of *Haemanthus*, by the road sides. The Botanic Garden is a large enclosure, much of the original forest still retained. I found here some fine exotic Palms, large Mangos, and many trees of tropical Asia and America, all thriving and seeming at home. But trees alone do not satisfy, and beyond some Bougainvilleas, a mass of purple bloom, flowers were absent, nor could I find any stove or conservatory worthy the name. We drew stores, and started for Pieter Maritzburg.

Natal has been often praised and over-praised, but a man must indeed be a cynic who, on leaving Durban, does not admire the lovely view spread before him. Undulating grassy hills descending into wooded valleys, each with its stream clear and refreshing, the gardens filled with huge Bananas, Orange groves, and dense rows of Pine-apples; above an African sky, and in the far horizon the sea fills up the view. Such a locality might seem to promise well to a man who turns the ground for his bread, but in reality there are many drawbacks. Passing Pine Town I admired a handsome purple-flowered *Melastomad*, *Osbeckia* sp.? Close to a stream I found *Cyathea Dregei* growing in the open, also a *Lomaria* with a short stem; an *Hypoxis* was common, and with its large sheathing leaves looked like a terrestrial Orchid. I was struck with the huge clumps of Bamboo planted by the roadside, their feathery waving mass showing in strong relief against the sky. We passed farms each with its plantation of Blue Gums, *Acacia Melanoxylon* and *dealbata*, *Grevillea* sp., *Cupressus*, *Melia Azedarachta*, Oaks and *Loquats*. Crops mainly consist of Maize, Barley, Oats, and Potatoes. The soil in general is a good brown or black loam, with subsoil of clay, gravel, or boulders. As we ascended from hill to hill, trees became rarer, boundless grassy plains spread all round. Pieter Maritzburg at last hove in sight, shrouded with trees in the valley of the Umsumdusi; here we halted for a few days, and I tried to see a little of the place. No town that I know of in South Africa has a better water supply, or town land so well suited for the plough. Produce of all kinds, particularly vegetables and fruit, find a ready sale at fair prices. As the town is over 2000 feet above the sea, some frost is felt, but ice is rare. Pine-apples, Bananas, Oranges, and Guavas, with care bear abundantly. On many farms and estates round the city tree planting has been going on at a fair rate of late years, though land-owners would do well to study variety a little more. The Botanic Gardens have not been in existence more than four or five years, but promise well. I noticed some fine young specimens of *Casuarina* sp., and a collection of *Coniferae* in good condition. The park is a spacious grassy hill, with walks and drives, thickly planted with little else than Oaks and Blue Gums.

We left Maritzburg, passing Howick and the magnificent falls of the Umgini, Estcourt, Ladismith, and Newcastle, small towns all. The uplands of Natal are destitute of tree or bush—dry cowdung served us for fuel. On the cliffs of the Bushman's River, Estcourt, I found *Greyia Sutherlandi*, and at Ladismith an Aloe. No Heath, *Mesembryanthemum*, or similar plants, which are so abundant in the drier Cape Colony. We crossed the Buffalo, and passing boundless grassy plains came to Utrecht, a small Transvaal town—on again and over the Blood River, arrived at Kambula Camp, March 23. This hill, whose name your readers may possibly remember, is a long, narrow terrace. Here the action took place, and here our men rest quietly in their graves till, when the tale has grown old, the ploughshare may reveal somewhat. Down below the slope are some of the finest *Cyathea Dregei* I have ever seen. About 4 miles north of the camp is a flat-topped hill, whence we sought fuel, but little was found good for use except *Greyia Sutherlandi*. Large Aloes and a handsome *Aralia*-like plant, *Cussonia* sp., grew here, as well as a *Rubus*, *Clematis*, *Asplenium*, and an epiphytic Orchid, with minute pseudobulbs. I reckoned this hill to be over 5000 feet above sea level. Growing in a swamp near the camp I found a small, pale, purple Orchid, the two lateral sepals spurred, superior hooded, the lip boat-shaped, enclosed, the two petals united and reduced to scales, one pollen-case each side of lip—a strange flower indeed. Being winter flowers were scarce, many Irids and *Helichrysum* were seeding.

April 23.—Our corps left camp for Balter's Spruit, Transvaal, to recruit our horses. Here I found an ideal Dutch farm of 6000 acres—ideal, I say, not because it was what a farm should be, but I took

it as an average Dutch farm. On nearing it we were pleased to see trees again, the rich drooping curves of the Weeping Willow, and the erect Blue Gum, with the spreading *Melia*; a house, too, with walls and roof, no less welcome contrast to our canvas town. Water is let out from a never-failing "spruit"—mountain stream—to irrigate the 4-acre garden plot enclosed with bank and a row of Fig trees. This enclosure contained a number of Peaches, Apricots, and Apples; the ground was red with an *Amaranthus*; the rest of the farm in a state of Nature. Here the good Boer lived on his cattle and sheep, now and then going to Utrecht to exchange his scanty produce for sugar, coffee, and a few other necessities a Dutch farmer requires. Here we had plenty of firewood—*Acacia* or *Mimosa*—I believe brought from Doornberg by waggon in quantity.

May 14.—We rejoined the flying column, and after several long patrols, feeling for the enemy, marched on Uhundi. The scarcity of wood became a serious matter; day after day not a tree or bush to be seen. We passed much "Imphe"—Kaffir Corn or Millet—still standing. The crop of Mealies was mostly gathered. On the banks of the Iteyosi River, near where Prince Napoleon fell, were growing several *Ricinus*—the Castor-oil plant seemingly—not truly wild I presume. In a quartz reef close by I heard traces of gold were seen. The sameness of the landscape wearied all—grassy plains, rocky hill-sides, and rivers of sand. Once by a river bank I lighted on a Thistle much like the common "Milk" Thistle. By what chance was it growing here? At length, near the end of June, we seemed to quit this high, desolate tableland, and enter on better parts. The first sign was a large green-leaved *Dracena* growing with other shrubs, and we halted near a deep, rocky valley, bearing a beautiful stream of water, rich with forest and many fine Ferns. Despite the stringent orders to remain in camp, and the extreme danger of going beyond our sentries, I explored a little. A large Aloe, *A. dichotoma*, some 40 feet high, with its flat head a mass of red bloom, was very conspicuous, with many other shrubs and trees all strange to me. Our men having destroyed the kraal of the Zulu king we were glad to turn homeward, for we felt the cold very much on this high plateau. The second week in July we reached Kamawasa Mission station. Here was a grove of singularly large trees growing in twos and threes, 50 to 80 feet high, leaves seven-pinnate, seed-pods three to five-seeded. On the stems of these trees I found a handsome parasite growing—leaves like a *Fuchsia*, the flowers tubular, pendulous, of a bright red colour, not unlike *Fuchsia corymbiflora*. In no other place did I observe the above tree and its companion parasite. In the fields round about grew the Castor-oil plant and Cape Gooseberry—introduced no doubt. The Zulus had destroyed the chapel and house but spared the garden, which still showed traces of refined taste and memories of home. A Silver-tree—*Leucadendron argenteum*—stood like a silver fountain, with dark green *Cypresses* as a background. A wild Rose hedge, a huge plant of *Passiflora edulis*, with some Lemon and Peach trees, helped to make a home in this savage wilderness. The country here was very rugged, everywhere torn into deep gullies. Notwithstanding the elevation I found little rock; the soil seemed a very deep brown or red loam. After a short halt we left, following a very narrow and serpentine path; fortunately the weather was dry, or we should have been in a sad plight. I met with a handsome pink and white flowered Composite 5 to 7 feet high, and also *Strelitzias* for the first time. We reached St. Paul's Mission Station the middle of July—a ruined building standing in a dense grove of Bananas. In a kloof near grew a fine *Labiata*, pale purple flowers drooping gracefully over the water. After a three days' halt we finally left for Durban, crossing the swift-flowing black Umfelozi, with its dense woods and open grassy glades, beautiful to see. Indeed the coast lands of Zululand have received everything from Nature. In the long grass I found *Stangeria paradoxa*. We crossed many small rivers, keeping the sea in sight on our left. I could not but note one river in which the leaves of a blue-flowered *Nymphæa* were strewn with the scarlet flowers of an *Erythrina* which grew on its banks. Much escaped me, however, laid up as I was with the prevailing ailment—dysentery. At last we reached the Tugela, which here was about 400 yards broad. Once across it we could feel safe at night, for the first time for six months. Now the enclosed fields and houses told us

we had reached a civilised land. Great fields of Sugar-cane spread on both sides of the road, or a field of Coffee overrun with weeds. I saw a little Tobacco and Arrowroot. One would like to say how agreeable it was to pass tilled ground, since it is evidence that some men are awake to the fact that the earth is our heritage. But our men, freed from martial law, gave themselves up, with few exceptions, to that double curse of Natal, strong drink. We slowly kept on our way, camping by the roadside, enjoying now and then a swim and good wash, and admiring the country. Clumps of *Strelitzia* and the native Palm, *Phoenix* sp., were seen everywhere. Passing the little village of Stanger we came to Verulam, a rising town, surrounded on all sides with Cane plantations, and a few more miles brought us to Saccharine and the railway. Close to the station stands the central sugar-mill, by far the largest and finest in the colony. We were soon in the train, and rushing by more Cane fields, Orange groves, Maize fields, and thick woods, soon arrived at Durban, and so ended our six months' campaign. Hereafter I may have something more to say on Natal, its climate, produce, and the prospects it offers to emigrants. *R. W. A., Pieter Maritzburg, Natal.* [We shall be glad to hear more from our correspondent. EDS.]

STOPPING THE LATERALS OF VINES.

IN the interesting discussion carried on in your columns lately regarding the stopping of laterals on Vines, the correspondents who have asserted their opinions thereon seem to have omitted to make allowance in most cases for the sometimes peculiarly diverse conditions in which many of them are cultivated, and the discussion loses much of its value in consequence. The previous premises must all be the same, before any infallible mode of producing fruit of good quality, or any particular rule of culture, can be laid down. What is essential to be done in one place under its particular conditions would be most conducive to bad health and misapplied energy in another, and *vice versa*. That the Vine is a plant which is grateful to all who use her kindly, and sometimes unkindly, is well known; else how could we account for very dissimilar modes or methods of culture producing results vieing with each other in every respect. That certain laws of cultivation cannot be transgressed without bad results is evident in every situation, soil, aspect, and condition, but the many hobbies of numerous cultivators can certainly be dispensed with as of no particular consequence.

The stopping or non-stopping of laterals being the point at issue, I think in taking an ordinary view of the case it may be easily solved in few words. The value of the spur or extension system of cultivation depends largely or solely upon the particular quality of soil and treatment. That fruit of good quality can be produced by mechanical manipulation alone is a farce. It is the clever worker alone who can by his adaptation of the means at his command surround his plants with the conditions essential to their well-being, the stopping or non-stopping of laterals being of little consequence. He knows well enough the condition of his Vines, what they are able to do and what they are not, and how he has to work to assist them. By allowing laterals to run rampant over the strong, large, and healthy leaves of the first formed shoot he knows well enough that he is clogging the machinery, stopping the action of leaves, which being the first of the season, are, therefore, the strongest and best root-formers, and he knows that if he has a spare rafter or a thin place that it will pay him to grow a lateral there, where it has room for all its duties as an assimilator and root-former, as well as for storing away *that* (I should like to know what *that* is) which is essential to the production of fruit.

The largest leaves, the largest stems or growth are productive of the best fruit when properly managed: there's the rub, for it is well known that these same large leaves are equally bad if improperly managed; hence the popular taste for those of more moderate growth, which, with less trouble and more easy management, produce a satisfactory return. The leaf is of course the strength of the Vine, and upon its being maintained in a state of health depends all the fruit-producing powers of the plant. Its peculiar conformation, varying with every variety, may also be given it, as being peculiarly essential to the production of the exact or particular fruit of its kind, both in flavour, size, and colour, and no other; its cells being so adapted and arranged in order to accomplish this. *J. Hart, King's House, Kingston, Jamaica.*

FRUIT TREES IN SMALL GARDENS.

My purpose in writing this paper is to encourage amateurs on the smallest scale to engage in the cultivation of fruit trees, even those whose gardens are only large enough to hold half-a-dozen trees. That was the number I started with some twenty years ago, when I made my first essay at fruit growing; and as I had to start at the very beginning, the details of my experience may not be without its use to those who, like myself then, have little or no knowledge on the subject. At the time I refer to I had personally managed my very small garden for two or three years, in the leisure hours of a busy life. I had read a little gardening literature, and had commenced to read a gardening paper; from which it may be inferred that my horticultural instincts were aroused. I was, however, as deplorably ignorant of most things pertaining to the subject as town-bred people usually are. But the gardening paper soon set me on the right road, and I before long began to find that my knowledge was growing wider, if not deeper. Since that time my acquaintance with the gardening papers has greatly increased, and I can candidly confess that I have spent many happy hours in their company. Among other things read by me at that time was a review of Rivers' *Miniature Fruit Garden*, which led me to buy the book. I rapidly devoured its contents, and was so enthralled by what I read that I at once determined to buy a few fruit trees and see what I could do with them. I then lived nearer to a large town than I do now, but it was not so smoky as it has since become, nor so large; and so perhaps my garden was as favourably situated as my present one, which then was a field right out in the country.

My selection of trees, as my readers will see, was not a bad one for a beginner. I had of Pears: Williams' Bon Chrétien, Bergamot Espere, and Louise Bonne of Jersey; of Apples: Cellini, Manx Codlin, and Lemon Pippin. I chose pyramids, but was rather unfortunate in getting somewhat ill-shaped trees to begin with from a little local nursery: I say unfortunate because the trees were badly shaped when they came into my hands, and all my subsequent efforts to improve their forms have been less successful than they would have been if I had luckily had a fairer start. Of course that was a decided disadvantage to a young beginner, and I record my experience to warn other young beginners to be more careful. And now-a-days well-formed young trees are to be had for the seeking in every well-conducted nursery.

I took care to have my ground well prepared before the trees came to hand. My soil was a medium light one of good quality, 15 inches or so deep, lying over a subsoil in which there was some clay; but water passed through it fairly well, and I had nothing to complain of as to drainage. I double dug the ground, which being in good heart rendered the admixture of manure quite unnecessary. I then dug out the holes for the trees, 10 inches deep, and 1½ yard wide every way, and left them exposed to the weather for a month or more. On the day the trees came to hand, early in November, I lightly forked over the bottom of the holes and found the soil in capital working order. I carefully examined the roots of the trees, and cut away the bruised ends in an oblique direction from the under surface to the upper. Some of the roots were furnished with a few fibres: those I carefully preserved; others were bare and thong-like. At the suggestion of an experienced friend I carefully took off with a sharp knife a thin slice of bark from one side of each of these roots for nearly its entire length. My object in doing this was to encourage the formation of fibres, which my friend told me would grow at intervals along the cleanly cut edges of the bark. In planting the trees I was careful to spread the roots out so that no two crossed, and gave the ends an upward rather than a downward direction. I then carefully covered them with soil, taking care no crevices were left. The soil I used for filling the holes was some from a heap of old turf which I had kept in my garden two years or more. It was full of fibrous matter and was a good loam in texture. The crowns of the trees were slightly above the ground level, and when the planting was finished each tree had the appearance of being planted on a slight mound, falling away to the garden level 2 feet from the boles. I next covered the mounds

with littery dung to the thickness of 3 or 4 inches. I let the trees remain for two or three days to allow of settling, should there be any, and then took steps to prevent their being moved by the wind. The plan I used was to drive into the ground round each tree three short sturdy stakes, each 3 feet from the bole, with the tops inclining away from the tree. Four feet from the ground I wrapped a narrow piece of old carpet around each tree-stem. I then tied one end of a piece of tarred string to one of the stakes, and, pulling it taut, tied the other end round the strip of carpet on the stem. The same was done to each of the stakes, and the tree was thus secured against the roughest gale.

It is needless to say that I longed for the coming of spring, and watched hopefully for the first signs of growth. The season was a delightful one, and no late frost of any severity chanced to visit us that year. The trees commenced to grow, and here and there on the Apple trees a bunch of bloom began to develop. On the Pear trees there was no bloom. I waited and watched, and determined to follow the guidance of Mr. Thos. Rivers as to leaf-pruning. The time soon arrived when I was to put his teaching in practice. I set about it rather doubting whether I fully understood what I had to do; but after carefully reading again the plainly-given instructions of my tutor, and examining one of my trees, I commenced operations. Starting with one of the main branches, I pinched the extremity of each side-shoot, leaving the three or four leaves nearest the branch untouched. The terminal shoot of the branch I left growing. I was not long in finishing my first tree, and then proceeded with the others. Genial rains fell from time to time, and my trees grew finely. Then one morning I became aware of my first trouble; I found most of the bunches of bloom had the appearance of being glued together. I carefully examined one, and soon discovered the cause—"a worm 'i' the bud." I hand-picked the intruders, but with the utmost care I was unfortunate enough to knock off some of the flowers. Still, I do not think I did any harm, and I gladly noticed that the flowers left on the trees opened one after another, and I thought nothing could be prettier, especially the blooms on the Lemon Pippin. In due time I had the happiness of finding a few fruits set on each of my Apple trees. Meanwhile, as I saw fresh side shoots developing, I pinched the ends of them off as I had done before to the others. Occasionally I removed a side-shoot altogether when I saw that crowding would follow if it remained; still, the ends of the branches and the leader-shoot were left untouched. This continued until about the second week in August, when I pinched these off too. Subsequently the terminal bud in some of them started into growth, and had to be stopped. As the weather was then very dry, I gave each tree three large watering-cans full of rain-water from a large cistern where I had a good supply stored. I repeated the dose of water at weekly intervals—three times. Then a spell of rainy weather set in, and watering was needed no more. My yield of Apples that year was of course only a small one, but I have never gathered large crops with half the pleasure I experienced that year. Every Apple was carefully picked and made the most of. The Cellinis—there were only half a dozen—were very pretty and highly coloured; but I think my favourites were the golden-hued Lemon Pippins with their curiously imitative look of the fruits after which they are named. When autumn was on the wane I took stock of my trees, and found but little to do in the way of pruning. I found some of the branches longer than others in the same tier; these I cut back to make them correspond to their neighbours, taking care to cut to a bud on the outside, so that the next growth would be in the right direction—namely, to extend the branch outward. A few of the side-shoots which had grown after pinching I cut back to two or three buds from the branch, and the leader I shortened by about one half. I next gently loosened the soil at the surface with a fork, and then gave a similar surface dressing of manure to that given when the trees were planted. I looked over the stakes and ties and found it necessary to replace only one. This done, my first year's experience in fruit growing came to an end, and I had the satisfaction of feeling that I had not been unsuccessful, and that my trees seemed healthy and promising for the coming year. I must leave the history of that to a future paper. *Philanthos.*

PROTECTION OF PLANTS USEFUL TO MAN.

(Concluded from p. 268.)

IN a new country, in competition with a hitherto undisturbed flora, with plants that have for ages settled the balance of power among themselves, the emigrant plants, like the emigrant people, have it all their own way, especially at first; but just as in time a remnant of a native race of men recovers itself, fits itself to the new conditions, and again becomes prominent—as the Indian has in Mexico, Chili and Peru—so is it with some among the invaded plants.

It is noticeable that in California most of the native plants that hold their own, or increase and become pests to man, are of the Composite order. The Compositæ are the most specialised of plants, and, so far from being created for man's use, are evidently adapted to live in spite of him. Few of them are of any use to him; few furnish food to his domesticated animals. Thus they remain uneaten, and scatter broadcast seeds which—each enclosed in a separate seed vessel and separately stuck upon a receptacle—are sure of a considerably wide dispersion, and which, moreover, are in many cases provided with a downy crown or pappus, by the aid of which they are borne by the breeze afar from the parent plant.

But man's efforts towards the destruction, or at least diminution in numbers of hurtful plants, must not be limited to his fields. If the world is to be really turned to his use he must commence at once to clear away undergrowth from his timber trees, and to judiciously thin out the crowded trees in his plantations. There are many feral species which, though they do not injure his crops, injure useful trees, and against the too great prevalence of these man will ultimately have to take preventive measures.

Hitherto only flowering plants have been spoken of as enemies to other plants, but there is a tribe of vegetable organisms whose ravages are more secret and more difficult to deal with, viz., the fungi. The higher fungi might be made to furnish much additional good food to man, but the lower are his deadly enemies. Under such names as smut, bunt, rust, ergot, they attack our cereals; as black moulds they destroy foliage; as blue moulds they feed on bread, cheese, preserves, fruits, &c. Nothing is safe from them. The air swarms with their spores, waiting only for a suitable combination of temperature, moisture, and habitat to burst into fungoid life. The spores of a single fungus may run into the billions. If they were all to fructify, the world would at once be covered with fungi, and all things else would die. But fungi can only live in a suitable nidus, and each species attacks some particular plant or animal, or a certain series of plants or animals, and lives on no other. A very large proportion of the spores remain unfertilised, for the arrangements for fertilisation are uncertain. Besides this a peculiar blending of heat and moisture is required for the development of fungoid spores, even when the pabulum they require is plentiful.

Thanks to these limitations, fungi have not yet destroyed the higher organisms; or rather, Nature has provided the fungi with an almost incalculable fecundity, that they may continue to exist under such conditions.

At present man can do but little against these subtle enemies. A field of Wheat may be ruined in one night with rust; in a few hours the labour of months may go. The Potato-rot is a fungus, so is the Grape-mildew, and so are all these mildews and blights which still are deemed by many mysterious dispensations of Providence.

Stamping out by the thorough destruction of the plants they have attacked is the surest cure known; it is costly, but less so than the unchecked spread of the fungus. Various chemical substances have also been tried with variable success; but, as said before, man has yet much to learn before he can greatly keep down the numbers of the microscopic germs of such fungi as feed on living plants.

Fourth.—The present geological period is often styled "the age of man," and the tertiary period "the age of mammals"—to distinguish them from the preceding periods in the strata of which reptiles and fishes are the predominating forms.

But though the mammalia as a class dominate over all the other vertebrata, both on the land and in the ocean, and though man to a considerable extent dominates over the other mammals, it cannot yet be said that either man or any of the lower vertebrata

have acquired full dominion over certain forms of the invertebrata.

Parasitic forms of the most varied structure dwell within, or live at the expense of, the higher animals. Tape-worms, round-worms, thread-worms, flukes, torture the lives of beast and bird, reptile and fish; nor do they spare the invertebrata. Crustacea, of low degree, inhabit all accessible outside and inside parts of marine animals, and on the land insects are even more aggressive in their attempts on plants and animals. Indeed, so abundant, so omnipresent, is insect life on the land and in the air, so countless are insect forms, and so wonderful the metamorphoses which they pass through, and the adaptations by which they gain access to their victims, that the

which he is powerless to kill. The scale-insects (Coccidæ) and "smother flies," or aphides, cover the stems, leaves and flowers, alike of his Roses and of his Cauliflowers, his greenhouse darlings and his kitchen herbs.

In his endeavours to destroy these pests he is often worsted; at other times conquers only by the sacrifice of his crops or trees, lest the plague should spread. Tiny Acarids, as the Phylloxera, attack his Vines, and the vintage is lost. Before these enemies he has too often stood helpless—helpless through ignorance.

The agriculturist, a practical man, laughs at "bug sharps," and neither investigates the life history of these pests, nor, to any great extent, practises the remedies found for him by the despised entomologists,

for the destruction of the Rocky Mountain locust by Messrs. Riley, Packard, and Thomas in their report for the year 1877.

These methods may be divided into (1) encouragement of natural agencies, (2) destruction of the eggs, (3) destruction of young or unfledged insects, (4) destruction of the mature or winged insects, (5) preventive measures.

The first is ensured by, as far as is possible, assisting the multiplication of the various insect enemies of the locust, such as the Anthomyia fly, which lays its eggs within the locust eggs; the flesh-fly, which does the same; various ground beetles, blister-beetles, and soldier-beetles, which usually, while in the larva stage, eat the locust eggs; the locust mite (Trom-

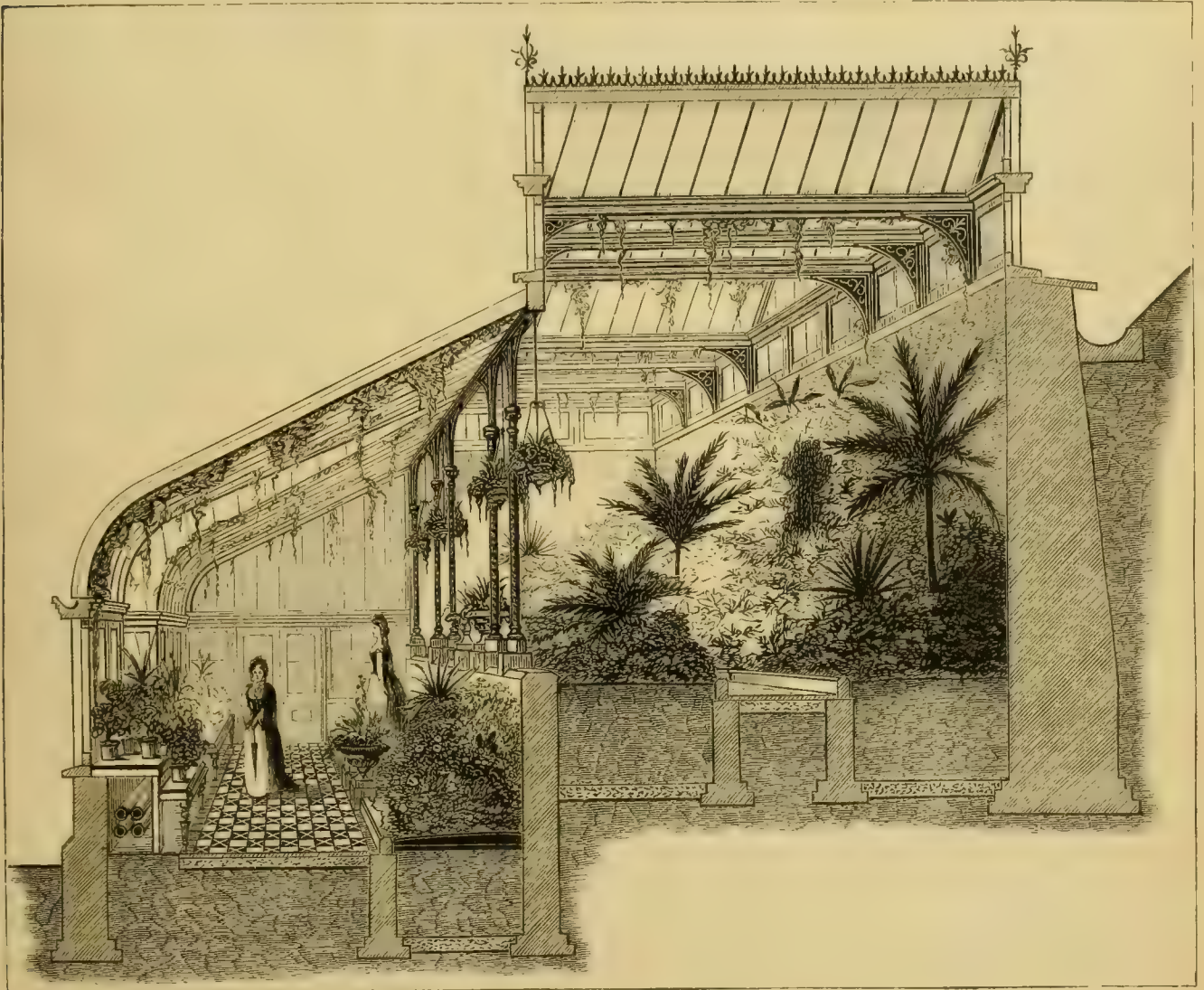


FIG. 60.—SECTION OF CONSERVATORY AT DOLDOWLOD. (SEE P. 328.)

present period may fairly be called the age of insects. Even man is not exempt from the attacks of many, while his lordly frame furnishes food to others. These direct enemies are sufficiently annoying, but they are as nothing to the indirect ones which attack the plants he uses for food.

Beetle and moth-larvæ in growing trees, eating them into dust and riddling them with tortuous galleries; "grubs," chiefly of beetles, but often of other orders, in fruits and nuts and seeds; gall insects on leaves and twigs—all these pursue slowly, unobtrusively, relentlessly their work of destruction, hidden from the sight of man until the evil is done. The foliage of man's cherished garden trees, of his fruit trees and choice exotics, and worse still, of the crops upon which he depends for sustenance, is destroyed before his eyes by a countless host of caterpillars

But so great have been insect ravages, so widespread the misery wrought by them, that, in a few instances, Governments have employed investigators to search for a cure. The Phylloxera in France, the grasshopper in the United States, forced recognition of their importance as checks upon human life, and commissions were appointed, which have already done great service.

By a study of the life history of each hurtful species it is usually found that there are other species which feed upon it, and which should, therefore, be encouraged. Also, that at some period in their lives they can be more readily destroyed than at others; or that different methods of destruction are most efficient at different periods of their lives.

Some idea of the methods to be pursued may be obtained by the enumeration of those recommended

bidium locustarum), which destroys both eggs and adults, fastening itself under the wings of the latter and sucking them dry; various Carabidæ and Cicindelidæ among beetles, and Asilus and Tachina among flies, all of which prey upon the adult locust, and also by fostering such birds as prey upon them. Blackbirds, robins, prairie-chicken, quails, larks, poultry, turkeys and crows all aid in the work of destruction, and should be fostered by man for the purpose in infested districts.

Harrowing in the autumn, ploughing under and irrigation are mentioned as methods of destroying the eggs. The larvæ can be killed by burning the grass, by machines carrying an open grate with a fire of pitch-pine, covered by a metal-sheet to force the heat downward; by locust-crushers of various descriptions; by trapping in nets, pits with winged fences, digging

and trenching; by coal-oil and coal-tar, which act as poison, the former being the more useful; and by catching and bagging in machines of various kinds.

In Missouri and Minnesota bounties are paid for the destruction of grasshopper eggs and young. In Kansas and Nebraska a certain amount of forced labour is enjoined. The breeding-grounds are known, and on them the fight can be most advantageously carried on, but something can be done even against the winged swarms by the simultaneous combustion of large quantities of straw and other matters, producing clouds of smoke.

When the whole course of life of the destroyers of Apple and Plum, and Pea and Bean, of Wheat, Cotton, Maize, and every other product man considers his own, is known to those who cultivate the soil, there is no question that their ravages can be greatly reduced.

In the destruction of insects birds play the most important part, but some, unfortunately, are themselves vegetable-feeders, while others subsist on a mixed diet. Man has too often, indiscriminately, slaughtered his avian friends in mistake for enemies. The truth is that the great majority of birds do man far more good by their destruction of insect life than mischief by devouring his crops, although there are occasions when the latter need protection from them.

The English sparrow—a finch, and, therefore, principally a seed-eater—was an unfortunate introduction to the United States.

When it is remembered that the chinch-bug in one year caused a money loss of 73,000,000 dols. in Illinois; that the annual loss from the cotton-worm is from 25,000,000 dols. to 50,000,000 dols.; and that in 1874 the Rocky Mountain locust caused a loss of nearly 50,000,000 dols., it becomes evident that the suppression of these insects is equivalent to a great expansion of production, and, therefore, of human life.

Among the domesticated animals are some which, brought from the desert, and accustomed to live upon the few dry herbs of an arid region, have made a desert of the lands where they have been introduced. Such are the camel and the goat—browsers by nature—killing young trees in preference to eating grass, and thus doing incalculable mischief.

The sheep, except in localities covered with chaparral, is far preferable to the goat; and it is devoutly to be hoped that the range of the camel will never be extended, and that its threatened introduction in California will not take place. *W. N. Lockington, in the San Francisco "Science Record."*

MIGRATION AND LOCATION.

MOST creatures display a natural aptitude for pursuit, and among the several objects of the chase to which men addict themselves, that of hunting after plants is one of the most innocent and delightful. There are certain parts of England which are particularly remarkable for characteristic plants which are rooted in their respective localities by virtue of their special fitness for the site and soil, or by reason of the obstacles to their migration.

A struggling onwards, a tendency to travel from their stations, or in other words to multiply and replenish the earth, is no doubt the law of life which has occasioned the migrations both of plants and animals. And on the other hand, the changes in the earth's surface have sometimes isolated or trapped certain families or individuals and interposed insuperable obstacles to their further wandering. The normal condition both of animals and plants is seen in their tendency to travel. But their powers in this respect differ. It has been said that rats and mice possess powers of adaptation superior to those of any other created beings, and therefore they wander furthest, and submit to habitats ranging from the tropics to the Arctic circle. The common house-sparrow is another typical traveller, and among plants the Shepherd's Purse.

Old as the world is in its present shape, the wanderings of some tribes of plants and animals have occurred at a very recent period. Wheat, Rice, and the Sugar-cane, were confined to the Old World, and Maize, Tobacco, and Cinchona to the New, till after the time of Columbus, and the history of these common plants may remind us of the numberless assisted travels by means of which, from the period of the Greeks and Romans to the present day, so many

useful and ornamental vegetables have been distributed; but some of the unassisted travels have been recent. The common rat, for example, only crossed the Volga from Asia into Europe in the last century. The history of the primeval and unassisted travels of plants is, of course, entirely hypothetical, and it is therefore the more interesting to follow their movements, and to endeavour to unravel the method by which they have, by the hand of Providence, been distributed, and how it is that some of them are still movable while others have become fixed to their stations.

As the glaciers of the "Ice Age" cleared, the plants migrated northwards as far as their power of submitting to a lower temperature than that of their home stations permitted, cold being one of the conditions which has always dominated their migrations. A subsidiary condition, that of soil, must not be overlooked. The Mountain Avena, for example, is one of the plants which loves the limestone. Its woody stem and evergreen leaves may be seen on most of the limestone hills. It grows on the limestone cliff called Black Head in the West of Ireland, and ascends the limestone hills in Wales and Scotland to a height of 2700 feet, and tops the hills of the same formation in the West Riding of Yorkshire. Some plants enjoy almost complete immunity from the assaults of the ruminants which frequent the hills on which they flourish, and it is that which leaves them where they are. The Mountain Avena (*Dryas octopetala*), the *Azulea procumbens*, and the *Empetrum* are all avoided both by sheep and chamois, and they carpet some parts of the Alps accordingly. Their leaves are rarely cropped, and the plants are never quite destroyed.

Among the cold-loving plants the genus *Saxifrage* deservedly stand high. Seven of the *Saxifrages* are alpine, or sub-alpine, never found except on high lands. *Saxifraga stellaris* bears its white blossoms by cool mountain springs and rills, where it might be mistaken for the London Pride of the cottage garden (*S. umbrosa*), a plant known among the mountains of the south-west of Ireland by the name of St. Patrick's Cabbage, and indigenous there as on the hills about Settle, in Yorkshire.

These rules of life have enabled plants to travel widely over suitable regions and soils, but their flexibility of habit has sometimes failed them through disuse. Some of the rarer *Saxifrages* cannot now wander from their mountain tops. The purple *Saxifrage* cannot now quit its stations among the crags of Snowdon and the highest cliffs of the Scotch Highlands at an altitude of 4000 feet. Ben Lawers, too, has its own peculiar *Saxifrage*, in seeking for which one should be accompanied by that very pleasant companion, *Mountain and Moor*, by Mr. J. E. Taylor, one of the *Natural History Rambles* series, published by the Society for Promoting Christian Knowledge. Ben Nevis and Ben Avon enjoy a *Saxifrage* between them at 3000 or 4000 feet above the sea level, at about the height where, in most of the big Bens, the belt of grouse ends and that of ptarmigan commences.

The Moss Campion, sometimes called the Snowdon Pink, is a lowly but lovely alpine, only 4 inches high, which carpets Ben Ledi and some other Scotch mountains in those spots where the elevation and the moisture are sufficient. The alpine *Lychnis* is found in similar situations in Cumberland and the Lake District, as also is *Cerastium alpinum*. Every district has its plant. The rare *Arenaria rubella* is found on the rocky summits of Ben Hope and on the Breadalbane Mountains at a certain height, which must not be less than 2500 feet. *Arenaria norvegica* must be sought for on the high seatholds of Orkney and Shetland. The mountain Meadow Rose is only found in wet places at high altitudes, and near it, perhaps in Scotland among the mountain tarns, may be found one of the rarest and most prized plants of the British flora, the little yellow Water Lily, *Nuphar pumila*. The Water Awlwort is another aquatic plant peculiar to waters of considerable elevation. Among other plants which grow high are Willow Herbs, the mountain Sorrel, and the alpine Ladies' Mantle, and a long list of others—Forget-me-Nots, Gentians and Speedwells, Milk Vetches, Spiderworts, and the Asphodels of Scotland and of Lancashire, not to mention the 2-inch Bog Orchis.

The berries of the mountains will also well reward the botanist's search, and bring him the reward of difficulties overcome. The Bog Whortleberry, Cowberry, Cranberry, and Berberry, have all inspired

botanical ardour, like the Cloudberry and the Crowberry.

Few books offer greater incitements to follow up the subject of locality and migration in reference to plants, and to expand these topics into an inquiry which embraces prehistoric research, than Mr. Taylor's *Mountain and Moor*. E.

WEST INDIAN FRUITS.

THE MUSAS.—There are many species of this genus cultivated in Jamaica, and the cultivation is largely on the increase consequent upon the large demand made by shippers to the United States. The species most valued for export is *Musa sapientum*, also called here the "Martinique Banana." It is a large and finely flavoured fruit, and bunches weighing 100 lb. each are not at all uncommon. Some little confusion arises in the nomenclature of Musas on account of the names they are known by in the East Indies being exactly the reverse of what they are known by here. *M. paradisiaca*, here known as "Plantain," is there called Banana, and *M. sapientum*, the Banana of Jamaica, is known to them as "Plantain." Many varieties of *Musa sapientum* are to be found in the island, notably a small kind called locally "Coolie Banana" which is very pretty and of finer flavour than the type. Another, which I also take to be a variety of *sapientum*, bears fruit of a fine dark purple colour, but has no distinguishing mark of flavour or shape to further separate it.

Musa chinensis or *Cavendishii* is cultivated, but not to any great extent, possibly on account of the slowness with which it furnishes suckers in comparison to other varieties. It has a fruit possessing a fine and very delicate flavour when in good order. *Musa paradisiaca*, or Plantain, furnishes but little fruit for export, as it is chiefly cultivated for home use, being classed with Yams, and Coco (*Colocasia esculenta*) as bread kind, and though consumed principally by the labouring classes is also found on the tables of the well-to-do. It is brought to market in two stages, ripe and green: when green it is boiled or roasted, and eaten as a vegetable; when ripe it is also cooked in the same manner, and then forms a very substantial and agreeably sweet breakfast dish. A variety or possibly species, bearing the same relation to *M. paradisiaca* as *M. chinensis* does to *sapientum*, is also rarely cultivated, *paradisiaca* being the taller, and the variety the dwaffer of the two.

The Musas are cultivated generally through all districts in Jamaica, but their favourite home is found in dells and gullies on a limestone formation, where they are protected from storms, and continue much longer productive than in any other position—the vegetable debris brought down by periodical rains from the adjacent mountains accumulating about their roots, providing them with food suitable to their requirements. The bunches are cut when full, a state in which they are yet quite green in appearance, and being well wrapped in dried leaves, procured from their own stems, are brought down from often scarcely accessible positions on the heads of negro women, boys, and girls to stations, where mule-carts meet them for conveyance to the shipping ports. Many other species of this genus are to be found in Jamaica, but mostly cultivated for ornament, or on trial as fibre producers. A fine plant of *Musa Ensete* is now growing at the Castleton Botanic Garden, situated in the centre of the island. *J. Hart, King's House, Kingston, Jamaica, August, 1880.*

Garden Operations.

KITCHEN GARDEN.

The good effect which such a prolonged period of delightful weather will surely exert on the nature of our winter subjects will be such that it will not be at all unreasonable to anticipate having more ample supplies of those winter products during the ensuing season than we had the preceding year. In order to secure the full influence of heat and air about the stems of these plants, it will be advisable to go over the breadths of such subjects as Broccoli and other winter greens, to remove all decayed and useless leaves and to clear away all weeds that may be found. These should be at once conveyed to the rubbish corner, and a good sprinkling of salt should be strewed over and intermixed with them to kill any insect pests which may exist. Quicklime in proper

proportion should also be added, to hasten decomposition. Refuse of this nature, when it is reduced to earth, becomes one of the best stimulating agents for vegetable culture that can possibly be had, and therefore it should be looked after and utilised properly.

The crop of spring sown Onions will about now be ready to pull up. If the Onions are removed to the borders of the walks or other convenient places, the ground should be prepared forthwith for the general crop of Cabbage for next spring. After it has been forked over, and the lines for the plants marked off, before the drill in which they are to be put is made, it should in light friable soil be trodden down just where the line goes. After all these are drawn, in dry weather it is a good plan to fill the drills with water preparatory to planting, and as far as practicable to plant out at early morning or late in the evening. This plan should be universally applied under such circumstances where subjects such as these are grown only in moderate quantities, for new plantings of Cabbage, Lettuce, Endive, &c., which have not had time to firmly establish themselves in the soil will need much attention in the way of watering. If these be regularly seen to, a slight sprinkling every morning will speedily make them safe. Copious waterings will also be requisite for late rows of Peas, Scarlet Runners, French Beans, and late sown Turnips. Autumn sown Onions and Spinach will be materially benefited by having a supply of it occasionally during the continuance of dry weather. Opportunities have not recently been wanting for such operations as hoeing and cleaning. These are matters which are highly essential, not simply for the sake of clearing the ground of weeds—which is most important, but for the sake of appearance; for unless cleanliness and order are simultaneously put into practice in the ordinary routine of management, the general effect in this department will suffer, and the subjects be rendered not nearly so interesting. *Geo. Thos. Miles, Wycombe Abbey.*

FRUIT HOUSES.

ORCHARD HOUSES.—It will be necessary now to see that the trees are well prepared, if they have to be forced. If they were potted as they ought to have been, and as advised at the time, the pots will now be well filled with roots, and all that the trees have to do now is to mature their buds for next season. If the leaves have fallen off through red-spider or any other cause, it will be much against them, but if well furnished with leaves, and the buds are prominent, I would advise their being placed in a sunny position out-of-doors this fine weather—the heavy dews at night and the hot weather seem to suit them admirably. Do not stand the pots on the ground where worms can get into them by the bottom hole. Our plan, whether the trees are in or out-of-doors, is to lay two bricks on the ground and to stand the pot on them with the hole between the bricks. This allows the air to pass underneath the pot, and is, I fancy, beneficial. If the trees are late potted bear in mind that a very gentle bottom-heat will cause early root-action to correspond with the gentle heat required to start the buds. I do not advise root-action from bottom-heat unless there is a corresponding warm atmosphere from the top. I need not say that now is the time to clean the leaves from insect pests, and the stems from brown scale.

In the late house there are still fruit on trees of the late varieties. It would be well for raisers to give their attention to raising later varieties of Nectarines than we at present possess. The Victoria is just now ripening, but we have no later variety than this. Could flowers of it be crossed with the very late Peaches it is very probable that good Nectarines would be raised from the cross. The early Lord Napier Nectarine and the Victoria are grand recent introductions, and will long keep the name of the late Mr. Rivers in remembrance. I would urge the importance of repotting the fruit trees of all kinds, if they require it, as soon as the fruit is gathered. It is no use potting them in very light sandy loam, as they do not succeed in this material. Yellow loam, on which our ordinary native Heaths will thrive, answers well. It has been recommended to mix a portion of chalk in the soil if it does not contain this naturally; this I have done in the case where good loam did not contain chalk, but there was no difference in the result. A fourth part of rich manure should be mixed with the loam, and if it is well rammed in the result will be satisfactory.

ORANGE TREES IN POTS.

See that a high temperature is kept up in the house now where the fruit is ripening. The fruit ripened in a greenhouse temperature is quite unfit to eat, and it is only by attention to keeping up the necessary temperature that fine sized good flavoured fruit can

be obtained. It is necessary of course to discontinue syringing when the fruit is changing colour, as the skin of the St. Michael's variety frequently bursts with the excess of the juices contained in the fruit. We have a tree of St. Michael's variety with fruit turning yellow on it, and the branches thickly clustered at the same time with its sweetly scented blossoms. The Tangerine usually ripens its fruit first, but it of course depends much on the time the blossoms open. Where the fruit is still green on any of the trees, its swelling may be aided by weak manure-water applied at intervals. Still attend to clearing the leaves and wood of the trees from scale. This is the most troublesome pest we have to deal with, but mealy-bug also becomes troublesome at certain seasons; it gets on the fruit as well as the leaves, and makes a nasty mess. *J. Douglas, Loxford Hall, Ilford, E.*

PINES.

Queens or any other kinds of Pine plants which are intended to give a supply of ripe fruit about next May or June should by this time have developed a good sturdy growth, and have well filled their pots with roots. In this state it is necessary to pay the utmost attention to the watering, so as to maintain unimpaired the vigorous habit which they have acquired. In doing this it must be borne in mind that since the soil has become permeated with roots, that much of its feeding qualities must naturally have been abstracted. To make up for this loss it will therefore be necessary to administer stimulants, and amongst the many excellent compounds which are to be had for such purposes we prefer guano, if it can be obtained in a genuine form. This should be used in a weak state on every occasion the plants are watered. The maturation of these plants will be materially helped forward by giving them a liberal supply of air whenever sunshine and heat prevail to an extent to admit of it being done, and by not keeping the atmosphere in the house too densely charged with moisture. Syringing the plants, however, should be continued two or three times a week during very fine weather, or less at other times, as may be ascertained by an examination of the axils of the leaves of the plants. No suckers should be allowed to remain on these plants until the fruit makes its appearance, when one or two at most should be left on for perpetuating the stock of plants.

Successional plants, which are not so much advanced in growth as the foregoing ones, and which are required to come in in subsequent order, should have during the current month every encouragement to make growth, because during this period sunshine and heat are generally available and effective. Use no fire-heat at all to these plants unless the internal temperature of the house or pit falls below 58° at night, and exercise every care so as to utilise sun-heat at the time of closing up the house in the afternoon. This should be done so as to enclose a heat of 90° or 95°; at the same time give the customary moisture which is needed to produce an invigorating state. This remark equally applies to the case of fruiting plants, which should also have the advantage of a somewhat higher state of temperature at night: 70° or 75° will suffice for the present month. Excepting in the case of plants with fruit near to the glass, shading should now be discontinued altogether over these plants, and all others likewise which have roots. *G. T. Miles, Wycombe Abbey.*

PEACHES AND NECTARINES.

The time has now arrived for having everything in the way of clean drainage and new compost properly prepared and conveniently placed ready for use, when the trees in early forced houses are in a suitable state for lifting or root-pruning. If fresh trees have to be taken in from the reserve walls some time must elapse before they can be disturbed; but where they are lifted annually—as trees intended for this purpose should be—they will be ready for removal much earlier than others that have to be brought from a distance. In all cases where lifting is about to be performed two great essentials to success are a properly moistened state of the old borders and despatch in carrying out the work. If the roots of the trees are confined to internal borders the roof should be shaded before they are disturbed, and when the old soil has been picked out and cleared away the exposed roots should be drawn aside and kept moist during the time the old drainage is being turned over, regulated, and got ready for the covering of turf, grass side downwards. Upon this the roughest portion of the compost, consisting of strong calcareous loam, old lime rubble, or charred earth, should be placed to the proper depth and rammed very firm. This done the points of the roots should be shortened with a knife and spread out evenly over the surface of the bed; soil should be cast over them as they are laid down. When all are covered a good watering with tepid water will settle the soil firmly, and the remainder of the compost may be placed over them and left in a dry state for the present. It may be well to keep the front ventilators closed to check the circulation of air, and to keep the foliage moistened with

the syringe for a few days until the leaves show by their crisp appearance that new roots are taking to the fresh warm compost, when the house may be thrown open and the trees will be in a fit state for forcing when the proper time arrives. Old trees do not as a rule require entire lifting, particularly where the borders are composed of sound healthy loam free from manure, but a trench taken out along the front and the removal of inert soil from the surface will give space for the addition of fresh compost, that will add greatly to their vigour and the quality of the fruit. In the management of Peach trees it should be borne in mind that the soil cannot be made too firm about the roots, and if it is rich and strong they will make a better class of fruit-bearing wood and remain longer in a healthy state if manure is used as a top-dressing only. Trees having their roots in external borders and now ripening off crops of fruit will require good mulching and heavy waterings at short intervals to support them through the intense strain they are undergoing, with the temperature approaching 80° in the shade. *W. Coleman, Eastnor Castle Gardens.*

PLANT HOUSES.

ORCHIDS.—The last four weeks will be remembered as forming one of the most brilliant seasons ever known in this country. From such weather as this Orchids, if they are properly managed, have nothing to fear; indeed, a very large proportion of them should obtain great benefit from it. It unquestionably is possible by improper shading and over-abundant ventilation through the heat of the day, to greatly injure the coolest Odontoglossums, Masdevallias, and Oncidiums; but all the Orchids, whether of the heat-loving or temperate sections, can now with a very little trouble be made to feel at home. What they delight in is plenty of sun-heat, without too fierce a light, a saturated atmosphere at all times, except during four or five hours in the middle of each day, when the hygrometer may be allowed to show from 5° to 10° of evaporation; and abundance of fresh air passing through ventilators not too near the plants, and just enough fire-heat through the night to prevent the atmosphere falling too low.

The Phalenopsis division should at its lowest temperature stand between 70° and 75°, and the Cattleya, intermediate, and Mexican houses about 70°. I have more than once during hot weather dispensed with fire-heat for the Cattleya-house, but the progress of the plants was in every case less satisfactory than when a little fire-heat was used and the temperature kept within bounds by a free use of the lower ventilators through the night. The internal air under such conditions is full of life and buoyancy as compared with that of a close, damp, and unheated structure. At this time of the year there are perhaps no Orchids that enjoy an airy atmosphere more than the inmates of the Cattleya-house. It is easy to know when the cool-house is properly attended to, for if the shadings and ventilators be judiciously used, and the floors and stages damped often enough, its atmosphere will be a few degrees lower in temperature than the external air.

Through such nights as we are now getting keep the top and bottom ventilators wide open, but avoid opening the doors and side lights, for in one night enough snails and slugs might crawl in to spoil all the spikes showing. It is astonishing how many obstacles slugs will contend with and master, in order to have a feast from the expanded flowers of such Orchids as *Odontoglossum grande* and *Laelia purpurata*.

The Dendrobiums must now be often looked over and any plants that have made up their growths and have arrived at that stage when they become likely to break away again, should be removed to lighter and more airy quarters. A thorough growing temperature must still be given to such late growing species as *D. Bensoniae*, *D. Brymerianum*, *D. albo-sanguineum*, *D. binoculare*, *D. luteolum*, and *D. moschatum*. This year's imported plants of *D. heterocarpum* may also take a little more time to finish. The variety of this charming species named *philippinense* will certainly take a very long time to enable it to make growths as long as those imported, which were from 4 to 8 feet in length. Possibly this variety under cultivation will make shorter but stouter bulbs than it did in its native habitat. The flowers of the variety are larger but less coloured and less fragrant than those of the species, the plant is nevertheless likely to be a very effective one when strongly grown and well-flowered. The splendid *D. chrysotis* will now be opening its flowers, and must on no account be allowed to get dry. It is an intermediate-house species, that delights in a rather shady damp position. Through the hottest portions of the day it will be as well just for the present to give a little extra shading to the *Bolleas*, *Pescatoreas*, &c., and also to the plants of *Zygopetalum maxillare*. Let neither of them get dry at the roots for a single moment. Flowering plants of *Vanda cœrulea* must be placed where their spikes will get abundance of light, in fact both flowers and foliage of this Orchid are anything but afraid of light or even sun-heat provided they have supplied them air and water in proportion. *J. C. Spyers, Burford Lodge, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Sept. 13	Sale of Dutch Bulbs from Holland, at Stevens' Rooms.
	Trade Sale of Dutch Bulbs, at the Auction Mart, by Frotheroe & Morris.
TUESDAY, Sept. 14	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; General Meeting, at 3 P.M.
	Newcastle-upon-Tyne Botanical and Horticultural Society's Autumn Show (two days).
WEDNESDAY, Sept. 15	Sale of Hyacinths, Tulips, Crocuses, &c., from Holland, at Stevens' Rooms.
THURSDAY, Sept. 16	Clearance Sale of Stove and Greenhouse Plants, at Paget's Nursery, High Street, Clapham, by Frotheroe & Morris.
	Clearance Sale of Winter-blooming Heaths and other Plants, at the Effingham Nursery, Lee, by Frotheroe & Morris.
FRIDAY, Sept. 17	Sale of Scientific and Miscellaneous Property, at Stevens' Rooms.
SATURDAY, Sept. 18	Sale of Dutch Bulbs, at Stevens' Rooms.

EVERY week we have fresh evidence of the existence of the VINE LOUSE in vineries throughout the country. It is satisfactory, however, to find that its ravages are under control if proper precautions be taken. Moreover, there is reason to think that the effects of the pest are not so disastrous here, under the conditions in which Vines are grown, as they are in the vineyards of France, where the plant grows under totally different circumstances. Be this as it may, however, it is quite certain that the "stamping-out" process is the only one which is likely to be satisfactory in the long run, and we have the advantage that this can be done here, while in the Vine-growing districts such a plan, however perfect in theory, can only be adopted to a limited extent in practice. Considering the length of time the insect has now been known in our vineries, and bearing in mind the facilities for its transfer from one vinery to another, it is rather surprising, not that there is so much of it, but rather that there is so little. It seems obvious that the conditions in this country are not altogether favourable to the life of the insect. Nevertheless, we have all along urged the stamping-out process as the only effectual one, and we are glad to insert the following communication from Mr. MALCOLM DUNN, as one whose experience and authority carry the greatest possible weight, advocating the thorough stamping-out process as the only one likely to be effectual. Mr. DUNN writes as follows:—

"I notice, from various articles appearing in your pages, and elsewhere, that the Phylloxera is still puzzling some Vine growers. I am afraid that failures to get rid of the pest in any vineries in this country can only be attributed to a want of thoroughness on the part of those who have tried their hand and failed. I have had more experience of the pest than I cared about, here as well as at Powerscourt, and I have been consulted by some dozens of people as to the best means of getting rid of it; and in every instance, where they have followed the advice I have given them, the Phylloxera has been thoroughly stamped out.

" 'Stamping-out' is the best way to get rid of it, and the plan I have always recommended; although, I believe, some are under the impression that I advocate 'cleaning' the Vines of the vermin—originating probably from the paper which appeared in the *Journal* of the Royal Horticultural Society, vol. iii., 1872, p. 81, detailing my experience with the Phylloxera on the Vines at Powerscourt, Co. Wicklow, from 1867 to 1869, and the success of the method I then adopted to clean them.

"At that time nobody knew anything about the nature and habits of the Phylloxera in this country, and I followed the plan which I found successful in getting rid of the insects (troublesome and risky as the plan undoubtedly is), simply because at the time I did not know of a better, and because I was most anxious to save the Vines, as detailed in the paper referred to. However, the experience I then gained, and a close observation of the nature and habits of the insect during those years, convinced me of the riskiness of the process, and that the safest and easiest way is to stamp out the insect, by clearing away and destroying every morsel of Vine—root, branch, and leaf—removing the soil, cleaning the house, &c., as so often recommended in your own pages. That

plan I have recommended ever since the paper appeared in the *Journal* of the Royal Horticultural Society, which was the first public notice of my experience with the insect. To all inquiries I have unhesitatingly recommended stamping-out; but in some cases, where a difficulty has existed about getting fresh soil to remake the border, I have advised cleaning it (the soil) thoroughly of every particle of Vine, and after a due period using it again, as I did in the case of the Vines at Powerscourt.

"As an example of this method I enclose a letter from a gentleman (Mr. GORDON) in Devonshire, which explains itself. It is the latest letter I have on that process, but by no means the only one, and it fairly explains the case. He found it impossible to get fresh soil, but acted cautiously and thoroughly in purifying the old. Such men succeed where less cautious or less careful men fail. Still, after all, I would strongly advise the stamping-out process as the best under all circumstances, and if it is done thoroughly it will never fail.

"There is no insect that I am acquainted with which is easier to kill, if we can only get at it, but there the whole difficulty rests. Safely intrenched in the warts, or excrescences, formed by their action on the Vine, the insects defy all applications that can be applied to them, unless they are strong enough to kill the Vine also. I do not forget the 'water cure,' strongly advocated by some. It will kill the Phylloxera, but it cannot be applied with any certainty to a Vine border; and to keep the border flooded, even suppose it were possible, for a sufficient length of time to drown the Phylloxera, would seriously injure the health of the Vines, as I have proved in the case of Phylloxera infested pot-Vines. Mr. GORDON's letter is appended. *M. Dunn, Dalkeith Gardens.*"

"I will not allow any longer time to elapse without paying my tribute to your most kind and valuable advice, given me about three years ago, when the Phylloxera attacked my Vines. All your instructions I scrupulously followed, with the most perfect success.

"I destroyed the infected Vines, had all the soil (about 160 cubic yards) taken out, caused the gardeners to pick out and burn every fibre of root (as if each had been a scorpion), put about 150 bushels of soot and hot lime on the heap, had it turned over thoroughly twice or three times, until my gardener declared there was not one worm, far less a Phylloxera, alive in it; and after leaving it out for about two months—(during which time I removed all the drainage down to the concrete floor, treated it to lime and soot, and then screened it before replacing it—white-washed with hot lime every inch of brickwork, &c., of vinery, and turpented all the wood and glass)—I returned it to the vinery, and in March, 1878, replanted the Vines I had ready from Messrs. DICKSON & Co., of Chester, which have grown splendidly, and this year show as fine a crop of Grapes as any man need wish to see—not over-cropped, for I know the folly of that; and this emancipation from a great trouble I owe to your kindness and advice."

OF all Orchids in cultivation there are none that so many growers fail with as the species of PHALÆNOPSIS, or rather it would be more correct to say there are few which are grown in a way that can be called satisfactory. We have seen many collections comprising representatives of most of the species that find favour with cultivators, all thriving well save and except the Phalænopsis, which seemed to defy every means that the grower could hit upon for their well-being. Even where they have been induced to thrive, and in a manner to excite the hopes of the cultivator, there appeared to be a point of mediocrity beyond which no coaxing could induce them to progress—the dreaded spot, which so often makes its appearance on their succulent leaves, attacking them from time to time to an extent that reduced whatever progress they had made to a minimum. This may be accounted for from the fact of their whole substance consisting of the fleshy leaves, and short succulent stems devoid of the pseudobulbs that are so tenacious of life in most of the species that possess them, and which often survive and tide the plants over hard usage that for a time they may be subjected to, and which frequently destroys

both the leaves and roots. It often happens that Phalænopsis are seen to grow freely for a time, then gradually get into a weaker state and ultimately die out; but where such is, the case there is generally a kind of suspicious appearance, which those who are acquainted with these plants can detect, in the shape of too soft, thin leaves, lacking the leathery stout character so essential to their endurance, and without which simple elongation forebodes evil instead of good. The number of Phalænopsis in Mr. BOCKETT's collection at Stamford Hill is about 300, including a considerable importation that have not yet, we believe, been a year in the country; the smallest of them seem to produce such a mass of roots and leaves in proportion as rarely seen even with older plants. Amongst established examples are several exceptionally fine forms of *P. amabilis*, *P. grandiflora*, and *P. Schilleriana*. Of the latter there are many with half-a-dozen leaves, the largest of which are 12 inches long by $4\frac{1}{2}$ inches wide, and stout in proportion; *P. amabilis*, with leaves 10 inches long. The plants are kept near the glass, and receive all the light they will bear without scorching, and plenty of air in the middle of the day so as to dry up the atmosphere of the house. Along with other fine plants in the house where the Phalænopsis are grown is a good specimen of *Aerides Schröderi*, with sixteen pairs of leaves; *Saccolabium præmorsum*, with fourteen; the winter flowering variety of *Angræcum sesquipedale*, pushing up three bloom-spikes. The cool species are doing equally well, Mr. EBBAGE evidently being as successful with these as with the hotter section. A house, 70 feet by 10 feet, is filled with *Odontoglossum crispum*, *O. Pescatorei*, and other allied species, doing beautifully. In another cool-house Masdevallias are growing like weeds; amongst a dozen plants of *M. Lindenii*, the largest is 18 inches across; one plant of the bull's blood variety has over thirty healthy leaves; several pieces of *M. Trichilus* are growing nicely; and in a little warmer house some two dozen fine plants of *M. towarensis*. At this time of the year, when Orchid flowers are scarce, the undermentioned were in bloom:—*Aerides Huttoni*, *Trichopilia tortilis alba*, *Cattleya marginata*, four plants; *C. intermedia*, *Compactia coccinea*, *Cypripedium Stonei*, very fine specimen, six spikes; *C. Harrisianum*, *C. Sedeni*, *Epidendrum vitellinum majus*, *Lælia Dayana*, *Masdevallia ignea*, *Oncidium longipes*, *O. crispum*, several plants; *Odontoglossum Uro-Skinneri*, *Mesospinidium vulcanicum*, *Zygopetalum rostratum*, three spikes from one growth, thirteen flowers from each of two of the spikes, &c.

— EUCRYPHIA PINNATIFOLIA.—In one of our visits to Combe Wood last season we were delighted to see this beautiful hardy shrub in flower, and to take specimens for identification. Since then cut specimens have been exhibited by Messrs. VEITCH at South Kensington, where the general verdict confirmed the impressions we had formed from less perfect specimens. *Eucryphia pinnatifolia* (see fig. 61, p. 337) is a Chilean shrub, with dark green pinnate leaves like those of a Dog Rose, and large white flowers resembling those of a *Stuartia* or of a wild Rose, but with only four petals, and with longer stamens. It is placed by Messrs. BENTHAM and HOOKER among the Saxifragaceæ—a group so large, and containing so many widely divergent species, that we suspect as knowledge increases the order will have to be remodelled, and if so in all probability this plant will be placed elsewhere. Be this as it may, cultivators have in this shrub one of the most beautiful hardy, or we may with more prudence say half-hardy, shrubs which exist. The experience of last winter might lead us to say quite hardy, but we can but remember that Combe Wood, though in the vicinity of London, is exceptionally favoured as to site.

— DESERT PLANTS OF EGYPT.—Lady WILKINSON and Mr. CARRUTHERS propose to publish a series of illustrations of plants from drawings made in

Egypt by the late Sir GARDNER WILKINSON. The drawings, reproduced by Mr. BLAIR, are not very striking, but the text, so far as we can judge from the specimen before us, will comprise much interesting information not readily accessible to the botanist or plant lover, and relating to the historical associations

matter. The haulms were in a living and apparently healthy state when first attacked, and the specimens sent on to me by rail from Sligo were living plants with the tubers attached. 'A. D.' is probably right in supposing that the time is now past for getting further reliable data this year, as the Potato tops have

though we may have to wait till next June before we know what it really is, or what course it is likely to take."

MANGOS.—Usually speaking Mangos arrive in this country in a state unfit for consumption, or, if not



FIG. 61.—EUCRYPHIA PINNATIFOLIA: FLOWERS WHITE. (SEE P. 336.)

and the economic uses of the plants. Messrs. DULAU & Co. are the publishers.

— NEW DISEASE IN POTATOS.—Mr. WORTHINGTON SMITH writes:—"Several correspondents have written to ask if this disease really occurred upon the living Potato haulms, Sclerotia being much more common upon dead than upon living vegetable

now to a great extent perished, and little or no haulm is to be seen belonging to the assailed plants. Still, any information as to the extent of the disease is greatly needed. Mr. SMITH, agent to the Marquis of SLIGO, writes to me, in reference to the diseased Champions, 'The stalks are now entirely gone, and the produce mere rubbish.' It is in every way probable that this new form of disease will reappear,

so on arrival, they speedily become so. The consequence is that stay-at-home travellers are apt to believe in the "tow and turpentine" theory, and indeed, are very likely to find Mangos considerably more ill-flavoured than turpentine would be. In the course of the summer, however, we received from an obliging correspondent a box of "No. 11 W. I. Mangos" which had apparently been gathered

before they were ripe, and which were brought over by private care, and arrived in perfect condition. The flavour was something superb—to attempt a description of it in words would be futile. A day or two after the receipt of the box, however, the few survivors had become over-ripe, and as nauseous as their predecessors, eaten just at the right time, were delicious.

— *LILIUM ELEGANS BATEMANÆ*.—This is a very late and effective variety of this group; the flowers are of a clear orange-apricot, and unspotted. It grows from 3 to 4 feet in height, is a native of Japan, and has proved to be a fine variety, *L. elegans* var. *armeniaceum*. It is now flowering in the Hale Farm Nurseries, Tottenham.

— *GERMAN POMPON DAHLIAS*.—In the collection of these growing at Chiswick there are a few striking novelties of recent introduction. One is a remarkably pretty form, named *Zoyling*, which is too large for a bouquet Dahlia, but not large enough for a show variety; the ground colour pink and buff, the petals charmingly tipped with white; it grows from 3 to 4 feet, and is very free, and excellent for cutting from. Not a few have small and exceedingly compact flowers, of fine shape and pretty colour. Some have peculiarly quilled florets, of which the older and useful *White Aster* is a type. One, named *Deutscher Reich*, has crimson flowers tipped with gold, and the florets, which are quilled, are all frimbriated in a singular but effective manner. Some parti-coloured flowers also add considerably to the variety in this most useful section of Dahlias, so desirable for decorative and cutting purposes.

— *MELASTOMACEÆ*.—*M. COGNIAUX*, late Conservator of the Royal Herbarium, Brussels, is now at Kew, engaged in the study of the Brazilian *Melastomaceæ*, which he is to elaborate for *MARTIUS' Flora Brasiliensis*. We understand that all the orders, with the exception of the Orchids, for this important work, have been assigned to various botanists.

— *DR. ASA GRAY* is expected in this country during the present month.

— *M. ALPHONSE DE CANDOLLE* is also expected towards the end of the month.

— *ADDITIONS TO KEW HERBARIUM*.—Another collection of dried plants has been received from Madagascar. It was made by G. W. PARKER, M.R.C.P., and includes upwards of 850 numbers. This is the third large collection received from Madagascar this year. A fine collection of South African plants has been presented by our correspondent, Mr. WILLIAM NELSON, who collected them himself, chiefly in Natal, Zululand, and the Transvaal.

— *ELECTRIC ALPINE PLANT PROTECTOR*.—This, when more largely known, will undoubtedly be more largely used, not only for the rarer alpine, but for all classes of plants where their stems and lower parts are subject to the attacks of slugs. It is of simple construction, and therefore the more valuable, being made solely of a small band of perforated zinc gauze, to form a circle, the two ends meeting as nearly as possible, a slightly larger hole being made so as to allow a stout piece of copper wire to pass through and round the interior, thus causing a continuous electric current, which is efficacious enough to ward off the numerous attacks of these pests. We recently saw some of these in use in Mr. WHITEHEAD's garden at Bickley, and were informed that not only did this protector ward off all their attacks, but that it could safely be removed from the plants altogether, without fear of further attacks. This would be a most useful article for placing around the stems of many stove and greenhouse plants, such, for instance, as *Lapageria alba* and many others when making young growth.

— *REFRESHMENTS EN ROUTE*.—On her journey North to Balmoral *HER MAJESTY* always breakfasts in the Perth refreshment rooms—a suite of rooms being specially prepared for her convenience. On the occasion of her going North some days ago, Mr. MACDONALD had, by permission, some six large Peach trees in pots from the gardens of the Earl of MANSFIELD, Scone Palace, ranged along the rooms, laden with fruit. The difficulty of transit in safety had been

discounted by Mr. HALLIDAY, who had each Peach kept in position by a neat black elastic band. The novelty of the thing was a general source of attraction, and the quality of the fruit was such that *HER MAJESTY* preferred them to those grown in the ordinary way and served on dishes. The white Genoa Figs from Scone were also highly appreciated, being of excellent quality, and the whole grown in the large orchard-house, which has been more than once noticed in these columns.

— *LILIUM LONGIFLORUM WILSONI*.—This is a grand and stately variety, with flowers much larger than those of the typical form and considerably later in development. This is undoubtedly a fine acquisition, and should be in all collections. Some fine beds in the Tottenham Nurseries are now in flower, some of the individual flowers measuring nearly 10 inches in length.

— *DELPHINIUM CRASSIFOLIUM TURKESTANICUM*.—This is a singular species, from Turkestan, with bronzy-blue flowers, and free branching habit. It is now flowering on the rockwork in Tottenham Nurseries.

— *ROYAL HORTICULTURAL SOCIETY*.—The following are the dates fixed for the meetings of the Fruit and Floral Committees, exhibitions, and evening fête, in 1881:—Tuesdays: January 11, February 8, March 8 and 22, April 12 and 26, May 10 and 24, June 14 and 28, July 12 and 26, August 9 and 23, September 13, October 11, November 8, December 13. Certificates will be awarded to deserving new fruits, vegetables, plants, and flowers; and medals, supplied by the DAVIS Fund, will be awarded for meritorious productions exhibited at these meetings. Great summer show, Friday, June 3, Saturday, June 4, Whit Monday, June 6, and Tuesday, June 7. Rose and Pelargonium Society's Show, Tuesday, June 28, and Wednesday, June 29. Exhibition of British Beekeepers' Association, Tuesday, July 26 to August 1. Artisans' and Cottagers' Show, Monday, August 1. Evening fête, Tuesday, June 28.

— *LILIUM NEILGHERRENSE*.—A striking and handsome Lily from the Neilgherry Hills belonging to the Eulirion, or long-flowered group; its flowers, which vary from pure white to soft sulphur-yellow, are from 6 to 8 inches in length, and very fragrant. This is the latest flowered Lily of this group; some plants may now be seen in good condition in the Tottenham nurseries.

— *ROYAL HORTICULTURAL SOCIETY'S GARDENERS' TRIP TO THE ALEXANDRA PALACE*.—The *employés* of the Royal Horticultural Society at Chiswick had a day's outing at that now popular place of resort—the Alexandra Palace—on the occasion of the great fruit show on Friday last. A most enjoyable day was spent, which was further enhanced by the kindness of one of the members of the Council, who furnished the sinews of war for a substantial entertainment. In all ways the jaunt was successful.

— *QUILLED GERMAN ASTERS*.—Those who have followed the cultural directions already given with regard to the cultivation of the Quilled German Aster, will be now reaping a rich reward for their labours. The season generally, and especially the past fortnight of warm, soft, genial weather, has been in every way suitable for the full development of the blooms, which, to be perfect in their delicacy of tint, do not require continuous sunshine, but delight in the heavy dews and cloudy but fine growing days with which we have been favoured. Even the earliest blooms, which are not unfrequently wanting in symmetry of form and purity of colour, have been very satisfactory, and fine examples have been seen on exhibition tables, while those now arriving at maturity are of splendid form and substance. A grower of the German Aster finds his Aster bed of great value at this season of the year, as, to use a well-known expression, he can "cut and come again" as often as he pleases: the side-blooms being especially useful for vases, while such beautiful varieties as the pure Snowball and the delicate Unique in contrast with Purple Prince, and other dark colours, are highly effective, and handy for filling the bottoms of large centre pieces and drawing-room stands, so much employed for table decoration. The Aster possesses one great advantage over many other flowers—that of

lasting a long time fresh and pleasant in water. A fine bloom of a quilled Aster, dressed with care by an expert at exhibiting, is as much an object of beauty in a stand for table decoration as a Camellia or other choice flower. Now is the time to select good blooms on a few particular plants to save seed from. The finest of the centre flowers should be selected for seed, and the side blooms removed; and in the case of selected flowers, one or two, at most, should be left for seed.

— *POMOLOGICAL CONGRESS*.—A Pomological Congress will be held in Brussels from the 24th to the 26th of this month in conjunction with the National Exhibition of Fruits, which will take place at the same time. The subjects proposed to be treated at the Congress are the following:—

1. Selection of the best fruits for cultivation in the garden, viz.:—Eighteen Pears, ten Apples, six Peaches and Nectarines, two Apricots, six Plums, four Cherries, four outdoor Grapes, four hothouse Grapes, two Raspberries, four Currants.
2. Market fruits.
3. Culture of the plant under glass.
4. The "police" of the fruit markets.
5. Procedure for accelerating the fertility of fruit trees.
6. List of the varieties of fruit trees killed by the winter of 1879–80.
7. Reproduction of varieties.
8. Method of destroying noxious insects.
9. The most advantageous form of fruit tree for planting along the borders.
10. Culture of bush fruit.
11. *Les débouchés* for the sale of fruit.
12. Plantations of trees along the highways.

— *ARBORETUM SEGREGIANUM*.—The first part of a series of plates, intended to illustrate the rich collections of M. ALPHONSE LAVALLÉE, at Segrez, has been issued, under the title of *Icones Selectæ Arborum et Fruticum in hortis Segrezianis collectorum*. The part before us is of large quarto size, and comprises twenty pages of text, partly Latin, partly French, and six exquisitely-executed lithographic plates devoted to the illustration of the following species:—*Juglans Sieboldiana*, *Ostryopsis Davidiana*, *Elæagnus longipes*, *Cratægus cuneata*, and *Jamesia americana*. *Juglans Sieboldiana* is a Japanese Walnut, with nuts like those of *J. regia* and with magnificent foliage. It is of easy culture, and may be propagated by grafting or by seed. *Ostryopsis Davidiana* is a nut-like shrub, native of Eastern Mongolia. When young it produces male flowers only, but as it grows older it produces female flowers as well. *Elæagnus longipes* is the species with long stalks to the fruit figured by us on July 26, 1873. *Cratægus cuneata* is a Japanese species of relatively low growth, with cuneate leaves, large white flowers, and large globular red fruits; it is quite hardy. *Jamesia americana* is a dwarf shrub with oblong-serrate leaves, and clusters of white fragrant flowers with the structure of a Saxifrage.

— *LUMINOUS FUNGI*.—We have received a fresh supply of the luminous fungus of the Andaman Isles, which seems, when most highly developed, scarcely to show more than an inch across. The pileus is sometimes much lobed, and occasionally has a very well marked stem, rudiments of which are sometimes but not always visible in the young fungus. It has been growing during the rains for at least six months, always retaining its remarkable luminosity. It is clear that *DE CANDOLLE's* *Uredo Petroselinii* is a *Cystopus*. *M. F. B.*

— *ERPETION RENIFORME*.—This plant, associated with *Selaginella helvetica* and others of a like character, is flowering profusely in a quiet shady nook on the rock at Southwood, Bickley.

— *DISEASE IN PARSLEY*.—A remarkably strong bed of Parsley having gradually withered, we were anxious to ascertain the cause, as it is almost certain that, should a similar case occur elsewhere before the end of the season, inquiries will be made about it, so that we thought it well to be forearmed, especially as it for some time baffled us; the disease, however, happened to spread to some neighbouring plants of different varieties which we wished to preserve, we again attacked it, and found that just before the leaves withered there was a trace of a white efflorescence which we supposed might be some form of *Cylindrosporium*. On examination, however, though so extremely short, we found that it was a very depau-

perated condition of *Peronospora nivea*, which has occurred in several localities on the common Parsley. The species varies very much in habit, but with the exception of the *Peronospora* which occur on the wood Anemone, we have observed none with such short threads. *M. J. R.*

THE GRASS SEED CROPS IN GERMANY.—

In so far as information has reached us to date, it would appear that in Germany, as in this country, agriculturists have had to contend with many difficulties of time and season. In the Darmstadt district the winter was one of the most unfavourable in that part of Germany that can be remembered for many years past, for the frost during December and the early part of January was of so severe a character that most plants suffered materially, and the injury was intensified from the fact that the first spell of sharp frost was succeeded by a few warm wet days in January, and then the frost came on again with increased severity, working sad havoc among the excited plants. The second spell of frost continued with unabated intensity for several weeks, doing great and irreparable injury to orchards and vineyards, though it was hoped that the grass crops would be spared to some extent. The expectations of the growers were disappointed, owing to the want of rain during the months of March, April, and part of May, and the severe night frosts which happened during the last days of April. At the time of gathering the crops it was found that the worst anticipations had been fully realised. Some of the subjects realised only half a crop, many not a quarter of a crop. While Southern and Western Germany were suffering from want of rain, the Eastern and Southern parts were almost deluged by heavy storms, and in the latter districts the crops suffered through the inclemency of the weather, the effects of frost and storm having deprived the plants of their natural power of resistance. In reference to quality, in consequence of the unfavourable weather the seeds did not turn out to be as heavy as is usually the case, and extra clean heavy seeds will be scarce, as well as high in price. The lighter seeds will have to be depended on to a large extent and the German cultivators are cleaning these with more than usual care. As the proper cleaning of the seeds is a matter of some importance, the most perfect machinery is employed for the purpose, and it has come to pass that better and cleaner seeds have been supplied of late years, and it is believed that the lower priced lighter seeds will be imported in a state of purity which has not before been equalled. Such seeds as Meadow Foxtail, Sweet Vernal, red Fescue, small-leaved Fescue, Crested Dog's-tail, and Poa nemoralis have suffered most; and in some districts so little has been grown that the highest possible rates would not have covered the expense of gathering. Cocksfoot, Poa pratensis, Yellow Oat-grass, Tall and Meadow Fescues, are also scarce though more abundant than the subjects enumerated above. Hard and Sheep's Fescues have apparently suffered least, and prices rule but a little higher than last year. A fair crop of Timothy-grass is expected, but it is difficult to report as yet with anything like certainty. The prospects of the Clover seed crops are considered to be generally better than last year, though the reports are less encouraging than they were at the beginning of the season. From Hungary, which yielded very fine samples of red Clover last season, the reports are conflicting; in Saxony, Bohemia, Silesia, and Galicia, only medium harvests are expected.

EUCALYPTS AT CHISWICK GARDENS.—

Visitors to Chiswick will be much interested in a collection of Eucalypts which Mr. BARRON has planted out in one of the new beds on the south side of the garden, as they afford a convenient study for those desirous of becoming acquainted with the characters of the different species. One has quite rounded, stout, rigid leaves, not unlike in appearance those of a Dutch Honeysuckle, and with a more horizontal growth than in the case of *E. globulus*; the young shoots are handsomely tinted with brown, as in the case of the immature fronds of *Adiantum macrophyllum*. *E. undulata* is a very handsome type, the leaves intermediate in shape between *E. globulus*. While the leaves of some are quite green, but small and most elegant, others are so richly glaucous as to appear frosted with silver. From this bed one might make a selection of ornamental leaved plants of no ordinary

character that could be planted out-of-doors in summer and utilised within-doors in autumn and winter.

— SHELL-LAC CULTIVATION IN INDIA.—Our supplies of shell-lac, or, as it is more commonly written, shellac, are derived almost exclusively from India, where its collection and preparation give employment to a considerable number of natives. It is the product of an insect, deposited on the twigs of trees, partly as a defence for the eggs over which it is incrustated, and partly as a food for the young larvae. These twigs are collected, and generally, for the convenience of transport, brought to market cut up in lengths of 2 or 3 inches, called stick-lac. They then undergo various processes, the objects of which are—first, to separate the resinous incrustation from the wood; second, to free this resin from the colouring matter which it contains; third, to convert the resin into what is known as shellac; and, fourth, to form the colouring matter into cakes of dye, known as lac-dye. In the course of manufacture it is known by various names; when the lac is separated from the wood it is called seed-lac; this, melted and formed into cakes, becomes lump-lac; and, when again melted and transformed by a curious process into thin, brittle sheets or flakes, takes the form and name, by which it is generally known, of shell-lac. To seed-lac an interest has lately been imparted, not anticipated when the term was first employed, the seed-lac being used actually as seed for the cultivation of lac in districts where it is not indigenous. The officers of the Forest Department of India have discovered that by judiciously applying the seed-lac to suitable trees the insect can be made to take up its home in new localities. This transplanting of the insect can also be effected by bodily transplanting the trees on which the eggs and lac are deposited, or by removing the twigs with their lac covering to the place selected for the cultivation of the product. In this way the lac industry is being spread over many new parts of India; and it is found that great economy in the cost of collection is achieved, since the material can be produced in large quantities in a comparatively small district, instead of being searched for over large forest areas as at present. The value of lac annually exported from India, which a few years ago was barely £200,000, is now nearly three-quarters of a million sterling. *The Colonies and India.*

— THE LIVERPOOL HORTICULTURAL ASSOCIATION.—We learn that this Society will hold an exhibition of Chrysanthemums, fruits, and miscellaneous plants in St. George's Hall on Tuesday and Wednesday, November 23 and 24.

— THE WEATHER.—General remarks on the weather during the week ending Sept. 6, issued by the Meteorological Office, London:—The weather during this period has been generally very fine and summer-like over the whole of Great Britain. In Ireland and the West of Scotland, however, it was rather less settled than elsewhere, and some slight showers occurred. Lightning was seen in many places during the latter part of the week, and in some instances was accompanied by thunder. The temperature was above the mean in all districts; in "England, S." and "England, S.W." the excess was 4°, but in nearly all other places as much as 6° or 7°. The maxima were higher than during any other week of this year, and on the 4th a reading of 88° was registered at Nottingham and Cambridge, and 87° at Loughborough and London. The nights were generally mild, but during those of the 1st and 6th the thermometer went down to between 43° and 47° at many of our inland stations. The rainfall was again less than the mean in all districts. Bright sunshine, in all places except "Ireland, S.," shows a decided increase. The number of hours recorded was greater at our southern, central, and eastern stations than elsewhere, the percentage of possible duration varying from 60 in "England, E." to 38 in "Scotland, W." The wind was rather variable in direction, but generally southerly or south-westerly; on the 3d and 4th, however, an easterly breeze was experienced in the south and south-west. In force the wind was light or moderate in most places, but on the 4th and 6th it blew rather strongly at some of our western and north-western stations, and at Stornoway reached the force of a gale.

— GARDENING APPOINTMENTS.—Mr. W. B. WARD, late Gardener to J. S. MORGAN, Esq., of Dover House, Roehampton, has been appointed Gardener to Mrs. J. G. WILKINS, of Westwood, Forest Hill, Kent.

AGRICULTURAL CHEMISTRY.

(Continued from p. 308.)

BOUSSINGAULT'S RESEARCHES.

ABOUT 1834 Boussingault became by marriage joint proprietor with his brother-in-law of the estate of Bechelbronn, in Alsace. His brother-in-law, M. Lebel, was both a chemical manufacturer and an intelligent practical farmer, accustomed to use the balance for the weighing of manures, crops, and cattle. Boussingault seems to have applied himself at once to chemico-agricultural research; and it was under these conditions of the association of "practice with science" that the first laboratory on a farm was established.

From this time forward Boussingault generally spent about half the year in Paris and the other half in Alsace, and he has continued his scientific labours, sometimes in the city and sometimes in the country, up to the present time. His first important contribution to agricultural chemistry was made in 1836, when he published a paper on the amount of nitrogen in different foods, and on the equivalence of the foods, founded on the amounts of nitrogen they contained; and he compared the results so arrived at with the estimates of others founded on actual experience. Although conclusions on the subject have doubtless undergone modification since that time, the work itself marked a great advance on previously existing knowledge, and modes of viewing the question.

In 1837 Boussingault published papers—on the amount of gluten in different kinds of Wheat, on the influence of the clearing of forests, on the diminution of the flow of rivers, and on the meteorological influences affecting the culture of the Vine. In 1838 he published the results of an elaborate research on the principles underlying the value of a rotation of crops. He determined by analysis the composition, both organic and inorganic, of the manures applied to the land, and of the crops harvested. In his treatment of the subject he evinced a clear perception of the most important problems involved in such an enquiry; some of which, with the united labours of himself and many other workers, have scarcely yet received an undisputed solution.

Thus, in the same year (1838), he published the results of an investigation on the question whether plants assimilate the free or uncombined nitrogen of the atmosphere; and although the analytical methods of the day were inadequate to the decisive settlement of the point, his conclusions were in the main those which much subsequent work of his own, and much of others also, has served to confirm.

As a further element of the question of the chemical statistics of a rotation of crops, Boussingault determined the amount and composition of the residues of various crops; also the amount of constituents consumed in the food of a cow and of a horse respectively, and yielded in the milk and excretions of the cow, and in the excretions of the horse. Here, again, the exigencies of the investigation he undertook were beyond the reach of the known methods of the time. Indeed, rude as the art of agriculture is generally considered to be, the scientific elucidation of its practices requires the most refined and very varied methods of research; and a characteristic of the work of Boussingault may be said to be, that he has frequently had to devise methods suitable to his purpose before he could grapple with the problems before him.

In 1839, chiefly in recognition of his important contributions to agricultural chemistry, Boussingault was elected a member of the Institute; and in 1878, thirty-nine years later, the Council of the Royal Society awarded to him the Copley Medal, the highest honour at their disposal, for his numerous and varied contributions to science, but especially for those relating to agriculture.

LIEBIG'S VIEWS.

The foregoing brief historical sketch is sufficient to indicate, though but in broad outline, the range of existing knowledge on the subject of agricultural chemistry prior to the appearance of Liebig's memorable work in 1840. It will be seen that some very important and indeed fundamental facts had already been established in regard to vegetation, and that Boussingault had not only extended inquiry on that subject, but he had brought his own and previous results to bear upon the elucidation of long recognised agricultural practices. There can be no doubt that the data supplied by his researches contributed important elements to the basis of established facts

upon which Liebig founded his brilliant generalisations. Accordingly, in 1841, Dumas and Boussingault published jointly an essay, which afterwards appeared in English under the title of *The Chemical and Physiological Balance of Organic Nature*; and in 1843 Boussingault published a larger work, which embodied the results of many of his own previous original investigations.

But there can be no doubt that the appearance of Liebig's two works, which were contributions made in answer to a request submitted to him by the Committee of this section of the British Association, constituted a very marked epoch in the history of the progress of agricultural chemistry. In the treatment of his subject he not only called to his aid the previously existing knowledge directly bearing upon it, but he also turned to good account the more recent triumphs of organic chemistry, many of which had been won in his own laboratory. Further, a marked feature of his expositions was the adoption of what may be called the statistical method. I use the word statistical rather than quantitative, as the latter expression has its own technical meaning among chemists, which is not precisely what I wish to convey.

It seems that, notwithstanding the conclusive evidence afforded by the direct experiments of De Saussure and his predecessors, vegetable physiologists continued to hold the view that the humus of the soil was the source of the carbon of vegetation. Not only did Liebig give full weight to the evidence of the experiments of De Saussure and others, and illustrate the possible or probable transformations within the plant by facts already established in organic chemistry, but he demonstrated the utter impossibility of humus to supply the amount of carbon assimilated over a given area. He pointed out that humus itself was the product of previous vegetable growth, and that it could not therefore be an original source of carbon; and that, from the degree of its insolubility, either in pure water or in water containing alkaline or earthy bases, only a small fraction of the carbon assimilated by plants could be derived from the amount of humus that could possibly enter the plant in solution. He maintained that, so far as humus was beneficial to vegetation at all, it was only by its oxidation, and a consequent supply of carbonic acid within the soil; a source which he considered only of importance in the early stages of the life of a plant, and before it had developed and exposed a sufficient amount of green surface to the atmosphere to render it independent of soil supplies of carbonic acid.

With regard to the hydrogen of plants, at any rate that portion of it contained in their non-nitrogenous products, he maintained that its source must be water; and that the source of the oxygen was either that contained in carbonic acid or that in water.

With regard to the nitrogen of vegetation, both from the known characters of free nitrogen, and as he considered a legitimate deduction from direct experiments, he argued that plants did not take up free or uncombined nitrogen, either from the atmosphere, or dissolved in water and so absorbed by the roots. The source of the nitrogen of vegetation was, he maintained, ammonia; the product of the putrefaction of one generation of plants and animals supplying the ammonia for the next. He pointed out that, in the case of a farm receiving nothing from external sources, and selling off certain products, the amount of nitrogen in the manure derived by the consumption of some of the vegetable produce on the farm itself, together with that due to the refuse of the crops, must always be less than was contained in the crops grown; and he concluded that though the quantity so returned to the land was important, a main source of the nitrogen assimilated over a given area was that brought down from the atmosphere in rain.

There can be no doubt that, owing to the limited and defective experimental evidence then at command on the point, Liebig at that time, as also subsequently, greatly over-estimated the amount of ammonia available to vegetation from that source. In Boussingault's *Réclamation*, already referred to, he gave much more prominence to the importance of the nitrogen of manures. In Liebig's next edition (in 1843) he combated the notion of the relative importance of the nitrogen manures; maintained, in opposition to the view put forward in his former edition, that the atmosphere afforded a sufficient supply of nitrogen for cultivated as well as for uncultivated plants; that the supply was sufficient for the cereals as well as for

leguminous plants; that it was not necessary to supply nitrogen to the former; and he insisted very much more strongly than formerly on the relative importance of the supply of the incombustible, or, as he designated them, the "inorganic" or "mineral" constituents.

As to the incombustible or mineral constituents themselves, Liebig adduced many illustrations in proof of their essentialness. He called attention to the variation in the composition of the ash of plants grown on different soils; and he assumed a greater degree of mutual replaceability of one base by another, or of one acid by another, than could be now admitted. He traced the difference in the mineral composition of different soils to that of the rocks which had been their source; and he seems to have been led by the consideration of the gradual action of "weathering," in rendering available the otherwise locked-up stores, to attribute the benefits of fallow exclusively to the increased supply of the incombustible constituents which would by its agency be brought into a condition in which they could be taken up by plants.

The benefits of an alternation of crops Liebig con-

decay, and putrefaction, and that of poisons, contagions, and miasms, constituted a remarkable and important part of Liebig's first report. It was the portion relating to poisons, contagions, and miasms, that he presented to this section as an instalment, at the meeting of the Association held at Glasgow in 1840. It was in the chapters relating to the several subjects here enumerated that he developed so prominently his views on the influence of contact in inducing chemical changes. He cited many known transformations, other than those coming under either of the heads in question, in illustration of his subject; and he discussed with great clearness the different conditions occurring, and the different results obtained, in various processes—such as the different modes of fermenting beer, the fermentation of wine from different kinds of grapes, the production of acetic acid, &c. As is well known, he claimed a purely chemical explanation for the phenomena involved in fermentation. He further maintained that the action of contagions was precisely similar. In his latest writings on the subject (in 1870), he admits some change of view; but it is by no means easy to decide



FIG. 62.—DOUBLE HORIZONTAL CORDON APPLE.



FIG. 63.—CORDON PLUM TREE.



FIG. 64.—SINGLE CORDON APPLE.

sidered to be in part explained by the influence of the excreted matters from one description of crop upon the growth of another. He did not attach weight to the assumption that such matters would be directly injurious to the same description of crop; but he supposed rather that the matters excreted were those which the plant did not need, and would therefore be of no avail to the same description of plant, but would be of use to another. He, however, attributed much of the benefits of a rotation to different mineral constituents being required from the soil by the respective crops.

Treating of manure, he laid the greatest stress on the return by it of the potash and the phosphates removed by the crops. But he also insisted on the importance of the nitrogen, especially that on the liquid excretions of animals, and condemned the methods of treatment of animal manures by which the ammonia was allowed to be lost by evaporation. It is curious and significant, however, that some of the passages in his first edition, in which he most forcibly urges the value of the nitrogen of animal manures, are omitted in the third and fourth editions.

The discussion of the processes of fermentation,

exactly how much or how little of modification he would wish to imply.

(To be continued.)

CORDON FRUIT TREES AT HARDWICKE.

OBSERVING at p. 247 that the representative of one of the oldest metropolitan nurseries, long famed for the excellence and truthness to name of its fruit trees, gives a short notice of our cordon Plums and Apples, and having had a good many enquiries respecting them, I think a few particulars about their culture and character may prove useful and interesting to your readers. To make the matter more plain my daughter Eva has made a sketch of a portion of our diamond Apple cordon (fig. 65) and one of our Plum cordons (fig. 63), to accompany my description.

The foundation of our Apple cordon, which extends over 50 yards, is thus laid:—Three wires, the first 8 inches from the ground, and the other two 15 inches apart, were tightly strained in the usual manner, a few uprights being introduced to keep them straight

and at equal distances. Across these horizontal wires, training wires 6 feet long were firmly tied diamond fashion at distances of a yard apart (see fig. 65). These preparations made, and a border of fresh loam about 4 feet wide and 2 feet deep provided, maidens on the Paradise stock were procured and planted. With the exception of a very few trees that are converted into double cordons the whole are single, and two are planted in each hole, each trained in an opposite direction, and so forming diamonds, as seen in the illustration.

Only maiden trees were used, and all of them were trained in full length from the first. To facilitate the straightening of the young shoots and ensure a neat start, stout wires 9 feet long were tied diamond fashion across the horizontal wires. These were cut out of some old fencing wire we had on hand; canes or Hazel rods would answer equally well for trainers. Unless the horizontal wires are placed much closer than ours apart, some such trainers are needful to keep the trees in good form from the first.

The trees made little or no growth the first summer, but they did more and far better than make wood—they formed roots and manufactured an abundant stock of large, plump fruit-buds. At the end of the season nearly the whole of the baby cordons were filled with the sure promise of fruit from base to summit. Doubtless the position as well as treatment of the trees somewhat favoured this development of fer-

enable them to form wood and to have the fruit finer. The first was necessary to fill our space, the second to fill our fruit-basket with fruit of the finest quality.

It was astonishing how speedily the trees responded to these lightnings of their crops. As each cordon has its own roots all to itself, it is far more under the control of the cultivator than a many-branched tree. Having once effectually curbed its natural tendency to wood-making by the necessary mutilation or disturbance of its roots in the process of transplantation, while leaving the top full length, it becomes a comparatively easy matter afterwards to regulate at pleasure the length and strength of the wood made. The great point, however, is to regulate growth by fruit-bearing, and not by either pinching or pruning. In our insatiable love for meddling with vegetable life and its products, we are in constant danger of forgetting that fertility is Nature's own antidote for excess in growth. The smaller the tree the more apparent becomes the operation of this law, and where it is ignored or forgotten cordons too often degenerate into mere useless fishing-rods, and the whole system is ridiculed or condemned.

Success or failure in cordon fruit growing all hangs on the maintenance of the proper balance between wood making and fruit bearing; and the balance to be safe must ever incline to the latter. This state once established, masterly inactivity is all that is demanded of the cultivator. He will treat his trees as the good

wires and fixing them together about a yard above the horizontal ones. This gives us a vertical height from the ground of 6 feet, and a length of diagonal cord of 9 feet, which I do not intend to exceed.

As to the future, about which I am often asked, it gives me no anxiety. With occasional root-prunings and care in summer pinching, it is probable the trees will go on fruiting for many years to come; and if not it matters little, we can simply clear them out and begin again. The cost is slight and the reward ample. Sufficient to the day is the good thereof, and I am in no way careful about what these cordons may grow like fifty years hence. Kept fruitful they may prove just as profitable a dozen years hence as now, and if not the alternative is obvious.

As to Plums, of which I give an illustration of one of a row in front of a wall about 50 yards long (fig. 63), they have a habit of settling the question of their duration in a somewhat summary manner. Comparatively few of them have lived here for more

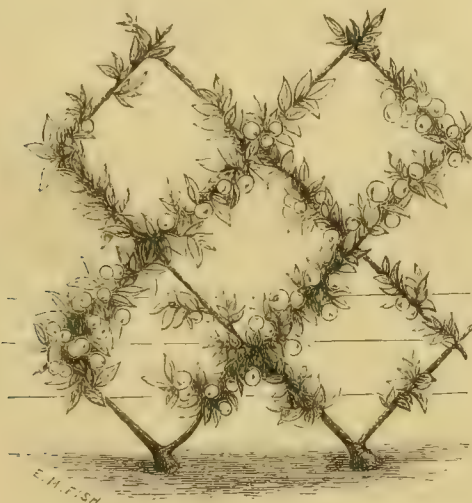


FIG. 65.—DIAMOND FENCE OF APPLES.

tility. Their diagonal position checked lateral extension, and at the same time favoured an equal development of fruit-buds along the entire length of the un-stopped tree. But the most potent means of rapidly manufacturing fruitful cordons out of maidens is the simple and easy one of laying-in the baby trees full length from the first. If this is done neither pruning nor stopping will be needed the first year; and the effects of this treatment extend far beyond the first season. Experience seems to show that they may mould and influence the entire life of the tree. Trees, in fact, are thus educated into fruitful ways in their youth. The first and violent check to wood-making, provided by leaving their tops intact, seems to lead vital force ever afterwards into fertile channels. Be that as it may, it is certain that most of our cordons thus treated fruited next season, and have continued fruitful ever since. Last year and again this—both alike in their short Apple crops—the greater part of our Apples have been gathered from these cordons, while most other trees have been bare. A row of pyramidal Pears on Quince stocks within three yards of the diamond cordons are now almost fruitless.

This mode of laying-in young trees full length also saves time, as well as begets and perpetuates fertility. By no other system can trees be so quickly made fruitful. The second season most of these cordons paid the cost of their purchase many times over. So heavy was the crop in many instances that the fruit had to be severely thinned. This was necessary to

horseman does his steed. And the result will show that trees can be swayed by the wise and gentle hand as readily as the horse.

The single stem and root system, which are the essential elements of cordon training, not only bring the trees under more perfect control, but result in finer produce. This is easily accounted for. There can be no lack of food in any part of a cordon. The furthest fruit or leaf is so near to the root larder that it must be abundantly fed. This proximity of larder to produce may not always be an advantage. In the case of Grape Vines, for example, the advocates of the extension system have often claimed that the quality of the fruit was probably improved by changes and improvements in the sap in its long run from the roots to the further extremities of the branches. On the other hand, it must be admitted that most of the finest Grapes have been grown on the single rod, that is, the cordon system. At all events, with each single rod of Apples furnished with its own independent roots, there can be no lack of food. One result of this plentiful or near supply is, that cordon Apples are mostly larger and finer than others. The full exposure of the fruit to sun and air is also favourable to the development of quality in cordon Apples. In the case of horizontal cordons within 1 foot or 15 or 18 inches of the ground, the extra moisture and heat of the soil no doubt favours quality. At the end of three years our cordon had reached the top of our fence. We formed another diamond by simply pulling up the training



FIG. 66.—SPIRAL CORDON APPLE.

than ten years, and that is perhaps long enough. No one, unless those who have actually seen Plum cordons in full fruit, can realise their extraordinary fertility. From 100 to 200 fruit on a double cordon, with a 6 feet wire to the right and left of the root, has been common. The one actually illustrated (fig. 63) here has about eighty fine fruit. Had we chosen one all fruit no one would have believed the sketch was from Nature. The Plums are trained on a wire 1 foot from the ground and planted 12 feet apart, being double cordons that give a run of 6 feet. These distances have answered well here, but of course they may be varied. Single cordons would fill the space



FIG. 67.—SPIRAL CORDON APPLE.

sooner, and might be planted from 6 to 8 feet apart. On a wall or fence Plums might be planted from 2 to 3 feet apart, and treated exactly as our Apple cordons, or trained vertically or diagonally, and not diamond fashion. Diamonds look well for Apples, but of course, as this would be yet more apparent in the case of Plums, there is apt to be a crush at the points of union and interweaving. My first intention in making the diamond fence of Apples (fig. 65) was to make it self-supporting by intergrafting at every intersecting point. I was also desirous to see the result of such a varied intermixture of sap as so many unions of different varieties would involve. That, however, has not yet been carried out, so several of these trees have begun to grow into each other.

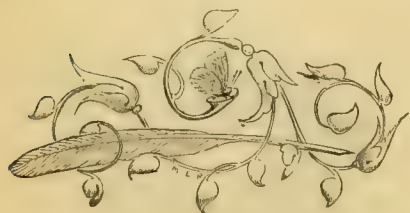
In the case of Plums all these unions should be avoided, as any abrasion of the bark causes bleeding or gumming. It may surprise a good many to hear that I consider our cordon Plums our greatest success. We have most of the best sorts as cordons. They have all done remarkably well, and we have found

none resent this concentration of their vital force into single or double cordons, or refrain from fruiting in consequence of the limited area afforded them.

The cordon Plums generally succeed the same sorts on walls, coming in a few weeks later. As a rule, too, they are quite as large as wall fruits and of equal flavour. Of course size and quality are both much dependent on the weather, and are also considerably influenced by soil, site, and culture. But, other conditions being the same, it may be broadly stated that cordon Plums are as good as any other, and far finer than the produce of standards. Being so low, and so easily accessible, the blossoms are easily protected with a few boughs in the spring. The fruits may also be thinned and fed at will. What more easy, for example, than to give a heavily-weighted cordon one or more potsful of manure-water on a broiling August day, or run a fine rosed watering pot along a whole line of cordon Plums every evening for a fortnight or more on either side of a dry midsummer day. The cordon Plums respond at once to those simple aids to culture, and even without them, and under the most common-place conditions, cordon Plums will seldom fail to please and abundantly reward those that plant them.

We also give two other forms of cordon Apples here—the horizontal (fig. 62), and the spiral (figs. 66, 67)—of both of which I send illustrations. The horizontal are double or single cordons run along a wire 18 inches from the ground. These have mostly done well, but are hardly so fruitful as the diamond cordons.

The spiral cordons I have never seen anywhere else; they are simply single cordons trained round five stakes, driven in to form a circle about a yard across. We started with the stakes a yard high, with the lower part of the cordon about 9 inches from the ground. The intention is to wind the branches round spiral fashion, keeping the main branch about 1 foot apart at all parts of the curve. The leader is run on without stopping. These were planted on poor soil, one each in the middle of each herb bed throughout a pretty complete herb garden, consequently they have not grown so well as the diamond cordons. Many of the trees have, however, fruited freely, and the trees have proved as useful as they are interesting. The horizontal cordons line the walks, the wires being carried round within about 9 inches of the Box edgings, and the walk by the Peach wall has a row of cordon Plums on the wall side, a row of cordon Apples on the other, then a row of pyramidal Apples on a 5-foot border furnished with a 15-inch path, and within a few inches of the latter come the diamond cordon Apple fence, screening the vegetable quarters, and screening them off from the fruit walls and borders. *D. T. Fish.*



Home Correspondence.

Senecio pulcher.—I am reminded by your note on this plant (see p. 306) that I have lately seen in a contemporary, though I cannot find the passage, that its cultivation is now well understood. It may be so, but I have never yet been fortunate enough to meet with any gardener who can flower it from year to year as a hardy plant. In this part of the country the crowns of the plant are always killed or mutilated in winter, and though the roots are not killed the late shoots do not acquire a flowering size before autumn. To secure flowering plants I find it necessary to keep them in a cold frame in winter, and plant out in April or May. I should not be surprised to hear that in warmer parts of the country it may be left in the ground with better results. I have now many plants in full flower, and they are well worth the trouble they cost. They grow best in a strong soil in partial shade, as the flower easily burns with hot sun. *C. Wolley Dod, Edge Hall, Malpas, Sept. 5.*

Jasminum odoratissimum.—What is the name of the enclosed yellow Jasminum? It was brought from Germany, but is supposed to be a native of China, and a very interesting fact has been tacked on to it, namely, that the flowers are used by the Chinese to give the flavour to the tea known as "Orange Pekoe." Is it so? *C. N.* [The plant appears to be the Madeira Jasminum odoratissimum. There is no mention of a yellow-flowered Jasminum by Dr. Porter

Smith in his *Contributions Towards the Materia Medica and Natural History of China*, who, at p. 124, writes:—"The *Moh-li-hwa*, or Jasminum Sambac, with its white, fragrant flowers, is well known to all; its flowers are used to scent Teas and to prepare toilet articles. Oil is extracted from them, and from the *Su-hing*, which is Jasminum officinale. The roots of the Jasmine plants are said to be deleterious; a tincture made from them is said to have very powerful sedative, anæsthetic, and relieving properties. These Jasmines were brought from Persia and Central Asia. The name *Ye-sih-min* is singularly like the English word *Jessamine*." *Eds.*]

Tuberoses Out-of-doors.—That Tuberoses can be well grown out-of-doors is fully attested by the fact of there being several fine patches of them in full flower at the present time in Mr. Ware's nurseries at Tottenham. In a light, warm, well drained soil they succeed admirably out-of-doors until late in the autumn. This fact should induce gardeners to grow them more extensively than they do in beds out-of-doors. No doubt the present season has been a favourable one for half-hardy plants generally, but from the splendid trusses of highly scented flowers that these bulbs were producing, without exception, when I saw them, no stronger evidence should be required of their fitness for out-of-door culture. *Visitor.*

Iris iberica and Susiana.—In answer to an inquiry as to the cultivation of these lovely plants, I may say there are but few localities and fewer seasons in which they will succeed perfectly in the open air, though every now and then one sees and hears of their flowering out-of-doors. What they want—like so many other plants of the East—is a season of heat and drought, which will enable them perfectly to mature their rhizomes and to rest for three or four months. There are three ways in which I have grown them with fair success. One is in pots, plunged in a frame during the autumn and winter, and brought into a cold house to flower, after which they should be kept in the warmest and driest place that can be found till about September. A second plan is to plant them out permanently in frames, and keep the lights on without shading for three or four months after flowering. The last is the plan which is followed by the Dutch growers for *Iris Susiana*, but which I do not think would suit *I. iberica*, and is intended rather to produce fine roots than flowers; viz., to keep the tuber dry like a Hyacinth, and plant it in the open ground in December, so that it does not begin to make growth above ground until spring. I fancy that both the Irises prefer a rather strong loamy soil if it is dry and warm enough; but they soon rot out-of-doors in such seasons as we have had lately. Besides the two plants above named I grow a hybrid between them, raised by Herr Max Leichtlin, which I do not think is an improvement on either; and three other nearly allied species, from North Persia and Armenia, *I. Saari*, *I. Heylandiana*, and *I. acutifolia*. All of them are rare and difficult to grow, though very showy when in bloom. *H. J. Elwes, Preston, Cirencester.*

Dishaulming.—Mr. Fish's instructions for carrying out dishaulming as a panacea carry their own condemnation, I think, on their very face. The stage of growth of the crop exercises so potent a claim to consideration that the most ignorant peasant could put his veto on the work with as much effect and better reason than the Roman *tribunus populi* sometimes did. No rules for dishaulming which do not distinctly state this condition or thoroughly provide for it are worth the paper they are printed on. Mr. Fish's instructions fail conspicuously here. In the second form of his rule (the only one which can apply to main late crops) this essential condition is so evaded that virtually the stage of the disease is made the only indicator of the right moment for applying the saving process; and in his anxiety to shut the stable door before the steed is stolen, he forgets the point whether there is a steed at all or a crop to be saved. The course of the Potato's growth and that of the fungus overlap each other. Later though the disease comes this year it came early enough to catch many a crop of early Potatoes which might have been saved in great part by this preventive practice. In field culture, where a common feature is lateness with everything but the disease, the tubers have to grow, from an early stage, in the very presence of the disease. It is useless, therefore, to affect to have turned the flank of this question—one which would have been long ago solved if capable of favourable solution. The disease turns the flank of the late Potato crop. If we may set it down—on paper—that at the earliest stage of the disease there is a crop of tubers, and thus the all-potent veto of this essential condition be minimised, as by putting the day of the month backward for a fortnight or so, then may this process be correspondingly extended—on paper—from early yields to late ones. This Mr. Fish does by virtually pushing back the second form

of his rule into the first, and, falling into his own snare, builds up a rapturous and Government-intervention-compelling prospect on this extremely narrow and slippery "basis of fact." No such light is thrown upon this matter that an "inspector," however intelligent in his own line of things, could deal with it. The very proposition is the condemnation of the theory. The rule given for dishaulming in its second form (which allows an interval for action after the disease spots' appearance) contains truth enough to controvert an erroneous or prejudiced statement, viz., that we are not to trust the disease-resisting powers of any kind of Potatoes. If I need not dishaulm before the disease hits the roots, then I need not dishaulm my Magnum Bonums at all, for it has not hit the roots of these for five years, and as an extended trial to-day goes far to assure me for six. The existence of disease-resisting kinds is matter of fact, their properties become verified by practice. Practical rules, therefore, are apt to endorse these properties, whatever the originators of those rules may say about them. *Rev. J. M. Taylor, M.A., Secer Green Vicarage.*

Peristeria elata, or Dove Plant.—While passing through the Chelsea Botanic Garden the other day, I was very much pleased to see a fine plant of *Peristeria elata* in flower. There are very few Orchid collections in the country but contain plants of this very curious Orchid, but how seldom do we see it in flower. What is the reason? I believe that Mr. Bain, the ex-curator of the College Botanic Garden, Dublin, used to flower this as freely as any other Orchid by merely giving the plants plenty of light and air, and keeping them in rather small pots. The same thing occurs at Chelsea; the plant in flower is fully exposed to the sun, and growing in a small pot. One of the finest *Lælias* I have seen for some time is in flower at the Royal Exotic Nursery, Chelsea, viz., *L. elegans* var. *Turneri*; the plant is not large, but has a spike carrying nine flowers, which all lovers of Orchids should see to appreciate. *A. Moore.*

Alnwick Seedling Grape.—Permit me to corroborate Messrs. Wildsmith's and Coleman's notes as to the merits of the above Grape. We have a Vine of it here, procured through Mr. Williams, that has borne eight bunches of very fine fruit this season. With us it set as well as Black Hamburgs usually do. The berries swelled well, are large, and as black as jet, with a beautiful bloom. The Vine in question was planted as a supernumerary in a late Muscat-house last April twelve months. It received the, with us, usual Muscat treatment when setting, viz., an average temperature of 75°. A Vine of Madresfield Court growing by its side set and swelled off well, but did not colour well, and the berries have cracked very much just as they were ripening. I intend cutting the latter Vine out, and inarching Alnwick Seedling on to it. Mr. Coleman in my opinion hit the right nail on the head when he says at p. 303 that soils have much to do with the success or otherwise of different varieties of Grapes. As mentioned before in your columns, the soil here is a stiff loam resting on magnesian limestone. *H. J. Clayton, Grimston Park Gardens, Tadcaster.*

Lilium auratum.—We have a specimen of this plant flowering in a Rhododendron bed, which has three spikes, one with thirty-three flowers, another with twenty-six, and a third with twenty-three. It is nearly 6 feet high the flowers are on the average 10 inches across. It is protected from the rain and sun by an umbrella. *W. C. P., Weybridge.*

Tall Trees.—In a village over which the sun will perchance one day cast the shadow of the Forth Bridge, and filled with surprise at the thought of its elevation, I went to church, little expecting that my estimate of height was destined to be completely dwarfed. The text was "The righteous shall flourish like the Palm tree," and appropriate enough were the analogies which the grandiloquent speaker drew from its upward, undeviating, and inwardly-increasing (endogenous) growth. But these were tame compared with the aspect the figure wore when the preacher assured his hearers that this tree sometimes reached the height of 1000 feet! "Where is the candidate from?" I enquired. "America," was the reply. He was far from home. *J. W., Edinburgh, Sept. 6.*

Nicotiana longiflora and acutifolia (see p. 305).—These plants are quite distinct. I have grown the former at intervals for years past, and have known it ever since I was a child. It is a most desirable plant in every point of view. In the greenhouse it may be had in bloom during every month in the year, and its blossoms have a delicious fragrance at night. In a fine summer it beds out with effect. *N. acutifolia* was sent to me three years ago by Mr. Max Leichtlin. It is a much larger and coarser plant than *N. longiflora*. Its blossoms are wholly without scent. They are much more star-shaped than those of *N. longiflora*, and of a much less pure white.

No one who saw the two plants growing together could suppose them to be identical. *H. Harpur-Creeve, Drayton-Beachamp Rectory, Tring, Sept. 7.*

The Ouvirandras at Purdysburn.—Having seen the above plants, I can testify to their successful cultivation by Mr. Young, the gardener, as mentioned by your correspondent, A. Outram, p. 277. But I differ from him with regard to name, as I believe them to be *O. Berneriana*, the leaves of which are club-shaped, while those of *O. fenestralis* are long, somewhat narrow, and pointed. Both varieties are, or were, grown at Chatsworth, *Berneriana* growing more rapidly and blooming more freely than *fenestralis*. *F. Fuller, Gr., The Grove, Reigate.*

Burning Sun Dahlia.—One of the drawbacks in Dahlia culture is that so many of them require so much tying and staking to secure them from rough weather. The plant under notice is a dwarf variety, of erect habit, and will furnish large quantities of flowers for decorative purposes at a minimum cost. The florist may nurse and dandle his pets as he will, but in point of usefulness plants that are self-supporting will as a rule be first favourites with practical gardeners. *H. C.*

Cauliflowers.—Having given Messrs. Dickson, Brown & Tait's Eclipse Cauliflower a fair trial for three seasons, I feel constrained to say that there is nothing to equal it for summer and autumn use. I have submitted three heads for your opinion, just as they grow on a quarter of the garden which had Broccoli last year. I consider it has three qualities to recommend it:—1. It never shows a fresh head, and stands hot weather better than any other; 2. It is moderately self-protecting; 3. It is white, solid, and of good flavour. The heads which I send are from seed sown in April under a hand-light, pricked out as soon as large enough, and planted out after Broccoli was cleared off in June. I have been cutting now for several weeks, and am confident there is nothing to surpass it, or even to equal it. The old saying, "When you find a good thing make a note of it," I consider applicable in this case, as nothing that has come under my notice as a kitchen gardener is equal to it. I have Walcheren, Veitch's Autumn Giant, and London Cauliflower, treated precisely similar, but they are not a patch upon it. *John Gaid, Thorndon, Brentwood.* [There is nothing about the specimens received to warrant our correspondent's high eulogium. The heads cannot certainly be called handsome, and the leaf growth is largely out of proportion. *EDS.*]

Apple Warner's King.—This Apple has done here (Hawkhurst, Kent) very well this year, considering the late bad season for ripening the wood. It is grown here as a cordon, and is bearing an immense quantity of fruit, each Apple being nearly a pound in weight. *A. R. P.*

Rosa rugosa.—I send for your inspection a few ripe fruit of *Rosa rugosa*, from a standard which is now bearing a heavy crop, as well as a profusion of its pretty blossoms in various stages. I may add that this and many other Roses which are not so much grown as they deserve to be are greatly prized by both the Earl and Countess Brownlow. *J. Gray, The Pleasure Grounds, Ashridge.*

Japanese Cyclamen (?).—The supposed Cyclamen mentioned at p. 311 as having been seen in Japan, is a Dog's-tooth Violet, growing very abundantly in all the sandy river-beds in Central Japan. I have never seen a Cyclamen in Japan. *C. Maries.*

Natural History.

MODIFICATION AND MUTATION.—In travelling through the English Lake District, or the Scottish Highlands, the tourist may have sometimes watched the movements of that eccentric bird, the water ouzel, which, in size and colour, looks at the first glance, when the bird is sitting, not unlike an altered black-bird. When the bird is in flight following rapidly along the course of a stream, with its short square wings and stiff rudder behind, you might mistake it for a kingfisher. And in the courting season, when you hear it sweetly singing, you might take it for a thrush. He is a winter singer, too, like the thrush. Tourists are not often found in his part of the country during winter, but Mr. St. John's evidence may be trusted, and he says in *Wild Sports and Natural History of the Highlands*, "In the coldest days of winter I have seen him alight in a quiet pool, and with outstretched wings recline for a few minutes on the water uttering a most sweet and merry song ;

then rising into the air, he wheels round and round for a minute or two, repeating his song as he flies back to some accustomed stone."

Considering the sort of country he frequents and his nesting-places in crevices of rocks on the sides of burns far up the mountains, in complete solitude where man's footstep seldom falls, you would expect the water ouzel, reared amid such scenes, to prove as wild as his birthplace. In real character, however, he bears a strong resemblance to the bird from which he sprang. I remember observing the tameness of the song thrush in a water ouzel I once met near Inverary. Near the margin of a lake which he wished to reach, on the banks of a small burn, I intercepted his flight. We had quite a protracted interview. He was quite within gun-shot, perched upon a stone, and curtsying continually. This habit of dropping curtsies by a constant dipping of his body gained him his name of dipper. Seeing that I still obstructed him he lost patience, and flew past me to the spot he wished to reach. I walked towards him, when he again perched upon a stone and curtsied as before, till I approached within 20 yards, when he once more flew round me and went up the burn. He is a good diver, and in spite of Mr. Waterton's opinion of the impossibility of the feat, he can forage for shell fish and caddis worms at the bottom of a stream, walking during these rambles by grasping the stones and pebbles with his claws.

Science proves that this curious water-bird is in fact a variation from the thrush type, and thus it offers another illustration that modification and mutation are the rule of life.

From any outlook on the fells of Cumberland or Westmoreland, the proofs of an altered and an altering world are visible on the landscape. The rubbish heaps of glaciers lie upon the shores of Windermere, whose climate is now so mild, and the grinding ice has scratched Helvellyn from its summit to its base. "The ruins of a house burnt with fire," says Mr. Darwin, "do not tell their tale more plainly than do the mountains of Scotland;" and the same may be said of those of Cumberland, with their scored flanks, polished surfaces, and perched boulders, of the icy streams with which their valleys were lately filled."

In the neighbourhood of Derwentwater, as the Rev. J. Clifton-Ward shows in his *Memoir of the Geology of Cumberland*, an ancient Cumbrian volcano poured forth its devastating ashes, and the boss of Castle Head, which visitors to Keswick are fond of climbing, was the centre of a lava flow. How the country has been modified since its Etna became extinct you may see by tracing its agreeable features from any conspicuous height, or by taking a seat in the excursionists' daily coach to Buttermere and Borrodale, and so home again to Keswick. Or you may find the proofs of change as plainly written in the flora of the district. Alpine plants found upon the hills here are found also in equally ungenial positions on the Pyrenees and in North Europe, showing that on the close of the glacial period, when plants on the hills became possible, the alpine of Great Britain must have had a common origin with those from which they are now separated. There was nothing to impede the plants from marching into England from the opposite coasts, since the shallow seas which separate us from the Continent were once dry land. Mr. Darwin says of the origin of our alpine flora at the close of the great ice age:—"As the warmth returned, the Arctic forms would retreat northwards, closely followed up in their retreat by the productions of the more temperate regions, and as the snow melted from the bases of the mountains the Arctic forms would seize on the thawed ground, always ascending as the warmth increased and the snow still further disappeared, higher and higher, whilst their brethren were pursuing their northern journey. Hence, when the warmth had fully returned, the same species which had lately lived together on the European and North American lowlands, would again be found in the Arctic regions of the Old or New Worlds, and on many isolated mountain summits far distant from each other."

It is found accordingly that the alpine plants of Switzerland and the Pyrenees are common to North Europe, and those of the United States to Labrador, while some of the alpine of America are identical with those of Europe. The more closely the crust and outer film of the world is studied the more clearly we perceive the modifications and mutations to which it has been subjected. The botanist meets with proofs of change as well as the geologist, and if the lesson of

the rocks—the igneous and the sedimentary, those which lie *in situ* and those which have been obtruded—did not suggest earth's constant changes of surface and climate, the distribution of alpine plants in the two hemispheres would alone suffice for the enlightenment of students in that department of science. *E.*

CARNIVOROUS HEDGEHOGS.—Your correspondents have lately drawn attention to this very unpleasant habit of eating their newly-born young when meddled with, in which the hedgehog agrees with the rabbit. In days long gone by, when I shared the care of the rabbits with other young folks, we found that a supply of water, or an occasional drink of fresh milk, stopped these very disagreeable proceedings, which were particularly unwelcome, as we had to finish the half-done work for the sake of common charity. Some of the rabbits would gnaw or kill their young shortly after birth, even if they were not meddled with, and we conjectured that the unnatural attack was caused by feverishness, which the extra supply of drink allayed. *O.*

Reports of Societies.

Alexandra Palace Fruit Show : Sept. 3, 4, 6, and 7.—The liberal prizes offered on this occasion brought, as might have been expected, a large exhibition, and there can be little doubt that had the duration of the show been less, still more competitors would have been present. The five days over which the exhibition extended naturally caused many in possession of perishable fruit to pause before entering the lists in a competition out of which a good deal of the produce was certain to come in a condition such as to make it of little further use. Although with a few exceptions there was nothing of unusual excellence displayed, still there was very little of that inferior description often present in an extensive fruit show, and which does so much to lower the general estimate of the whole. Grapes were the strongest feature in the exhibition, being present in large quantities, some of them possessing great merit. Pines, though being now comparatively so little cultivated, were not largely shown, but some of those exhibited gave unmistakable evidence that there are still those who can grow them. The time for indoor Peaches and Nectarines is getting far advanced, and unfortunately this season they are far from plentiful on open walls, yet some beautiful examples were staged. An estimate of the Apple and Pear crop, formed upon the extent and quality of the display of these fruits, would be much, we fear, above the mark, so far as the reality is concerned, taking the country collectively; for in addition to the fine exhibition for so early in the autumn shown in the classes allotted to them, the collection of too varieties of Apples shown by Messrs. Veitch, grown at their Fulham nursery, in beautiful condition; and of fifty kinds, also well grown by Messrs. Paul & Son at the Old Nurseries, Cheshunt, would in themselves have given an idea that Apples were not so scarce as they are.

COLLECTIONS OF FRUIT.

In the class for twenty varieties there were four exhibitors, each varying in their strong and weaker points. The twenty varieties required is a very large number. Apples, Gooseberries and Currants do not associate well with Pines, Grapes and Peaches, yet these commoner fruits must needs be used in the competition, unless the exhibitor stages such a number of varieties of the higher-class fruits as to limit the number of species of which his collection is composed; but although there is an interest attached to variety in the widest interpretation of the term, still the commoner fruits, however good of their respective sorts, cannot hold their own against the best kinds cultivated under glass. Mr. Goodacre, gr. to the Earl of Harrington, Elvaston Castle, Derby, was 1st with Venn's Black Muscat, Black Hamburg, Gros Colmar, Muscat of Alexandria, Canon Hall Muscat, and Foster's Seedling Grapes, mostly well done; Queen and Pernambuco Pines, Bellegarde, Princess of Wales, and Late Admirable Peaches, Victoria and Rivers' Orange Nectarines, two good Melons, Ischia Figs, McLaughlin's Gage Plums, Moor Park Apricots, Morello Cherries, and Jargonelle Pears—a good even collection. Mr. Sage, gr. to Earl Brownlow, Ashridge Park, Berkhamstead, who came in 2d, was strong in hardy fruit; his best dishes were Black Alicante Grapes, a fine cluster of Musa Cavendishii, good Royal George Peaches, Eastnor Castle and Scarlet Gem Melons, Elruge Nectarines, and a handsome dish of fruit of the edible Passion-flower (*Passiflora edulis*). Mr. Austen, gr. to Sir Greville Smith, Ashton Court, Bristol, was 3d, with a nice, highly-coloured collection, the most noticeable being Bowood Muscat Grapes, Exquisite Peaches, Pitmaston Orange Nectarines, W. Tillery and Ashton Hybrid Melons, and a nice dish of Bananas.

Ten dishes of fruit.—Here Mr. Miles, gr. to Lord Carington, Wycombe Abbey, High Wycombe, was a good 1st, with, amongst others, Black Hamburg and Muscat of Alexandria Grapes, Charlotte Rothschild and Black Jamaica Pines, Barrington Peaches, Pine-apple Nectarines, Golden Gem and Read's Scarlet-fleshed Melons. Mr. Goldsmith, gr. to P. C. Hardwick, Esq.,

Tunbridge, was 2d; his most meritorious dishes were Muscat and Black Alicante Grapes, Royal George Peaches, and Pine-apple Nectarines. Mr. Upjohn, gr. to the Earl of Ellesmere, Worsley Hall, Manchester, was 3d; in his collection were good examples of Black Hamburgh and Venn's Muscat Grapes.

Grapes.—Five varieties, one bunch of each. This class was well represented, some splendidly finished examples being shown; the best came from Mr. McMasters, gr. to W. Just, Esq., Eastham, Cheshire, with a beautiful even lot of five bunches, well finished in every way: they consisted of Muscat of Alexandria, Black Alicante, Madresfield Court, Buckland Sweetwater, and Mrs. Pearson. Mr. J. Roberts, gr. to the Baroness Rothschild, Gunnersbury, was 2d, with smaller bunches, very well done, of Foster's Seedling, Muscat Hamburgh, Muscat of Alexandria, Madresfield Court, and Black Hamburgh. 3d, Mr. Miles. Black Hamburgh, three bunches.—With these there was a close competition, Mr. Miles taking 1st with medium sized bunches of good even berries, quite black; Mr. J. Roberts, 2d, also showing well; 3d, Mr. J. Gadd, Thornton House, Brentwood, highly finished examples, but rubbed in carriage. Muscat of Alexandria, three bunches.—This class also was strongly contested, there being eleven lots staged, several of which ran very close, yet all being somewhat deficient in the deep amber colour so much prized in this excellent variety. Mr. C. Roberts, gr. to E. C. Glover, Esq., Highfield Hall, Leek, Staffordshire, occupied the post of honour with good bunches of even-sized berries; Mr. Hudson, gr. to J. Atkinson, Esq., Gunnersbury House, Acton, was 2d—handsome bunches, even in berry; Mr. Feest, gr. to H. J. Ashton, Esq., Staines, 3d. Any other white variety, three bunches.—1st, Mr. J. Roberts, Foster's Seedling—very well shown, better coloured than usually met with, the bunches even and compact; Mr. Sage, who was 2d, also had Foster's Seedling; 3d, Mr. McMasters. Any other black variety, three bunches.—Here, too, the competition was very keen, the quality of the 1st and 2d prize lots being unusually fine. Mr. J. Roberts had 1st, with Madresfield Court—good sized bunches, enormously large, even berries, nicely covered with bloom, just a shade wanting in colour; Mr. McMasters was 2d with Black Alicante, as fine in every way as it well could be; 3d, Mr. D. P. Bell, Clive House, Alnwick, with Alnwick Seedling—bunches and berries fine, and altogether well done.

Pines.—There was only one exhibitor in the class for three Queens, Mr. J. Roberts, who deservedly had the 1st prize, with handsome large fruit, respectively weighing 6 lb. 2 oz., 5 lb. 7 oz., and 5 lb. 1 oz. Smooth Cayenne, single fruit.—1st, Mr. D. Wilson, gr. to Earl Fortescue, Castle Hill, South Molton—a good fruit, 6 lb. 13 oz.; 2d, Mr. Muir, gr. to C. R. M. Talbot, Esq., Margam Park, Taibach, South Wales. Any other kind of Pine, single fruit.—1st, Mr. D. Wilson, showing a fine example of Charlotte Rothschild; 2d, Mr. Miles. Mr. Wilson also exhibited half-a-dozen Smooth Cayennes in his usual style—handsome, well-managed examples.

Peaches, Nectarines, and Apricots.—With twelve Peaches, Mr. Haycock, gr. to R. Leigh, Esq., Barham Court, Maidstone, took the lead, staging *Violette Hâtive*, handsomely coloured; 2d, Mr. Goldsmith, with *Reine des Vergers*; 3d, Mr. Seymour, gr. to W. R. Winch, Esq., North Mimms Park, Salway. For twelve Nectarines the 1st prize went to Mr. Abbott, gr. to G. H. Frith, Esq., Rindall, Sheffield, for *Victoria*, in nice condition; 2d, Mr. Hanagan, gr. to R. C. Naylor, Esq., Hooton Hall, Cheshire, with *Pine-apple*, in good order; 3d, Mr. Gadd, with *Elruge*. Twelve Apricots.—1st, Mr. Mundell, gr. to Lord Ebury, Moor Park, Rickmansworth, for *Moor Park*; 2d, Mr. Goodacre; 3d, Mr. Sage. Twenty Plums.—1st, Mr. Miles.

Melons.—Single fruit, green-fleshed.—Here Mr. Gadd was to the fore with a handsome, thickly netted, unnamed sort. Mr. Feest, who was 2d, had Bromham Hall. Single fruit, scarlet-fleshed.—1st, Mr. Muir; 2d, Mr. Goldsmith. In both these classes there were a number of exhibitors.

Apples and Pears.—The principal class for Pears was confined to six of a kind, but an unlimited number of varieties were allowed. This, as it almost invariably is, was unsatisfactory, one exhibitor showing forty kinds, the others not more than half that number. Mr. Goldsmith took 1st with forty varieties, comprising most of the best well known kinds; Mr. G. De Faye, Jersey, 2d, staging twenty sorts, large and in beautiful condition; 3d, Mr. P. F. Le Seuer, Jersey, with sixteen dishes, even larger than the 2d prize lot. The best examples of the Jersey fruit were Williams' Bon Chrétien, Bon Chrétien d'Été, General Todleben, Beurré d'Amanlis, Chaumontel, &c. Twelve Jargonelle Pears.—1st, Mr. Goldsmith; 2d, Mr. Hood, gr. to J. Fisher, Esq., Ebor House, Stamford Hill. Twelve Pears, any other variety.—1st, Mr. Goldsmith; 2d, Mr. De Faye.

Collection of cooking Apples, six kinds, six of each.—These were very fine. Evidently, if Apples are scarce, those that do exist are likely to be unusually large. The 1st prize was won by Mr. Haycock, with beautiful big fruit of Stone's Apple, Lord Suffield, Washington, Emperor Alexander, New Hawthornden, and Lord Derby. Mr. De Faye, who was 2d in a fine lot, had good dishes of Alfreton, Jacques Lebel, and Emperor Alexander. Single dish of cooking apples.—1st, Mr. Le Seuer; 2d, Mr. Austen. Dessert Apples, six varieties, six of each.—With these Mr. Haycock also took the lead, showing Jefferson, Summer Golden Pippin, Mother Apple, Devonshire Quarrenden, and Duchess of Aldenburgh; 2d, Mr. Douglas, gr. to F. Whitbourne, Esq., Loxford Hall, Ilford. Single dish of dessert Apples.—1st, Mr. Roberts; 2d, Mr. Miles.

There were a number of competitors for the Tomato prizes, many of the exhibits being unusually fine. For the best twenty-four, Mr. Castle, West Lynn, Norfolk, had 1st; Mr. R. Farance, florist, Chagwell Heath, was 2d. Messrs. Lane, of Berkhamstead, contributed some

large pot Vines, finely fruited—the kinds consisted of Black Hamburgh, Foster's Seedling, and Black Alicante. Messrs. Veitch's collection of a hundred varieties of Apples, already alluded to, was extremely fine for so early; as also was Messrs. Paul's, who in addition had ten boxes of Roses, good for the advanced season. Messrs. Rawlings made an extensive display of Dahlias, flowers of which likewise came from Mr. Smith, Edge Lane, Edmonton. Mr. Cannell had Dahlias, Asters, and Marigolds; Mr. J. Gilkes some fine Asters, Mr. Boller a collection of succulents, and Mr. J. Salter Cucumbers. All the above received commendations.

The Royal Horticultural of Ireland: Autumn Show.—This Society held its autumn show in the Exhibition Palace on Sept. 2, and it proved very gratifying to those entrusted with the management. The various classes were numerously contested, some good plants being staged in their respective classes.

The Cup offered for 12 exotics was won by Mr. Bracken, gr. to E. P. Westby, Esq., who staged a very fine well grown lot, viz., *Croton Queen Victoria*, 5 by 6 feet, a magnificent specimen, well coloured—a perfect beauty, one of the best *Crotons* in cultivation; *C. Weismanni*, about the same size; *Anthurium crystallinum*, grand; *Lapageria alba*, in umbrellae trellis, manifestly flowered; *rosea* also; *Allamanda Hendersonii*, *Vallota purpurea*, a grand specimen, about fifty fine spikes, &c. This collection would have done credit to any show; 2d, G. Orr Wilson, Esq. (gr. Mr. R. Hobson), who showed a nice group, but far inferior to the former.

The Society's Cup for nine Palms was awarded to the Right Hon. Lord Justice Deasy, who staged a fine lot, well grown and very clean. 2d, F. P. Westby, Esq.

Six fine-foilage plants.—1st, E. P. Westby, Esq., whose collection consisted of *Croton majesticum*, *D. Weismanni*, *Dracaena Baptistii*, *Curculigo recurvata* variegata, *Alocasia metallica* and *macrorhiza* variegata, a fine even lot. 2d, L. G. Watson, Esq., a nice lot. 3d, Mrs. White Killaher. All these collections were remarkably fine. In the class for six foliage plants, in 10-inch pots, E. P. Westby was again an easy 1st, with a good well grown lot. 2d, L. G. Watson, Esq.; 3d, Mrs. White Killaher—a close run these two.

Fuchsias and Pelargoniums were well shown. Tuberous Begonias were magnificently done also. The 1st prize was awarded to the Rev. F. Tymons, for a grand lot, his *Gloire de Nancy*, double, being by far the best specimen I have seen.

Cut flowers were shown in great quantities. The competitions for Dahlias and Asters, likewise *Gladioli* were particularly strong, the principal prizes for Dahlias falling to F. W. Leyland, Esq., who staged some first-rate blooms neatly put up. The same exhibitor showed some good Asters and *Gladioli*. A magnificent lot was shown by Mr. A. Campbell, of Gourrock, Scotland, who took 1st for the twenty-four and twelve.

Hand bouquets were good, nice taste being shown. The 1st prize contained flowers of the lovely sweet-scented *Plumeria Lambertiana* and *L. alba*—a grand flower for the bouquetist. 1st prize, Mrs. B. Daly; 2d, Mr. Guilfoyle; 3d, Sir E. S. Hutchinson.

Ferns were shown wonderfully well. The 1st prize was awarded to L. G. Watson, Esq. (gr. Mr. Flynn), for a magnificent clean, well-grown, even lot, consisting of *Todea superba*, nearly 5 feet across; *Davallia Mooreana*, well done; *Gleichenia* also. 2d, Lord Justice Deasy, for a nice even, well-grown lot. *Selaginellas* were also well done, seldom better seen. The 1st prize was awarded to P. Riall, Esq. The varieties included *Lyallii*, a grand piece, 3 feet through, clean, good foliage; *Wallichii*, *Warszewiczii*, *umbrosum*. 2d, R. Miller, Esq. British Ferns.—1st, P. Riall, Esq.

Fruit was a fair show. The competition for Grapes brought some really first-class bunches together, the highest honours falling to Mr. Roberts, gr. to the Countess Charleville, who showed in his usual masterly style. His Muscats of Alexandria were wonderfully well done, also Madresfield Court. 2d, Mr. Ennis, gr. to the Right Hon. Earl of Portarlington, who also showed some excellent examples of skilful cultivation. The same exhibitor was 1st also for Nectarines, Pine-apple, Melon (scarlet-flesh). Peaches, Nectarines, and Plums were fairly represented, as were also Melons, Apples, and Pears.

Some very fine collections of vegetables were staged, and were a great credit to the various exhibitors. Mr. W. E. Gumbleton showed some new varieties of Potatoes, which, if proved to be what was stated, must be something wonderful. From 3½ lb. of seed, the result produced was stated to be 150 lb. If true, is not this remarkable? The variety is called *Marshallton* (a Yankee), with purple oval-shaped tubers.

Messrs. Roger & McClelland, of Newry, exhibited not for competition, a miscellaneous collection of plants containing many novelties, some particularly rare; these, as staged by Mr. Smith, their energetic and enthusiastic manager, produced a grand effect. A novelty was introduced in this collection in the shape of showing some rare aquatics in tubs and glasses, which were very attractive. They also showed the new and beautiful *Ilex insignis* (figured in our last number, p. 297), and *Myosotis picturata*, a fine golden form, foliage grand for bedding. A grand specimen, such as is not often seen, of the lovely *Cattleya Dowiana*, was shown, not for competition, by Mr. Smith, gr. to Lord Ardilaun. I do not recollect ever seeing a more healthy specimen of this lovely Orchid. Highly commended.

The show in every way was a great success, the credit of which is due to Mr. Balfe, the energetic secretary, whose arrangements were complete in every respect. It is also gratifying to state that the decision of the judges could not be challenged in a single instance. (From a Correspondent.)

Sherborne Horticultural: Aug. 26.—This was held in the ruins of the old castle, Sherborne—a spot every way suited for such an exhibition—the whole of the garden and pleasure grounds, by the kind permission of G. Wingfield Digby, Esq., being thrown open—a boon evidently very much appreciated by many hundreds of visitors to the show. As is pretty well known in the gardening world, the presiding genius over the gardens there is Mr. Pragnell, one of the foremost vegetable growers, and a record of the show in these pages is desirable if only to illustrate the force of example, or the influence Mr. Pragnell has had, and still wields throughout the entire district, in the matter of vegetable culture; for though the show was grand in every department, the palm must be given to the vegetables, both as to the number of competitors and high quality, and this, be it understood, not because the schedule was a liberal one, or more so than for prizes offered for fruits and flowers—rather the reverse. The excellence attained in the culture of Potatoes, Carrots, Parsnips, Onions, and Celery can only be described by the word perfect, and all were alike good, properly puzzling the judges in their endeavour to discover the best. There were the usual three classes of gardeners, amateurs, and cottagers, the latter in some instances—notably so in Onions and Potatoes—beating the professional hands. Mr. Pragnell himself showed, but not for competition. A collection of Potatoes exhibited by him was noteworthy, not only for their high excellence, but because the name of each variety was supplemented with descriptive notes as to quality and productiveness, a procedure that might be advantageously copied in other districts.

Fruit generally was good, Plums predominating, Kirke's, Jefferson and Green Gages being the staple kinds shown. As in the fruit and vegetable classes alone there were upwards of 500 entries, it will be seen how impossible it is to give a list of all the prizes taken, but the following were successful in the principal classes. For plants Sir R. G. Glyn, Leweston House; Mr. T. W. D. Bide, Yeovil; Mr. J. Gooden, Compton House; and Mr. J. Neal, Kingston. For cut flowers the principal prize winners were Messrs. Keynes, Salisbury; Mr. Nicklen, Sherborne; Mr. Garraway, Bath; and Mr. W. Daley, Yeovil. In the fruit classes the following were among the most successful:—Collection of ten varieties, Vincent St. Ames, Esq., Cote House, Westbury-on-Trym; and Hanning Vaughan Lee, Esq., M.P., Dillington Park, Ilminster. For six varieties, G. W. D. Digby, Esq., and R. Baker, Esq., Ilchester. For Grapes, G. D. W. Digby, Esq., Colonel Rattary, Sherborne; Captain Midmay, Hazlegrove House; W. R. Phillips, Esq., Montacute House; and W. Neal, Esq., Kingston.

In the vegetable classes nearly all the prize winners belonged to Sherborne and the immediate neighbourhood, and in the cultivation of vegetables they might unitedly challenge, without fear of being beaten, any other locality in the kingdom—a fact in no small measure due to Mr. Pragnell's geniality and readiness at all times to impart information on any and all subjects connected with horticulture.

Maidenhead Horticultural: Sept. 20.—The annual show of this very spirited Horticultural Society was held on Wednesday, the 20th inst., in the Hambleton Hall (a large and commodious building partly roofed with glass, which seemed very well adapted for the purpose), and proved very successful. The competition in many of the classes was very keen, especially so amongst fruit and vegetables. The arrangement of the exhibits in the hall showed more than the usual ability, and did the management much credit. Prizes were offered for groups of plants effectively arranged, which brought forward several good lots, the 1st prize going to Mr. G. Elliott, gr. to J. Hibbert, Esq., Braywick Lodge; conspicuous in this group were a number of nice plants of the pretty blue *Browallia elata*. A very good display was produced in the class for twelve variegated or handsome foliaged plants, which is a novel and excellent change from the ordinary class of six or eight huge monsters which are generally to be seen. Mr. R. Brown, gr. to F. T. Barry, Esq., St. Leonard's Hall, Windsor, was 1st with beautiful plants of the following:—*Alocasia Veitchii*, *Crotons pictus* and *Weismanni*, *Anthurium magnificum*, *Dracenas regina*, *ferrea*, *Shepherdii*, *Pandanus Veitchii*, *Areca crinitas*, *Pritchardia*, &c. For one specimen foliage plant there were some very fine plants shown. Mr. G. Elliott was placed 1st with a very fine *Croton Weismanni*; and Mr. Wells, gr. to R. Ravenhill, Esq., 2d, with a tall grand plant of *Eurya latifolia*, a plant not often seen at exhibitions; a very large and fine plant of *Ficus Parcellii* was also shown. For the best plant in flower Mr. R. Brown was 1st, with a very fair specimen of *Bougainvillea glabra*; Mr. Hopkins being 2d, with a *Stephanotis floribunda*. For six stove and greenhouse plants Mr. G. Elliott was 1st, and for four ditto Mr. Keates, gr. to Colonel Williams, secured the honours. Coleuses were well shown, and some very large Cockscombs came from Mr. A. G. Bridgman, gr. to T. S. Cocks, Esq., Thames Bank, Marlow. Cut flowers were not so well shown, if we except a fine stand of six varieties from Mr. Tranter, and the wonderfully fine *Zinnias* from Mr. Walker, of Thame. The *Chrysanthemum Asters* from Mr. Gribble, gr. to Mr. Palmer, Canon Hill, were preferred to the quilled varieties from Mr. Walker. Bouquets were altogether of second-rate quality, and the table decorations were execrable.

Fruit.—Some very good fruit was exhibited. Mr. Lockie, gr. to Lord Otho Fitzgerald, securing the 1st prize for the collection of six kinds, viz., Grapes—Black Alicante, White Tokay, named *Forster's Seedling*; Figs—Brown Turkey, very fine; Pears—Jargonelle, very fine; and Peaches, very large. In the collection of four kinds, Mr. Feist, gr. to E. J. Ashton, Esq., Bishopsgate House,

Staines, was placed 1st, and this exhibitor was 1st also for Muscat Grapes, which were very fine and meritorious. Black Hamburg Grapes were well shown by Mr. Bloomfield, gr. to G. Blane, Esq., Folejohn Park, Slough; and the Black Alicante from Mr. G. Goodman, gr. to E. Deacon, Esq., Abney House, Bourne's End, did the cultivator much credit. Mr. Maker, gr. to C. Allhusen, Esq., was 1st with excellent Peaches, and some remarkably fine Plums—Pond's Seedling, Kirke's, &c.—came from Mr. Gribble and Mr. Lockie.

Vegetables were well shown, the Potatoes being remarkably fine throughout. For the collection of nine dishes there were eight entries, Mr. Lockie being placed 1st, and Mr. Elliott 2d. The former had very fine Tomatoes, Peas, Turnips, and Cucumbers. One other very fine lot would have been placed higher but for the absence of Potatoes, which the judges rightly considered were indispensable. The champion, and by far the handsomest Potato at this exhibition, was undoubtedly Sutton's Woodstock Kidney, raised by Mr. Fenn. It is a model in form and appearance, and also of excellent quality. The best six dishes came from Mr. W. Gooch, South Norward, viz., Woodstock Kidney, Triumph, Blanchard, International, Salmon, Trophy, Onions were remarkably fine. The cottagers' display of vegetables was exceedingly good, and appeared to excite great interest.

Very material assistance towards the display was rendered by Mr. Fleming from the Duke of Westminster's rich stores at Cliveden; and by Mr. Turner, of Slough, whose grand exhibits of Dahlias, Roses, &c., were much admired. A very fine lot of plants and a basket of Niphetos Roses also came from Messrs. Standish & Co., Ascot.

Caledonian Horticultural.—The great autumn two days' show of this Society opened on Wednesday. The exhibition as a whole was one that was seldom surpassed, and the *locale* in which it is held, the Great Waverley Market, in Edinburgh, is the finest obtainable in Scotland. The nurserymen, as usual, made a great display, filling the large tables with their choicest productions. The Lawson Seed and Nursery Company had a fine display of Conifers arranged on the floor, formerly an ornamental garden, with fine standard Sweet Bays in the centre of each bed. Messrs. Ireland & Thomson's tables had a fine collection of stove plants, in which were noticeable Anthurium Veitchii and Warroqueanum, Crotons Prince of Wales, Duke of Buccleuch, interruptus, aureus, and Warrenii, some fine Begonias, &c. Messrs. Downie & Laird showed fine Palms, Dracenas, Ferns, &c., and some choice stands of Dahlias, Pentstemons, Phlox, and Violas, which were greatly admired; and a plant of Rhododendron Duchess of Edinburgh in fine flower. Messrs. Methven & Sons exhibited a fine lot of Ferns, Palms, Crotons, &c., also some cut stands of their Glove Carnation Duke of Wellington in fine condition. Messrs. Dicksons & Co. had superior Tree Ferns, fine Eucharis amazonica, and a good display of stove and herbaceous plants, and a stand of cut blooms of their Matricaria inodora fl.-pl. alba.

Messrs. Drummond Brothers showed some nice Orchids, Ferns, Palms, and miscellaneous stove plants on their tables; and Mr. Robertson Munro sent some choice herbaceous plants and a stand of cut blooms of Tigridia grandiflora, very fine. Messrs. Todd & Co. had a dinner-table spread with a fine display of fruit and flowers, very well done; this attracted much attention, as also did one by Messrs. Dickson & Co., of Princes Street. The latter was heavier in style. Mr. David King had a table of hardy and other Ferns; and last, but not least attractive, the Botanic Gardens contributed a collection of Sarracenias, amongst which was a fine plant of the new Cheloni, also grand Darlingtonias, Nepenthes Cheloni, Fly-traps, Miltonia spectabilis, and Agave Victoria regina, &c.

In the amateur class Mr. Hammond, of Brayton Hall Gardens, carried off the palm with good Cocos Weddelliana, Croton Queen Victoria, Dracenas, and many other fine things; Mr. Reid, gr. at Ravenswood, coming in 2d with a very good collection. Stove and greenhouse plants were well represented, the veteran Mr. J. Paterson, gr. to J. Syme, Esq., of Millbank, being placed 1st in both classes with very fine plants of Ericas Irbyana, Marnockiana, MacNabiana, and aristata major, Statice profusa, &c.; Mr. A. Paul, of Gilmore Place, being 2d in the larger class, and Mr. McFarlane, of Moreuden, in the smaller.

For a single pot of Eucharis amazonica Mr. Paterson was again victor as also with three Cape Heaths; his exhibits being tricolor Eppsi, retorta major, and Jacksonii. Ferns were a great feature. Dr. Patterson, of Bridge of Allan, was 1st for two Todeas. Mr. Pearson, gr. to Lady L. Dundas, of Beechwood, distanced all competitors for Adiantums, and Mr. Curror, gr. to Geo. Douglas, Esq., Eskbank, had by far the finest single Adiantum farleyense. Mr. Cairns, gr. to R. Patterson, Esq., had a splendid Pteris scaberula. For six Ferns Mr. Hammond was 1st with very fine specimens, and Mr. Paul 2d. Mr. Graham, Blackford Avenue, had fine Lycopodiums. For a single Orchid Dr. Patterson was 1st with a fine Vanda suavis, and Mr. Paul 2d with Oncidium tigrinum. Mr. Hammond was also 2d for the fore with four fine Palms, and Mr. J. Paterson 2d. For foliage plants, Mr. Hammond was 1st with fine Phyllostenium Lindeni, Croton Weismanni, Croton majesticus, and Dasylirion acrotrichum; and Mr. S. Graham, of Blackford Avenue, 2d. Mr. Johnson, of Woolmet, and Mr. Henderson, gr. to Mr. Weir, distinguished themselves with Pelargoniums; and Mr. Walker, gr. to Mrs. Wood, Rosehall, had excellent Fuchsias. Cut flowers were very good, Messrs. Downie & Laird being 1st in both classes of Dahlias; and Mr. Black, of East Calder, 1st in the amateur

class of fancies, and Mr. Walker, Rosehall, with shows. Some fair Hollyhocks were exhibited by Mr. Forbes, of Hawick, and Mr. Johnston, and good spikes by Mr. McIntyre of The Glen. Mr. T. Smith, nurseryman, Stranraer, and Mr. Hugh Dickson, of Belfast, had good cut Roses, very fresh. Messrs. Stuart, Mein & Allan, Kelso, had some good Marigolds; while Asters were well represented by Mr. Menzies, of Carberry, and Mr. J. Taylor, of Inveresk.

Fruit.—On this occasion fruit was exhibited in perfection. Mr. McIndoe, Hutton Hall, Guisborough, took the 1st place for the collection of twelve sorts of fruit, with very fine Duke of Buccleuch, Black Hamburg, Foster's Seedling Grapes; Walburton Admirable and Prince of Wales Peaches; good Pines, Figs, &c.; Mr. McIntyre, of The Glen, Innerleithen, being 2d. In the collection of eight sorts of fruit, Mr. Fairgrieve, of Dunkeld Gardens, was 1st; and Mr. McKelvie, gr. at Broxmouth Park, 2d. For eight bunches of Grapes there was a fine competition, Mr. McKelvie being 1st with Alicante, Hamburg, Muscat of Alexandria, and Golden Queen, all very fine; Mr. Johnston, of Glamis Castle, 2d; and Mr. Hammond, 3d. For four bunches, Mr. Hammond was 1st, and Mr. Maclure, 2d. For the Corporation of the City prize for twelve bunches, Mr. Hammond carried off the palm with Black Hamburg, Alicante, Mrs. Pince, Muscat of Alexandria, all very fine; Mr. McIntyre was 2d, and Mr. McIndoe 3d. Mr. Johnston, of Glamis, was 1st with two bunches of Muscat of Alexandria, excellent fruit; and Mr. Boyd, of Callender House, was 1st for two bunches of Black Hamburg; while Mr. McIntyre took 1st for two magnificent bunches of Mrs. Pince, and Mr. Hammond 2d. Mr. McKinnon was 1st for a single bunch of Muscat of Alexandria, fine and splendidly coloured; and Mr. Bell for Alnwick Seedling, in good condition; Mr. Forbes, of Cockermouth, for Alicante; and Mr. Boyd for Lady Downe's. Mr. McIndoe took 1st for the finest flavoured white Grape, and Mr. Boyd for the finest bloomed bunch. Mr. McKelvie was grand with Gros Colmar; Messrs. Thomson & Sons, of Clovenfords, showed splendid Duke of Buccleuch; and Mr. Carruthers, of Corstorphine, had excellent Madresfield Court. The great centre of attraction was round the Grapes, though all other kinds were well represented.

Vegetables.—The chief point of interest in the vegetable department was the great Potato competition, Mr. Reid, of Mid-Sanquhar, Ayr, carrying all before him in both classes—twelve varieties and eighteen varieties, twelve of each. His tubers were very clean, of equal size, and well staged. In the former class Mr. J. Gentleman, Bathgate, was 2d; and in the larger, Messrs. Lamont & Sons, The Glen Nurseries, Musselburgh, had 2d honours; and Mr. McKinnon, Melville Castle Gardens, took 3d place in both collections. The number of entries in both was very large, and the exhibits well up to the mark. Vegetables of all kinds were shown in profusion, and for the most part of first-rate quality. Mr. J. Thomson, Crook, Murrayfield, took 1st for a collection in the market gardeners' class; Mr. Milne, Sunnyside, 2d; Mr. J. Brown, of Abercromby, being 1st in the gardeners' and amateurs' class; and Mr. McIntyre 2d. (From a Correspondent.)

Derbyshire Horticultural: Sept. 1 and 2.—The annual exhibition of the above Society was held at Derby, and proved a great success. Plants and cut flowers were well shown, and the fruit was good, but lacking in quantity compared with previous years. There were three spacious tents provided for the exhibits, and they were well filled. The centre one was a large circular tent, the plants being in the centre, and the fruit, cut flowers, and vegetables staged on the side tables. In the nurserymen's class for twelve plants Mr. Cypher, of Cheltenham, was well to the fore with Thrinax elegans, Latania borbonica, Crotons Weismanni and Disraeli, Cordyline indivisa, Gleichenia Mendelii, Ixora amabilis, Lapageria rosea, Stephanotis floribunda, Erica Irbyana, E. Aitonii Turnbullii, and a remarkable plant of the slow-growing Erica Marnockiana. E. Cole & Sons, of Manchester, were 2d, with Kentia Fosteriana, Crotons Disraeli and Weismanni, Allamanda nobilis, A. grandiflora, Ixora coccinea, Erica Marnockiana, &c. Small & Sons, of Ilkeston, were 3d, with a very poor lot, that did not merit the prize they received. In the class for gardeners Mr. Ward, gr. to T. H. Oakes, Riddings House, was an easy 1st, with Kentia Fosteriana, Dasylirion glaucum, Cordyline indivisa, Croton variegatus, very good; C. Weismanni, Cocos Weddelliana, Dicksonia antarctica, Ixora Williamsi, I. Fraseri, Erica jasminoides, Dipladenia amabilis, Allamanda Hendersoni. Mr. Milford, gr. to T. Evans, Esq., M.P., Allestree Hall, was 2d, with Croton longifolius, good; C. pictus, Areca lutescens, Maranta Veitchii, Adiantum farleyense, Allamanda Hendersoni, good; &c. Mr. Gilbert, gr. to Rowland Smith, Esq., Duffield Hall, was a very close 3d, his flowering plants being very good. He had Bougainvillea glabra, Vallota purpurea, Allamanda Schottii, Vinca alba, Dicksonia antarctica, Cibotium Schiedei, Latania borbonica, &c. Strange to say, out of four entries for Ferns there was not one exhibitor; in former years there has been six competing. Lycopodiums were one of the best features in the show. Mr. Robinson, gr. to G. Meynell, Esq., Meynell Langley, was 1st, with S. cæsia arborea, stolonifera, Mertensii, Schottii, apoda and Wildenovii. Mr. Milford was a good 2d, with S. umbrosa cernialis, cordifolia, &c. For six Bicolor and six Tricolor Pelargoniums, Mr. Ward was 1st, and Small & Son 2d. For six double and six Zonals, Mr. Robinson was 1st, and Small & Son 2d. Mr. Milford was 1st for a good basket of plants, in the centre of which was a finely coloured plant of Croton Queen Victoria. For Roses, Perkins

& Sons, of Coventry, took the premier prize for twelve, and the 2d for six, Mr. Henson, of Derby, being 1st, for six and 2d for twelve. Mr. Edwards, of Nuthall Nurseries, Nottingham, was a long way ahead with Dahlias, Mr. Henson being 2d in both classes. Mr. Edwards also staged a very good lot, not for competition. Mr. Henson was the principal prizetaker in Gladioli, Asters, Marigolds, &c.

For bouquet, Mrs. Cypher was 1st, with a very good one, Mrs. Henson being 2d—the last-named being 1st for a stand of flowers. In the class for dinner-table decorations to be arranged by ladies there were seven exhibitors, Mrs. Bolas, of Hopton Hall, being 1st; Mrs. Ward, of Riddings, 2d, and Mrs. Henson 3d. For bouquets there were six prizes offered and fifteen were staged, of which the one made by Miss Butler was an easy 1st, Mrs. Butler being 2d, Mrs. Ward 3d, Miss Cypher 4th, with one that ought to have been nearer the top; Mrs. J. Henson 5th, and Mrs. Isaac Henson 6th.

Fruit.—For black Grapes, Mr. Ward was 1st, Mr. Edwards, gr. to E. Coke, Esq., Longford Hall, was a very close 2d, and Mrs. Robinson 3d. The prizes were awarded the same for white, Mr. Ward having some excellent Muscats. Mr. Ward was also 1st for Pine, Melons, staging "Luscious and Melting," and Peaches; Mr. Gilbert being 1st for Nectarines, Mr. Milford for Cucumbers. Mr. Ward was the only exhibitor of ten dishes of fruit, staging good Muscat and Madresfield Court Grapes, Providence Pine, Melon, Figs, Plums, Peaches, and Nectarines. For a collection of vegetables, twelve species, Mr. Ward was 1st; Mr. Wootton, gr. to N. C. Curzon, Esq., Lockington Hall, was 2d; and Mr. Wright, of the Manor House, Borrowash, 3d. There were five exhibitors in this class. (From a Correspondent.)

Worcester Show.—The city of Worcester has at last followed in the footsteps of many other towns of less importance, and produced one of the best shows in the West of England. The idea emanated from Mr. Tudgey, the gardener at Henwick Grange, one of our largest exhibitors both in London and the principal shows throughout England. He was fortunate in meeting with an excellent secretary in Mr. J. Hill White, and a good working committee was soon formed. A great patron of horticulture, J. F. Greswold Williams, Esq., kindly placed his grounds, which were very suitable for the purpose, at the services of the Society.

In class I, miscellaneous collection, 30 square yards, Mr. Cypher, of Cheltenham, was 1st, with some splendid plants of Ixora Williamsii, Croton Johannis, Cycas revoluta, Brahea filamentosa, a plant seldom seen well done, in consequence of the damp rotting the tips of the leaves and filaments. Mr. Hughes, gr. to T. R. Hill, Esq., was 2d. In this collection was a fine plant of Brugmansia arborea, a fine decorative plant; and a Begonia fuchsoides, 10 feet high. Mr. Cypher was also 1st with Ferns, having some splendid Gleichenias and a grand plant of Adiantum cardiochæna. There was not much competition in this class. Mr. Cypher was also 1st with ornamental foliage plants, and had a grand plant of Geonoma Seemannii and Croton Johannis, a grand Croton when done well. J. E. Morton, Esq., had a splendid plant of Cycas revoluta and Pandanus Veitchii. Fuchsias and Caladiums were fairly well done, also Coleus. Unfortunately some of these had to be arranged out-of-doors, which did not show them off to the best advantage.

Two splendid banks at each end were arranged for effect by Mr. Tudgey, but not for competition. The local nurserymen also sent some nice groups, especially Messrs. Smith & Son and Messrs. Rowe & Co.

Fruit was well represented, both as regards quantity and quality. In the collection of six dishes Mr. Barker, gr. to Sir H. Allsopp, was 1st, having some magnificent black and white Grapes; Mr. Child, gr. to the Earl of Coventry, was a good 2d. Vegetables were also shown well, and in such quantities that space will not allow us to particularise them. (From a Correspondent.)

Manchester Botanical.—A show of Dahlias and Gladioli took place on Saturday afternoon at the Manchester Botanical Gardens, Old Trafford. The display made by several trade growers was excellent in every respect, and a large variety of examples were shown. A Silver Cup was offered by Messrs. Elkington & Co., of St. Ann's Square, for the best forty-eight Dahlias, and this was awarded to Mr. W. Boston, of Bedale, Yorkshire, a 2d prize being given to Mr. Charles Rylance, Aughton, Ormskirk; the whole of the flowers exhibited by Mr. Boston were perfect specimens, and included great variety of colour. Mr. Charles Turner, of the Royal Nurseries, Slough, showed a very fine collection, as did also Messrs. Dickson, Brown & Tait, of Manchester. A special feature of this department of the exhibition was the show of bouquet Dahlias, a small type of flower excellent for cutting for bouquets, and making also most effective garden plants. Of these Mr. Turner, in particular, showed a large variety. The collection of a variety christened Lady Blanch, having pure white flowers resembling a Ranunculus, was much admired.

The principal show of Gladioli was made by Messrs. J. Kelway & Sons, of Langport. Such a display, it was asserted by competent authorities, has never before been seen, either in point of colour or marking. The blooms covered a space of 70 feet by 3 feet, and the artistic manner in which they were staged added greatly to their appearance. The Society's Gold Medal was awarded to Messrs. Kelway for their whole collection. The same firm also exhibited several new seedlings, in respect of which certificates were awarded. They included Joseph Broome, a magenta flower with pink and white throat; Duke of Connaught, the predominating colour of which

was intense scarlet; Henry Irving, yellowish bronze; Shirley Hibberd, crimson, and Bruce Findlay, a delicate salmon-coloured flower with white throat. The judges awarded an extra prize to Messrs. Dickson, Brown, & Tait for a hybrid Melon. (From a Correspondent.)

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON.
FOR THE WEEK ENDING WEDNESDAY, SEPT. 8, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.					HYGROMETRIC DE- DUCTIONS FROM GLAISHER'S TABLES 6th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.			
Sept. 1.	In.	In.	°	°	°	°	°			
2	30.15	+0.26	81.4	56.4	25.0	67.3	+8.0	59.6	70	0.00
3	30.04	+0.14	85.3	54.7	30.6	69.0	+9.9	59.7	72	0.00
4	29.84	-0.06	87.5	56.1	31.4	71.2	+12.4	59.6	67	0.00
5	29.92	+0.01	76.9	63.0	13.9	68.5	+9.9	57.4	67	0.00
6	29.91	0.00	75.3	51.5	23.8	61.3	+3.4	52.3	71	0.07
7	29.87	-0.04	70.3	52.3	18.0	60.0	+1.6	50.2	70	0.07
8	29.82	-0.09	67.4	47.6	19.8	57.1	-1.3	50.6	70	0.00
Mean	29.94	+0.03	77.7	54.2	23.5	65.0	+6.3	55.6	72	0.14

Sept. 2.—A very fine bright warm day. Generally clear till evening, then cloudless.
— 3.—A brilliantly fine day. Hot. Cloudless.
— 4.—A very fine hot day. Sky cloudless generally.
— 5.—A fine, bright, hot day. Strong wind, cloudy in evening. Few drops of rain at 6.30 P.M.
— 6.—Fine and bright till afternoon, then cloudy. Overcast, with thin rain after 6 P.M.
— 7.—A fine bright day, partially cloudy. Cool at night.
— 8.—A fine day, generally cloudy and cool. Overcast at night.

LONDON: *Barometer*.—During the week ending Saturday, September 4, in the neighbourhood of London, the reading of the barometer at the level of the sea decreased from 30.18 inches at the beginning of the week to 29.96 inches by the afternoon of August 30, increased to 30.37 inches by the morning of September 2, decreased to 29.98 inches by the afternoon of the 4th, and was 30.02 inches at the end of the week. The mean reading for the week at sea level was 30.13 inches, being 0.07 inch above that of the preceding week, and 0.06 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 87½° on September 4, 85½° on the 3d, and 81½° on the 2d, to 70½° on August 30; the mean value for the week was 79°. The lowest temperatures of the air observed by night varied from 52½° on September 1 to 56½° on the 2d; the mean for the week was 55°. The mean daily range of temperature in the week was 24°, the greatest range in the day was 31½° on September 4, and the least 15½° on August 30.

The mean daily temperatures of the air were as follows:—Aug. 29, 64.4, 30th, 61.8, 31st, 63.5, Sept. 1, 63.1, 2d, 67.3, 3d, 69.3, 4th, 71.2, and the amounts in excess of their respective averages were 4.3, 1.8, 3.7, 3.7, 8.9, 9.9, 12.4. The mean temperature of the air for the week was 65.8, being 6.3 above the average of sixty years' observations, and 9.2 above the value for the corresponding week in 1879.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 158° on Sept. 3 and 4; 157° on the 3d, and 151° on August 29; on August 30 the reading did not rise above 96°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 46½° on Sept. 1, 48½° on the 4th, and 49½° on August 31; the mean of the seven lowest readings was 50°.

Wind.—The direction of the wind was N.E., S.W., and S.E., and its strength gentle. The weather during the week was very fine, dry, and hot. The sky was generally clear. Lightning was seen on August 29 and 30.

Rain.—A little rain fell on August 29; the amount measured was only 0.02 inch.

ENGLAND: *Temperature*.—During the week ending Saturday, Sept. 4, the highest temperatures of the air observed by day were above 87° at London, Cambridge, Birmingham, and Sunderland, and below 77° at Plymouth and Brighton; the general mean from all places was 82½°. The lowest temperatures of the air observed by night were below 52° at Truro, Plymouth, Bristol, Cambridge, Wolverhampton, and

Nottingham, and above 56° at Bradford and Sunderland; the mean value from all places was 53°. The extreme range of temperature in the week was above 35° at London and Cambridge, and below 25° at Brighton and Bradford; the mean range of temperature from all stations was 29½°.

The mean of the seven high day temperatures was above 76° at Truro, Bristol, London, Leicester, Cambridge, Birmingham and Sunderland; and below 71° at Plymouth and Brighton; the mean value from all places was 75½°. The mean of the seven low night temperatures was below 56° at Truro, Bristol, London, Wolverhampton and Cambridge, and above 59° at Leeds and Sunderland; the general mean from all stations was 57°. The mean daily range of temperature in the week was above 24° at London and Cambridge, and below 15° at Plymouth, Brighton, Bradford and Leeds; the mean daily range of temperature from all places was 18½°.

The mean temperature of the air for the week from all stations was 64½°, being 9½° higher than the value for the corresponding week in 1879. The mean temperature was above 66½° at Cambridge, Birmingham, and Sunderland, and below 63° at Plymouth, Brighton, and Wolverhampton.

Rain.—At Nottingham 0.71 inch fell on August 30, and with this exception the amounts of rain recorded at the several places were very small; at Leeds the amount was 0.25 inch, whilst at London (Blackheath) it was but 0.02 inch. At Truro, Plymouth, Brighton, Bristol, Cambridge, Wolverhampton, and Sunderland no rain was measured. The average fall over the country was 0.10 inch.

The weather during the week was very fine, bright, and hot, and the sky clear.

Lightning was seen at several places on Sunday, August 29.

SCOTLAND: *Temperature*.—During the week ending Saturday, September 4, the highest temperatures of the air observed by day varied from 81° at Glasgow to 72½° at Leith; the general mean from all places was 76½°. The lowest temperatures of the air observed by night varied from 40° at Paisley to 52° at Aberdeen; the mean value from all stations was 47°. The mean range of temperature in the week from all places was 29½°.

The mean temperature of the air for the week from all stations was 62°, being 8° higher than the value for the corresponding week in 1879. The mean temperature was above 63° at Dundee, and below 61° at Paisley and Leith.

Rain.—The amounts of rain varied from 0.30 inch at Perth to 0.02 inch at Paisley; at Glasgow, Aberdeen and Leith no rain was measured; the average fall over the country was 0.07 inch.

DUBLIN.—The highest temperature of the air was 76½°, the lowest 43°, the extreme range 33½°, the mean 63°, and the amount of rain 0.04 inch.

JAMES GLAISHER, F.R.S.

Obituary.

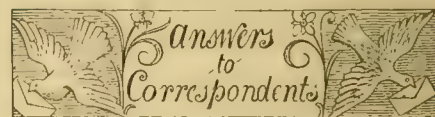
THE death of Mr. ROBERT RONALDS, of the High Street, Brentford, an old and very much respected townsman of the county town of Middlesex, and a highly respected nurseryman, is announced, at the advanced age of eighty-one years. In times past the nursery business carried on at Brentford by Hugh Ronalds & Son acquired a great and, we might say, European reputation. Then it was one of the very best fruit nurseries in the kingdom, and young men sought admission there with as great desire as they would in these days to Kew or any other first-class establishment. It is thought to be some fifty or sixty years since the father died, and then the business was carried on by John and Robert Ronalds.

The nursery was situated in that part of the town of Brentford known as New Brentford, but the site is now covered by houses. In addition to being large cultivators of fruit trees, &c., a select collection of bulbous plants was grown, and a portion of it was devoted to seed growing. At that time the nursery was famous for its strains of Asters, Stocks, &c., which were in great demand by the London seed trade. Also the newest and choicest hardy and half-hardy annuals were grown for seed purposes. It is recorded that on one occasion a former Duke of Devonshire was so struck with the beauty of a bed of late Tulips he saw in Messrs. Ronalds' nursery, that he offered the large sum of £500 for it, which offer was accepted.

Among the reminiscences connected with the nursery is that of the firm having on one occasion given a grand entertainment to their hands in Kew Gardens. John Ronalds was well known throughout the United Kingdom, and in those days the firm did a great

business with America and Europe. John Ronalds died many years ago. It is said to have been to Messrs. Ronalds' nursery at Brentford that Dr. Robert Hogg came many years ago from Messrs. Peter Lawson & Sons, Edinburgh, to gather up the information he was enabled to acquire with the brothers Ronalds; and at that time the ground foreman was the late Mr. William Waring, a thoroughly first-rate and intelligent man, who knew fruits well—so well, indeed, that he probably had no equal in his day. After the death of John Ronalds the business declined somewhat, and about twenty years ago Mr. Robert Ronalds retired from business, but retained a select connection for years after, buying and selling nursery stock, &c. Although he took no part in public affairs in Brentford he was well known and much admired and respected for his quiet unassuming disposition.

— At Cape Town, on August 13, AGNES, wife of JOHN HORNE, Esq., Director, Royal Botanic Garden, Mauritius.



BORAGINEOUS PLANTS: *M. M.* You can get specimens of Onosma, Borago, Echium, &c., from any of the leading nurserymen who deal in herbaceous plants. The curators of the various botanic gardens would doubtless help you. We do not know where dried specimens can be obtained.

CHALK FOR VINE BORDERS: *G. H.* We should scarcely say that chalk is a "good" substitute for brickbats and old lime in the composition of a Vine border, but as chalky loam suits most fruit trees, we believe you might mix in a fair proportion of the rougher parts of the chalk without injury to the Vines. Do not, however, ram it down as a foundation for the border.

CHANGE OF COLOUR IN HOLLYHOCKS: *H. D. T.* We suppose it is a "harking back" to the original colour of the flower in the wild state.

COPPER BEECHES: *H. E. D.* The change from deep red to green is no doubt due to reversion to the normal form in the case of the seedlings, and to increased vigour in that of the layers.

FUNGUS: *G. W.* What you send is the undeveloped state of some fungus—probably dry rot.

GRAPES: *G. S.* Clearly the Grapes have shrank badly, but in the absence of any details we cannot tell you how it has been brought about. — *P. C. J. S.* The berries appear to be scalded—probably caught damp by a gleam of morning sun, when the house was insufficiently ventilated.

INSECTS: *Miss S.* The insects which eat your Calceolarias were all dried up and quite undeterminable. Please send living ones to Professor Westwood, Oxford. *I. O. W.—W. P.* The caterpillar of the elephant hawk moth, Sphinx Elpenor. *I. O. W.—G. W. H.* The caterpillar which has eaten your variegated Hollies is that of a sphinx, probably *S. Ligustri*. It has become a chrysalis already. *I. O. W.—J. A. C.* The insects found on the diseased Potato leaves are the Potato bug (see *Gardeners' Chronicle*, 1847, p. 468). The smaller fly is another closely allied species. They suck the leaves, but have no connection with the disease. *I. O. W.—J. C.* Your box and caterpillar arrived in a smashed condition. We have no doubt that the latter is the geometric larva of the swallow-tailed moth, *Geometra sambucaria*. *I. O. W.—F. L. S.* Your Pelargoniums and Cham. dianthus are probably eaten by the larvae of the Cabbage moth, *Mamestra brassicae*. We found no specimens of the young broods on the leaves sent. There are certain insects which sparrows will not touch. *I. O. W.—J. P. M. C.* After a careful microscopic examination we found in one of your little parcels of Vine roots some very minute whitish shining mites and some fragments of a white millipede (*Julus* sp.), and in the other a minute wood louse. None of these could have been the cause of the bad condition of your Vines, and have no connection with the Phylloxera. *I. O. W.—G. W. O.* The little white cottony masses on the young shoots of your Larch trees are the secretion (like that of the American Apple blight) of a kind of aphid named *Chermes Laricis*. Washing the shoots with a mixture of soft-soap water, lime-water and soot, or dipping them into it, would kill the insects. *I. O. W.—H. H.* *Sirex gigas*, female. *I. O. W.*

LONDON MARKET GARDENS (see p. 299): *C. W. S.* —Mr. Shaw is not easily satisfied: we ought to have said that his selection of early market Pears was absurd. It was the absurdity of naming Citron des Carmes with Madame Treve and Beurre de l'Assomption as early London market Pears ripening in July and August, that we wished to point out. Citron des Carmes is a July Pear, and is seen in market, but not in such abundance as Doyenné d'Été, Windsor, &c. Williams' Bon Chrétien appears in August, not July. As for Beurre de l'Assomption and Madame Treve, has Mr. Shaw ever seen a single fruit of either of these

varieties in market during August? or half-a-bushel at any time? They are not market Pears in the ordinary sense of the term. As for early Plums, ask Mr. Rivers his opinion of Early Prolific. But Mr. Shaw's remarks about early fruit not paying the grower so well as late were applied to Apples as well, and to which we took exception; and repeat it again, that early sorts (Apples) pay the grower very much better than late sorts. *Reverber.*

NAMES OF FRUITS: A. J. Z. Bourré superfin.

NAMES OF PLANTS: J. Owen. *Anemone japonica*.—R. S. O. Your *Adiantum* is quite like that known as *A. Lawsonianum*. We believe it is scarce. Yours would appear to be an independent sport from the spores, and a very elegant plant.—J. R. 1. *Triticum junceum*; 2. *Diactylis glomerata*; 3 and 6. *Catabrosa* or *Aira aquatica*; 4. *Avena flavescens*; 5. *Pbleum pratense*.—South Shropshire. *Asplenium lucidum*.—J. T. B. *Abutilon vitifolium*.—*Redwood*. No. 1 appears to be *Harpallium rigidum*; the other we do not identify; both are shrivelled almost beyond recognition.—H. Mundell. 1. *Ophiopogon Jaburum* variegatus; 2. *Corydalis lutea*; 3. *Linaria Cymbalaria*.—W. F. Boff. It is the true old *Lilium speciosum*, the finest of all the forms.—Mrs. C. Young. A species of *Crimum*, which we are unable to determine from the material sent, but perhaps *C. purpurascens*.

PERNAMBUCO: H. J. C. Yes; especially *Oncidium*s.

REEDS FOR THATCHING: P. Smith. The proper time to cut *Arundo phragmites* (the common Reed) for thatching purposes, is in the autumn and early part of the winter.

VERBENA: R. Clow. The variety does not appear to us to have any striking merit; the colour, fading towards the eye, is too indistinct.

WARTS ON VINE LEAVES: J. F. J. The excrescence of the leaves sent is no doubt owing to unfavourable atmospheric conditions, probably insufficient ventilation.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Bart & Sugden (King Street, Covent Garden, W.C.). Descriptive Catalogue of Bulbs and Plants for Winter, Spring, and Summer Flowering.—John K. King (Coggeshall, Essex). Illustrated Catalogue of Imported Bulbs for Autumn Planting.—Vilmorin-Andrieux & Co. (4, Quai de la Mégisserie, Paris). Catalogue of Bulbs, Flower Seeds, and Strawberries.—Edward Webb & Sons (Wordsley, Stourbridge). Autumn Bulb Catalogue.—C. & W. Yates (28, Market Place, Manchester). Catalogue of Dutch and French Flowering Bulbs.—Kerr & Fotheringham (Dumfries). Catalogue of Dutch Flower Roots.—Louis de Smet (Ledeberg lez Gand). Catalogue of Azaleas, Ferns, Begonias, Palms, Succulents, &c.—Pellorce & Co. (Melbourne). a curiosity!—Hooper & Co. (Covent Garden). Catalogue of Bulbs, &c.

COMMUNICATIONS RECEIVED:—A. N.—J. R.—J. A. H.—A. L.—W. B. H.—E. R. D.—C. A.—F. F.—A. G.—A. D.—J. H.—H. G. Rchb. F.—A Casual Visitor.—J. B.—F. S.—L. V. N.—J. E. A.—E. A. C.—M. C. C.—W. S.—G. P.—I. O. W.—R. G.—N. E. Br.—J.

Markets.

COVENT GARDEN, September 9.

There is little reaching us now in the way of home-grown fruit, except Plums and Apples, the former being in good supply, and fair prices are realised. Channel Islands Grapes continue to arrive in large quantities, the prices being lower; while Pears from the Continent, the principal consignment, are in good demand, Kent Cobs and Filberts are short. *James Webber, Wholesale Apple Market.*

Prices for cut flowers, and plants in pots, remain about the same as last week:—

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	3 0-6 0	Foliage Plants, various each	2 0-10 6
Begonias, per dozen	3 0-6 0	Fuchsias, per dozen	3 0-9 0
Bouvardias, per doz.	12 0-24 0	Lilium auratum, doz.	18 0-48 0
Calceolarias, per doz.	4 0-12 0	— various, per doz.	9 0-18 0
Chrysanth., per doz.	6 0-12 0	Lobelia, per dozen	3 0-6 0
Cockscombs, p. doz.	3 0-6 0	Mignonette, per doz.	4 0-6 0
Coleus, per dozen	3 0-9 0	Myrtles, per doz.	6 0-12 0
Cyperus, per dozen	4 0-9 0	Nasturtiums, dozen	3 0-6 0
Dracæna terminalis	30 0-60 0	Palms in var., each	6-21 0
— viridis, per doz.	12 0-24 0	Pelargoniums, dozen	9 0-24 0
Eucalyptus, various, per dozen	6 0-18 0	— Ivy-leaved, doz.	4 0-8 0
Ferns in variety, per dozen	4 0-18 0	— Tricolor, doz.	4 0-12 0
Ficus elasticus, each	1 6-7 6	— scarlet, per doz.	2 0-6 0
		Rhodanthes, per doz.	6 0-9 0
		Solanums, per dozen	6 0-18 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	3 0-6 0	Heliotropes, 12 sp.	0 6-1 0
Asters, 12 bunches	3 0-6 0	Mignonette, 12 bun.	2 0-6 0
Bouvardias, per bun.	2 0-4 0	Pelargoniums, 12	
Calceolarias, p. bunch	9 0-1 0	— sprays	0 6-1 0
Carnations, 12 bun.	3 0-9 0	— zonal, 12 sprays	3 0-6 0
Cardinalis, per doz.	2 0-4 0	Phlox, 12 bunches	6 0-12 0
Eschscholzia, 12 bun.	2 0-4 0	Primula, double, per bunch	1 0-1 6
Eucharis, per doz.	3 0-6 0	Roses (indoor), doz.	1 0-6 0
Feverfew, 12 bun.	4 0-6 0	— outdoor, 12 bun.	3 0-9 0
Forget-me-not, 12 bunches	3 0-9 0	Stephanotis, 12 spr.	3 0-6 0
Gardenias, 12 blms.	3 0-6 0	Tropeolum, 12 bun.	1 0-3 0
Gladioli, 12 spikes	1 0-3 0	Tuberose, per dozen	1 0-2 0

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0-5 0	Melons, each	1 0-2 0
Cobs, per lb.	1 6-2 0	Peaches, per doz.	4 0-8 0
Filberts, per lb.	1 6-2 0	Pears, per dozen	1 6-2 6
Grapes, per lb.	0 6-1 0	Pineapples, per lb.	1 6-4 0
Leimons, per 100	6 0-10 0	Plums, ½-sieve	2 0-4 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe, per doz.	4 0-6 0	Horse Radish, p. bun.	4 0-6 0
Aubergines, per doz.	3 0-6 0	Lettuces, Cabbage, per doz.	0 6-1 6
Beans, French, p. lb.	0 6-1 0	Mint, green, bunch	0 4-1 0
Beet, per doz.	1 6-2 6	Mushrooms, p. basket	1 6-2 0
Cabbages, per doz.	1 0-2 0	Onions, per bushel	5 0-1 0
Carrots, new, bunch	0 4-0 6	— Spring, per bun.	0 6-1 0
Cauliflowers, Eng., each	0 3-0 6	Parsley, per bunch	0 4-1 0
Celery, per bundle	1 0-2 0	Peas, English, per qt.	1 6-2 0
Chilis, per 100	3 0-6 0	Radishes, per bun.	0 2-1 0
Cucumbers, per doz.	6 0-9 0	Small salad, pun.	0 4-1 0
Endive, per 2 doz.	1 6-3 0	Sprach, per bushel	2 6-1 0
Garlic, per lb.	1 0-2 0	Tomatoes, per lb.	0 9-1 0
Herbs, per bunch	0 2-0 4	Turnips, new, bunch	0 4-1 0
		Vegt. Marrows, doz.	2 0-1 0

Potatoes are all much lower, and prices down all round.

SEEDS.

LONDON: Sept. 8.—The market to-day was thinly attended, with but little business doing. In addition to the samples of new Italian and American Clover seed previously alluded to, samples of new German and French red have now appeared; however, no transactions in either variety are yet reported. Trefoils are also quite neglected. There is more inquiry for imported Italian. Some offers of new French white Clover seed have come to hand. Trifolium continues to advance in value. For winter Vetches the sale is slow at drooping rates. Sowing Rye is scarce and firmer. Winter Barley and Oats are moderate in price. The new English blue Peas are said to yield badly. Haricot Beans are in short supply. All descriptions of bird seeds, excepting white Millet, continue exceedingly cheap. Rape seed is dearer. Quotations for the new white Mustard seed are not yet fixed. Buckwheat and Linseed are steady. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane, on Monday, the trade in English Wheat was very dull, and prices declined 2s. per quarter compared with Monday se'night. Some of the samples weighed 66 lb. per bushel. Foreign Wheat sold slowly at 1s. to 2s. per quarter less money than given a week previous. There was very little doing in malting Barley, and grinding Barley sold slowly at barely late rates. The malt trade presented no important feature. Indian Corn sold at about previous rates. Oats were in better demand at an advance of 3d. per quarter on the week. For Beans and Peas prices were with difficulty supported. Flour sold slowly, and rather lower prices than last recorded had to be accepted.—On Wednesday there was not much doing, but in the case of Wheat more disposition was shown to buy, and the rates of Monday were maintained without any great difficulty. Barley remained very quiet, Malt was neglected. Maize was a dull sale, but Oats were steady. Beans and Peas were taken off slowly on former terms. Flour was very quiet at late rates.—Average prices of corn for the week ending Sept. 4:—Wheat, 43s. 3d.; Barley, 35s.; Oats, 22s. 11d. For the corresponding period last year:—Wheat, 48s. 2d.; Barley, 32s. 11d.; Oats, 26s. 7d.

CATTLE.

At the Metropolitan Market on Monday quotations were well maintained for choicest qualities of beasts, whilst inferior were difficult to sell. The supply of sheep was comparatively small, consequently trade rather improved, although there was scarcely demand enough to clear all off. There was enquiry for choice lambs, and in the calf trade no alteration was reported. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 5s. 10d.; sheep, 5s. to 5s. 8d., and 6s. 4d. to 7s.; lambs, 6s. 6d. to 7s. 8d.; pigs, 4s. 6d. to 5s. 10d.—On Thursday the cattle trade showed rather more steadiness. Supplies were short but sufficient. Both beasts and sheep tended upwards in value, but the actual variations were slight.

POTATOS.

The Borough and Spitalfields Markets reports state that Potatoes are arriving there in moderate quantities, and sales progress slowly at the subjoined prices:—Regents, 4s. to 5s.; kidneys, 6s.; and ditto, Jerseys, 6s. to 7s. per cwt.—Last week's imports included 1446 bags from Hamburg, and 1 bag from Rotterdam.

COALS.

The following are the prices current at market during the week:—East Wylam, 14s. 6d.; Ravensworth West Hartley, 14s. 3d.; Walls End—Hetton, 15s.; Hetton Lyons, 13s. 6d.; Hawthorns, 13s. 6d.; Lambton, 14s. 6d.; Original Hartlepool, 15s.; Wear, 13s. 6d.; South Hetton, 15s.; Chilton Tees, 14s. 6d.; Haswell, 15s.; Thornley, 14s. 6d.; Tees, 14s. 9d.; Radford Navigation, 15s. 9d.

Government Stock.—The closing price of Consols on Monday were, for delivery, 97½ to 97½, and 97½ to 97½ for the account. Tuesday's figures were, for delivery, 97½ to 97½, and for the account 97½ to 97½. The final quotations on Wednesday were 97½ to 97½ for both delivery and the account. The closing figures on Thursday were, 97½ to 97½ for delivery, and 97½ to 97½ for the account.

LOMARIA GIBBA.—For Sale, 100 good Plants, with five to eight fronds, in 60's; want potting immediately; also some good MAIDENHAIRS, in 48's. R. FARRANCE, Florist, Chadwell Heath, Essex.

Horticultural Establishment. E. D. PYNAERT-VAN GEERT, Ghent, Belgium.

SEEDS of TUBEROUS BEGONIAS, large flowered varieties, from the collection of M. Moens (first prize at the Brussels National Exhibition, 1880), 5 francs per packet, or 12 francs for three packets, post free.

JULES DE COCK, Nurseries, Ghent, Belgium.—Specialties of AZALEAS INDICA and MOELLIS, CAMELLIAS, DEUTZIA GRACILIS, and SPIRAEA JAPONICA, for forcing.



TWO HUNDRED THOUSAND HERBACEOUS AND ALPINE PLANTS, for Borders, Rockwork, &c. See Descriptive LIST, giving colour, height, time of flowering &c., free by post for one penny stamp. R. S. & Co.'s selection of 100 good showy varieties, for 25s. RICHARD SMITH AND CO., Nurserymen, Worcester.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE.

3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 20s.; 1 bushel bags, 4d. each. LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton. BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 25s.; 12 for 40s., or 34s. per ton; sacks, 4d. each. COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each. YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel. SPHAGNUM MOSS, 8s. 6d. per sack. Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

12, Castle Street, Endell Street, Long Acre, London, W.C.

Reduction of Prices.

COCOA-NUT FIBRE REFUSE.—As supplied to all the Royal Gardens and principal Nurseries. Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; a destroyer of Slugs and Insects. Sold in bags, about 4 bushels, at 9d. per bag. Orders for 15 bags, 10s.; 30 bags, 17s.; 100 bags for 50s. (bags included). Delivered free to any Station in London. Van-loads at the Works, 2s. Ditto, delivered by our vans within 5 miles, 8s. Railway-trucks filled at 18s., 2 trucks for 30s., free to any Station in London. Terris Cash. Post-office Orders payable at West Ferry Road, GEO. WHITTLE, Janet Street, West Ferry Road, Millwall, E.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 12s.; 15 bags, 12s.; 30 bags, 16s.; 100 bags, 50s. (all bags included); van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 250 bushels), free on rail, 15s. J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE.

As supplied to all the Royal Gardens of Europe, useful at all seasons, Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c., Destroys all Slugs and insects. Bags (about 4-bushel), per bag 1s., 15 bags 12s., 30 bags 20s. (all bags included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 250 bushels), free on rail, 25s. Terms cash with order.

CHUBB, ROUND AND CO.,

Fibre Works, Westferry Road, Millwall, London, E.

Superior Bagshot Peat.

BROWN or BLACK FIBROUS PEAT of the finest quality for Rhododendrons, Azaleas, Orchids, Ferns, &c. Price, 4s. 4s. for 6 tons, loaded on trucks at Camberley Station, South-Western Railway. W. TARKY, "Golden Farmer," Farnborough Station.

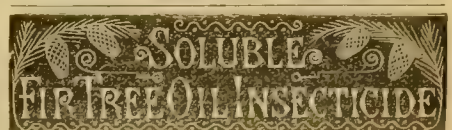
Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton. Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s. 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each. Fresh SPHAGNUM, 10s. 6d. per bag. WALKER AND CO., Farnborough Station, Hants.

FIBRE REFUSE, for Gardens, Potting, &c. 4 bushels for 1s., bag included. Orders by post punctually attended to.—G. HARDING, 23, Stepney Green, E.

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Wasps, Flies, &c., in Vineries and elsewhere, certain and speedy clearance by using

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The Best Qualities of Fine and Coarse
SILVER SAND, PEAT and LOAM.—
SILVER SAND, fine, 10s. per ton; coarse, 11s. per ton.
PEAT, 8s., 10s. and 13s. per cubic yard. LOAM, 10s. and 12s. per cubic yard, on rail, by truckloads. Horticultural Price List and further particulars on application to
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ARCHANGEL and ST. PETERSBURG MATS, RAFFIA FIBRE, &c. New arrivals just to hand from our Agents. For Wholesale Prices, apply to **MARENDAZ AND FISHER**, James Street, Covent Garden.

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3 ft. by 5 ft., 1s. 6d. per blanket 5 ft. by 5 ft., 2s. 6d. per blanket
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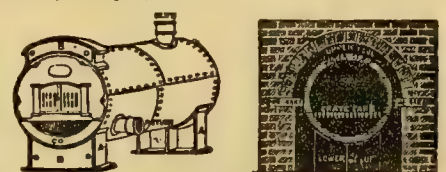
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THOMAS MILLINGTON and CO., Importers and Manufacturers, have a large quantity of GLASS in various sizes and thicknesses:—

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	8 X 6 to 10 X 8	9s. 6d.	10s. 6d.	11s. 6d.	12s. 6d.		
	10 1/2 X 8 1/2 to 14 X 10	10s.	10s.	12s.	13s.	14s.	
	15 X 10 to 18 X 12	11s.	13s.	14s.	15s.		
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	20 X 17 to 24 X 18	12s.	14s.	15s.	16s.		

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15-oz. and 21-oz., in Boxes containing 200 feet, Carriage Paid to any Railway Station in England.

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Sold in casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

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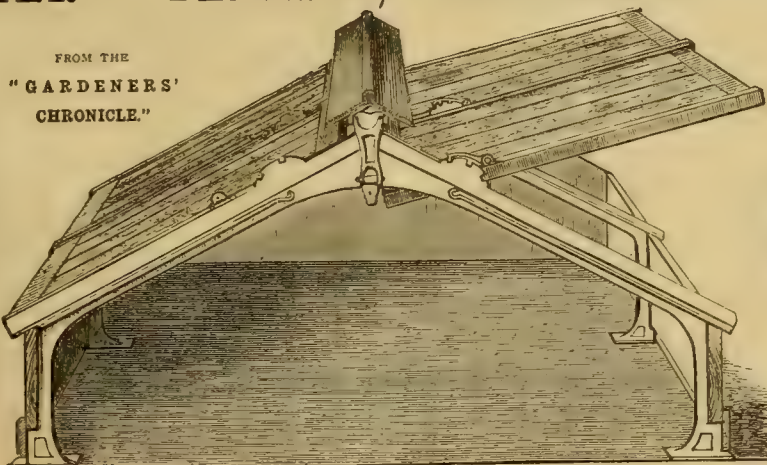
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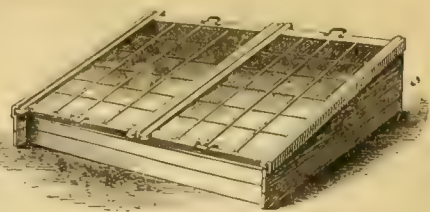
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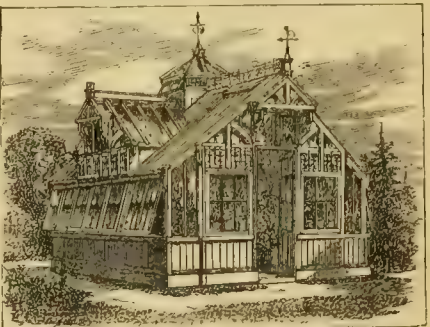
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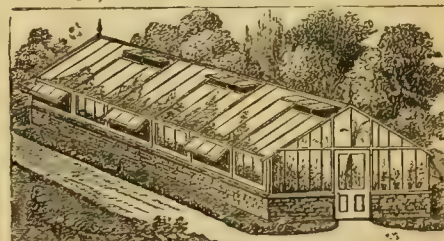
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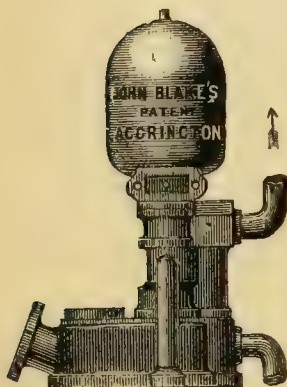
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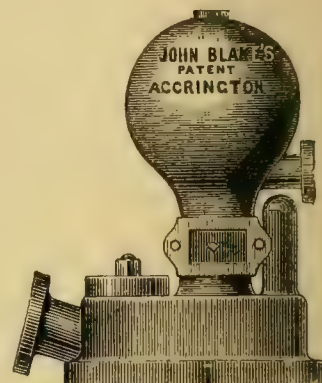
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This Ram, for deep working falls, will force up one-third of the water passing through it.

RECENT TESTIMONIALS.

From J. SPENDER CLAY, Esq., *Ford Manor, Lingfield, Surrey, August 9, 1880.*—"In reply to your letter of inquiry I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6120 gallons per twenty-four hours, being 120 gallons above the quantity you guaranteed."

From the Right Honourable the EARL OF ROMNEY, *56, Eaton Place, S.W., June 12, 1880.*—"Sir,—In reply to your inquiry, I have pleasure in stating that the Hydraulic Ram which you erected for me at Gayton does its work remarkably well, and is a great success. I think the work is especially creditable to you on account of the very small fall of but 3 feet with which you had to deal, and I shall always be glad to recommend you.—Yours faithfully, ROMNEY."

From JOHN ROWE BENNION, Esq., *Nursted House, Petersfield, August 25, 1880.*—"I have much pleasure in saying that the two Hydraulic Rams you put down for me, and which are supplied from a spring now yielding in this dry season only 3 gallons per minute, are sending up an ample supply of water to my house and the home farm, distributing the supply through more than 2000 feet of pipes and to an elevation of 137 feet. Of this result I think you have as much reason to be proud as I have to be satisfied."

From the Right Honourable the EARL OF GRANARD, *Castle Forbes, March 1, 1880.*—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of the tower, 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

From Col. TREMAYNE, *Perran-ar-Worthall, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons per day to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE.

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NOTICE.—Will shortly be published with the "Gardeners' Chronicle," a Double-page Plate of NARCISSUS. Full particulars will be duly announced.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
DATES OF THE MEETINGS OF THE FRUIT AND FLORAL COMMITTEES, EXHIBITIONS, AND EVENING FEET in 1881:—

FRUIT AND FLORAL COMMITTEES, TUESDAYS.—January 11, February 8, March 8 and 22, April 12 and 26, May 10 and 24, June 14 and 28, July 12 and 26, August 9 and 23, September 13, October 11, November 8, December 13.
GREAT SUMMER SHOW.—Friday, June 3; Saturday, June 4; Whit Monday, June 6; and Tuesday, June 7.
ROSE and PELARGONIUM SOCIETY'S SHOW.—Tuesday, June 28, and Wednesday, June 29.
EXHIBITION OF BRITISH BEE-KEEPERS' ASSOCIATION.—Tuesday, July 26, to Monday, August 1.
ARTISANS' and COTTAGERS' SHOW.—Monday, Aug. 1.
EVENING FETE.—Tuesday, June 28.

THE INTERNATIONAL POTATO SHOW will be held at the Crystal Palace, Sydenham, S.E., on SEPTEMBER 22 and 23. The Exhibition will be opened by the President, the Right Hon. the Lord Mayor of London.
J. A. MCKENZIE,
Tower Chambers, Moorgate, London, E.C.

ROYAL AQUARIUM, WESTMINSTER.
—The THIRTY-FIFTH ANNUAL EXHIBITION (open to all England) of the BOROUGH of HACKNEY CHRYSANTHEMUM SOCIETY will be held, as above, on WEDNESDAY and THURSDAY, November 17 and 18, when valuable Silver Cups, &c., will be awarded as usual. The Schedules for this Exhibition also includes a liberal scale of Prizes to be awarded to FRUIT and VEGETABLES, and may be had on application to WILLIAM HOLMES, Hon. Sec., Frampton Park Nursery, Hackney, N.E.

NOTE.—Persons desirous of joining this Society are reminded that the latest date for election of New Members for current year is Thursday, October 14.

THE HORTICULTURAL DIRECTORY For 1881.

GARDENERS who have Changed their Residence since the last publication are requested to send the Correction to the Editor as early as possible.

NURSEYMEN, SEEDSMEN, and FLORISTS of Great Britain and the Continent will kindly send their Card if any Alteration has been made in their firm since December, 1879. Advertisements will be inserted at the rate of 42s. for One Page; 25s. for One Half; and 12s. One Quarter of a Page. Journal of Horticulture Office, 171, Fleet Street, London, E.C.

ROYAL FERNS.—Parties wishing a cheap quotation of Royal Ferns (OSMUNDA REGALIS), by the dozen, hundred, or thousand, apply to JAMES ANDERSON, Nurseryman and Valuer, Meadowbank, Uddingston, Glasgow.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE OF FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST OF FERNS," free on application.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—J. E. ALDERSON, Bell Farm, Hershaw, near Walton-on-Thames, Surrey.

To the Trade only.
E. H. KRELAGE and SON, NURSEYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland. The Wholesale CATALOGUE (No. 347A) of Dutch Flower Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants, for 1880-81, is now ready, and may be had free on pre-paid application, by Nurserymen, Florists and Seedsmen.

Deutzia gracilis.
WILLIAM FLETCHER has a fine stock of the above to offer. Fine bushy plants, with from 10 to 20 branches, price 21s. per 100, £10 per 1000. Ottershaw Nurseries, Chertsey.

LILY of the VALLEY.—Fine strong Crowns for forcing, the best quality, as known in use many years; 40s. per 1000; by taking at least 5000, at 38s. per 1000, for cash, carriage free to Hamburg. By taking at least 10,000, and cash with order, carriage free to London. Early orders requested. ROBERT NEUMANN, Erfurt, Germany.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this." Two Cuttings, post-free, for 1s. 2d. One Plant, post-free, 1s. 6d. The Home for Flowers, Swanley, Kent.

Gardenias.
MESSRS. JOHN STANDISH and CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug. Royal Nurseries, Ascot, Berks.

Vines for Present Planting.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries. CATALOGUES free. The Trade supplied.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785.) Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY and SEED COMPANY (Limited), King's Acre, near Hereford.

Christmas Roses.
F. C. HEINEMANN'S Splendid Hybrids. Very moderate prices of strong Plants and New Seeds given on application.—F. C. HEINEMANN, Nurseryman and Seedsman, Erfurt, Germany.

NEW ROSES in Pots.—Tea and Noisette ROSES in Pots.—CLEMATIS in Pots. INFALLIBLE MILDEW COMPOSITION. Special LISTS, with full particulars, now ready, gratis and post-free. EWING and CO., EATON, NORWICH.

Christmas Roses.
BUDDENBORG BROS., BULB GROWERS, Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.

WANTED, strong STANDARD ROSES, good varieties. State price per 100 or 1000. FOR SALE, a few thousand extra fine 3-year old CONVALLARIA clumps, at a very low price. ZOCHER and CO., Nursery, Rozenhagen, Haarlem, Holland.

WANTED, MANETTI STOCKS. Price and quantity to R. Gardeners' Chronicle Office, W.C.

WANTED, WILLIAM PEARS, COB NUTS, &c., also CUT ROSES. Prompt returns and moderate commission.

WISE and RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

Skeletonised Leaves.
A BOUQUET WANTED, under Glass Shade. HOOPER and CO., Covent Garden, W.C.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit. CARTERS, the Queen's Seedsmen, High Holborn, London.

Strawberries.
CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice. The Royal Nurseries, Slough.

STRAWBERRY RUNNERS. Strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s. W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once. CATALOGUE post-free. Special Prices for large quantities. H. CANNELL, Swanley.

STRAWBERRIES. Strong Roots for Fruiting next year, 4s. per 100. Descriptive LIST on application. RICHARD SMITH and CO., Nurserymen, Worcester.

Bulbs for the Season.
CHARLES TURNER'S consignments of the above have arrived in splendid condition. The roots are remarkably sound and good this season. Early orders are most respectfully solicited. CATALOGUE post-free on application. The Royal Nurseries, Slough.

HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other choice flowering Bulbs. Carriage free. Our very large consignment of the above bulbs is now received, which for quality and quantity is unequalled. Early orders are respectfully solicited. Descriptive and Priced CATALOGUE free on application. DICKSON and ROBINSON, 12, Old Millgate, Manchester.

Bulbs, Orchids, &c.
THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application. Lion Walk, Colchester.

Hyacinths, Tulips, &c.
BUDDENBORG BROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

Bulbous Flower Roots.
FIRST QUALITY, CARRIAGE FREE. JAMES DICKSON and SONS have received, in the finest possible condition, their first large annual consignment. Priced CATALOGUE post-free. 108, Eastgate Street, Chester.

Dutch Bulbs.
C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to Messrs. R. SILBERRAD and SON, 25, Savage Gardens, Crutched Friars, London, E.C.

To Gentlemen, Seedsmen, Gardeners and Others.
FOR SALE, a quantity of Yellow CROCUSES, at 7s. per 1000. Cash with order. Reference given if required. R. GOSLING, Market Gardener, Boston, Lincolnshire.

EDWIN HILLIER has to offer in quantities Double White PRIMULAS, ADIANTUM CUNEATUM, DAPHNE INDICA RUBRA, Tea-scented ROSES, Pot VINES, all well grown. Price per dozen or 100 on application. The Nurseries, Winchester.

SEEDLING THORNS.—The finest in the Trade. Price and particulars on application. Also transplanted of various sizes. RODGER McCLELLAND and CO., 64, Hill Street, Newry.

10,000 Nursery Yards
BOX EDGING, Dwarf and Fine. Sample and price from J. B. YOUNG, Landscape Gardener, Bridge of Allan.

To the Trade.
GREEN HOLLIES.—1-yr. Seedlings, fine; also 2-yr. bedded Hollies, healthy good rooted stuff, 4 to 6 inches and 6 to 9 inches. Price and terms on application to C. WHITEHOUSE, Brereton Nurseries, Kugeley.

EWING and CO.'S Magnificent Collection of SPECIMEN CLEMATIS is NOW in FULL BLOOM. The Nurseries are open to the Public on Week-days. CATALOGUES of Clematises, Roses and General Nursery Stock gratis and post-free. The Royal Norfolk Nurseries, Eaton, near Norwich.

Hyacinths in Pots.
POTS made expressly for HYACINTHS can be supplied by J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List free.

SALES BY AUCTION.

Every Monday.

SALES OF DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, on MONDAY NEXT, and every following Monday, at half-past 11 o'clock precisely, extensive consignments of first-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS from Holland, in lots to suit all buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Burnt Ash Nurseries, Lee, S.E.

IMPORTANT ANNUAL SALE OF ERICA HYEMALIS and other Stock, to commence punctually at 11 o'clock, in consequence of the large number of lots.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. E. Maller to SELL by AUCTION, on the Premises, the Burnt Ash Nursery, Lee, S.E., on TUESDAY, September 27, 17,000 splendidly grown WINTER-BLOOMING HEATHS, in 48, 40, 32 and 24 pots, which for profusion of bloom-buds are unsurpassed in the trade, including 6000 extra fine Hyemalis, and many thousands of Wilmorea, gracilis, autumnalis, colorans, melanthera, assurgens, cafrina, grandinosa, ventricosa, persolata alba, and others; 10,000 ERICA HYEMALIS and others in small pots; 5000 very fine SOLANUM CAPSICASTRUM, beautifully berried; 500 remarkably fine ADIANTUM CUNEATUM, and other choice Decorative FERNS; 3000 very fine CYCLAMEN PERSICUM, 2000 extra well-grown GENISTA FRAGRANS, 2000 BOUVARDIAS, red and white; fine Maréchal Niel, Gloire de Dijon, and other TEA ROSES in pots; 1500 CYPERUS ALTERNIFOLIUS, 300 PASSIFLORA CŒRULEA; also a quantity of English-grown AZALEAS, CAMELIAS, Double PRIMULAS, fine PALMS, DRACENAS, FICUS ELASTICA, ARDISIAS, JACARANDAS, EPIPHYLLUM, ACACIAS, &c. Intending purchasers are invited to inspect the Stock, which is in splendid condition.

Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C.; and Leytonstone, E.

Lea Bridge Nurseries, Leyton, E.

TENTH ANNUAL TRADE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to SELL by AUCTION, on the Premises as above, on WEDNESDAY, September 22, at 11 o'clock precisely (there being nearly 900 Lots), 20,000 WINTER-BLOOMING HEATHS, remarkably well grown, including 8000 HYEMALIS, 500 WILMOREA, 2000 GRACILIS, and quantities of other varieties; 1500 unusually fine CYCLAMEN PERSICUM, 2000 GENISTA FRAGRANS, a great quantity of well grown Tea-scented and Noisette ROSES in pots; LAPAGERIA ALBA and ROSEA; 1500 AZALEAS, full of bloom-buds; 1000 Early-flowering CHRYSANTHEMUMS; 300 Maréchal Niel ROSES, in pots, from 7 to 10 feet; 1500 fine strong plants of AMPELOPSIS VEITCHII, and other stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

The Westbourne Nursery, Harrow Road, W.
UNRESERVED SALE OF SURPLUS STOCK OF WINTER and SPRING BLOOMING PLANTS.

MESSRS. PROTHEROE AND MORRIS will SELL, by order of Messrs. Woodroffe & Son, on the Premises as above, on WEDNESDAY, September 29, several thousands of STOVE and GREENHOUSE PLANTS, including 1500 Aloysias, 2000 good bushy Genistas, 1500 Hydrangeas, 2000 strong Poinsettias, 1000 Double Primulas, 1500 well-berried Solanums, 2000 early and late flowering Chrysanthemums, 1000 Bouvardias, Hogarthii and jasminoides, Dracanas, Pandanus, Palms, and other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C.; and Leytonstone, E.

Tooting, S.W.

IMPORTANT SALE OF STOVE and GREENHOUSE PLANTS, ORCHIDS, PALMS, FERNS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION on the Premises, the Exotic Nursery, Tooting, S.W., on THURSDAY, September 30, at 9 o'clock precisely, by order of Mr. R. Parker, a quantity of extra stock of STOVE and GREENHOUSE PLANTS in healthy and thriving condition; choice ORCHIDS in variety, Exotic FERNS, selected PALMS, English-grown AZALEAS and CAMELIAS, Greenhouse RHODODENDRONS, HARDY CLIMBERS, and other stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.
N.B. The first portion of the above Estate, comprising 40 Lots of Freehold Building Land, will be offered at the Castle Inn, Tooting, on September 30, at half-past 6 o'clock in the evening.

Consignment of Camellias and Azaleas, full of
Bloom-buds, and other PLANTS from Ghent, for UNRESERVED SALE; and an importation of ORCHIDS received direct from Mexico, including several large masses of LÆLIA MAJALIS, EPIDENDRUM VITELLINUM MAJUS, and others, in splendid condition, and freely breaking into growths.

MESSRS. PROTHEROE AND MORRIS will SELL the above at the Mart, Tokenhouse Yard, E.C., on FRIDAY, October 1.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY, during September, at half-past 12 o'clock precisely each day, consignments of DUTCH BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the morning of Sale, and Catalogues had.

Importation of Phalaenopsis grandiflora, received DIRECT.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 23, at half-past 12 o'clock precisely, an Importation of PHALAENOPSIS GRANDIFLORA, in good condition, received direct; also P. SCHILLERIANA, VANDA LAMELLATA, &c.; and some choice ESTABLISHED ORCHIDS in flower.

On view the morning of Sale, and Catalogues had.

Nearly 1000 Anthurium Andreanum.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 21, at half-past 12 o'clock precisely, a GRAND IMPORTATION OF ANTHURIUM ANDREANUM, brought home by Mr. F. C. Lehmann, and comprising the whole of his splendid consignment. Owing to having been attended by him personally on the journey they are in grand health. It is not an easy plant to bring home, but a free order when once in Europe. There has been a rumour spread about Mr. Lehmann's plants not being true, but Mr. N. E. Brown, of Kew, who studied his specimens, says that "there is not the slightest difference between his flowers and those of Mr. André," and there can be no doubt of their being perfectly identical. A quantity of dried flowers will be on view. The plant is (although the rhizome gets lengthened in its native habitat) of the same compact and beautiful habit as Anthurium Scherzerianum. This species makes rhizomes in Costa Rica a yard and more long, and the leaf of Andreanum is far more beautiful; hardly sufficient can be said in its praise. It is probably the finest floral introduction ever sent to Europe, the flower being of such substance that it lasts three months in perfection, (and although (being very thick) it shrivels greatly in drying, its immense size will be seen from sketch of a fresh flower and from the dried flowers.) It received the First Prize as the best new flowering plant at the Grand National Exhibition last July at Brussels, and the whole Horticultural Press is unanimous in its praise. This grand species far surpasses in beauty the well-known Anthurium Scherzerianum, its colours being more vivid and the size of the flower immense. The plant was described in the *Gardener's Chronicle*, April 10, p. 464, and it says:—"This time a plant which attracted all eyes is Anthurium Andreanum." And again it is fully described and figured in the *Gardener's Chronicle*, April 17, p. 490. It states:—"This is the very striking plant which we noticed last week as having been exhibited at Ghent, where it attracted much interest. A similar feeling was experienced here when the plant was shown before the Floral Committee of the Royal Horticultural Society. The plant is an Aroid of tufted habit, with oblong, cordate, glabrous, leathery leaves, dark green above, paler beneath, and marked by comparatively few but prominent nerves; the leaf-stalks are ascending, cylindrical, slender, and thickened at the top, the blade being attached, as it were, hinge-wise, so as to allow of varying positions, deflexed or spreading; the flower-stalk is double the length of the leaf-stalk. Undoubtedly this plant is one of the most brilliant and remarkable discoveries of recent times. Those who remember what Anthurium Scherzerianum was on its first introduction and what it is now, are justified in looking forward to the career of the present plant as quite of exceptional importance." The plants are in exceptionally fine condition.

At the same time will be Sold 1000 ODONTOGLOSSUM ALEXANDRE, finest varieties; O. VEXILLARIUM, a splendid lot of CATTLEYA DOWIANA, the grand BATE-MANNIA WALLISII MAJOR, and the new PESCATOREA LEHMANNI, together with many other species. Drawings, Flowers, &c., will be on view the day of Sale.

May be viewed the morning of Sale, and Catalogues had.

Odontoglossum vexillarium.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 23, at half-past 12 o'clock precisely, an importation of ODONTOGLOSSUM VEXILLARIUM, per R.M.S. "Moselle," in fine condition; also CATTLEYA GIGAS, and a few lots of a new and beautiful CATTLEYA, petals and sepals yellow, labellum rich purplish-crimson, flowers fully as large as C. Dowiana; also some fine ESTABLISHED ORCHIDS in flower, including Lælia elegans; SPECIMEN STOVE and GREENHOUSE PLANTS, ORCHID BASKETS, &c.

May be viewed the morning of Sale, and Catalogues had.

Rawcliffe Lodge, Langside, near Glasgow.

SALE of the whole COLLECTION of RARE and VALUABLE PLANTS, including a magnificent assortment of ORCHIDS, selected with the greatest care and discretion by the late A. B. Stewart, Esq., of Rawcliffe Lodge and Ascog Hall, during the last ten years, whose abilities and taste as a horticulturist were so well known and appreciated throughout Britain.

MESSRS. HUTCHINSON AND DIXON have been favoured with instructions to offer the above, without reserve, on the Premises, Rawcliffe Lodge, on WEDNESDAY, October 6, and following days, commencing each day at 11 o'clock, A.M.; and they are confident that such a Collection, for variety and rarity, combined with a perfect state of cultivation, has never before been offered for public competition in this country.

Amongst the ORCHIDS, which occupy three large houses, will be found a number of the most valuable specimens, such as Aerides affine superbum, Vanda tricolor, Dalkeith var. (in flower); Vanda Lowii (the finest plant in the country), several large Vanda suavis, large number of Phalaenopsis in perfect order, not grown in sweltering heat; Anæctochilus, such as has not been seen in this country for many years; Angrecum, Calanthes in quantity; Cattleya axiconensis, a large specimen of the finest variety; true Cattleya labiata, large specimen; and many other rare kinds; six specimen Cologne cristata, the largest and best Collection of Cyrtopodiums that has yet been sold by auction, over thirty varieties, many specimen size; and a number of very rare Dendrobiums, Lælias, Oncidiums, and Odontoglossums in quantity, especially Odontoglossum Alexandre of the very finest varieties. Amongst Pitcher-plants, there are Nepenthes sanguinea, with pitchers holding more than a pint of water—a magnificent specimen; Nepenthes Veitchii—an extra large specimen; N. Rafflesiana—very fine pitchers, holding a pint of water. Unequalled specimens of Azaleas and Heaths. Amongst Heaths, three large Specimen Maraoekiana, the finest Erica Turnbullii to be found, erubra, ventricosa, &c., equally good. Azalea Duchesse de Nassau, Criterion, &c., extraordinary plants. Amongst Foliage Plants, many rare specimens in Palms, &c., such as Phoenix rupicola, Cocos Weddelliana, Crotons, Stove Flowering Plants, Greenhouse Flowering Plants, in quantity; Camellias, Nerines, many fine Ferns, Todeas, &c.

The Collection being so well known at all the principal Exhibitions during the last nine years, it is unnecessary to particularise further the many numerous and rare specimens, which will be fully described by Catalogue in course of preparation.

The plants can be seen by those who are known to Mr. Todd, Gardener; or by application to the Auctioneers, who will grant cards of admission by applying at the "Mart," West Nile Street, Glasgow.

Freehold Land, and extensive, valuable, and lucrative Gardener's, Florist's, Fruiterer's, Nurseryman's, and Seedsman's Business, as a going concern, in the county of Cumberland, for Sale.

MR. C. P. HARDY has been instructed to SELL by AUCTION, on MONDAY, September 20, at the County Hotel, Carlisle, at 3 o'clock in the afternoon, the entire BUSINESS, as a going concern, of the late Mr. Thomas Hamilton, of Botcherby. The Estate comprises 18½, 3, 22p, of superior Freehold Land, on which are erected extensive Vineries, Conservatories, Cucumber and Propagating Houses, Greenhouses, Dwelling House, with Out-offices, Stables, Coach House, Barns, Byres, Piggeries, Potting and Packing Sheds, Boiler and Forcing Houses, Cottage, Strawberry Farm, &c., &c. The Glass Houses, which are mostly in splendid condition, are filled with the choicest Vines, Cucumbers, Melons, &c., the whole of which have been intelligently cultivated, and the adaptation of the best mode of heating and ventilating at the least cost is very demonstrable. A large portion of the area is covered with fine Forest and Fruit Trees, in all stages of their early growth, for which large orders can be promptly executed. In addition to the foregoing are beautiful varieties of all kinds of Decorative Shrubs and Plants, large Fruit and Vegetable Gardens, and the celebrated Botcherby Strawberry Beds. Besides these are the growing produce of several fields in the immediate vicinity, held under lease, the goodwill of which will be included in the transfer. Botcherby Gardens are situate 1¼ mile from the Citadel Station, Carlisle, and are an intensely popular institution. Messrs. Hamilton, the owners, will show the property, which embraces magnificent building sites.

Descriptive Catalogues are published, and may be had, with further particulars, at the offices of Messrs. DOBSON and WATSON, Solicitors, 47, Lowther Street, Carlisle.

The late Mr. John Verschaffelt.

THE NURSERY at LEDEBERG,

near Ghent, lately conducted by

MR. JEAN NUYTENS VERSCHAFFELT,

IS FOR SALE,

ON ADVANTAGEOUS TERMS,

And with Special Facilities for Payment to a Suitable Purchaser.

Apply to

MADAME NUYTENS VERSCHAFFELT,

CHAUSSÉE DE BRUXELLES, 134.

LEDEBERG LEZ GAND, BELGIUM.

Island of Guernsey.

TO BE SOLD, a GARDEN, VINERIES, and GROUNDS, containing about 2½ acres, in the parish of St. Peter Port, and within a short distance of the town. The Vineries are in all 270 feet long, stocked with the choicest Vines, on which there are now about 3000 lb. of fruit. The Garden was laid out about four years ago. There are upwards of 300 young Fruit Trees, including nearly 100 of the famous Châtaumontelle Pears. There is a Nursery of about 7000 young Vines, and about 10,000 strong Asparagus plants. The Land is held in fee, not subject to any Rent, and the taxes are nominal. One-third of the Purchase Money may be left outstanding.

Apply to T. GODFREY CAREY, Esq., Advocate, Court Place, Guernsey.

Singularly Advantageous Opening to Gentlemen FARMERS or HORTICULTURISTS.

TO BE LET, for a term (in consequence of the recent death of the Proprietor) AN UNIQUE ESTATE (with railway access to Birmingham and the North), consisting of about 240 Acres, all scientifically drained and roaded, and of which 150 Acres have been planted with thousands of the choicest Pear, Apple, and Plum Trees, chiefly the earliest and latest keeping dessert species, the intermediate spaces with innumerable Gooseberry and Currant Trees. The remaining 90 Acres were intended by the proprietor to be used as Nursery Ground, and particularly for the raising of Filbert and other Fruit Trees for sale (a most lucrative business), and for the production of general Garden produce, as well as Straw and Roots for the horses employed, &c.; but it may be used as ordinary Farm Land, if the taker prefers, and up to 350 Acres of sound and good Farm Land adjoining (if wished) added thereto in the same lease. Labourers' Cottages, Sheds for packing and storing Fruit, a Manager's Residence, Farm Buildings, Barns and Yards, are already arranged, and either an ordinary Farm-house, or a Residence, suitable for a magistrate or county gentleman (who desires to unite pleasure and profitable occupation) will be included in the Lease. The air is most salubrious, the scenery charming, the roads excellent. For many years a connection with Birmingham, Manchester, Leeds, and Liverpool, for the sale of the produce, has been opened up, and will be handed over without payment to the Lessee. It is not, therefore, too much to assert that, with energy and sufficient superintendence, a rapid fortune may be confidently hoped for.

Address, for further particulars, to Messrs. NEW, PRANCE, AND GARRARD, Solicitors, Evesham.

GLASS WANTED.—A thorough practical Gardener, with small Capital, wishes to meet with some GLASSHOUSE TO LET, at moderate rent, in or near a town, suitable for a Florist's Business. Or would TAKE a PARTNERSHIP to further extend an already increasing business. Full particulars given and expected.—H. B., 6a, North Walls, Winchester, Hants.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

STRAWBERRIES IN POTS.
Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

H. CANNELL, Swanley, Kent.

PINUS PINEA, producing the Edible Pine Nuts, and a very ornamental hardy tree. Nice plants in pots, or any quantity from the border. Two small plants sent as sample for 1s.
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Green Hollies.
W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., have a fine stock of **GREEN HOLLIES**, 1-yr. seedling; **GREEN HOLLIES**, 1-yr. seedling, 2-yr. transplanted. Samples and price on application.
L. & S. will also be glad to furnish quotations for Seedling and transplanted **FOREST TREES** of sorts, their stock of which is large and in splendid condition.

DAVIS' IMPROVED LARGE HARDY GREEN COS LETTUCE.

The largest, hardiest, and best self-heating variety, specially suited for Market Gardening purposes. New Seed now ready.
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Subscriber has just completed his purchases of Natural Grasses in the Irish Markets. The Crested Dogtail, Foxtail, and Cockfoot, &c., are of fine quality. Samples and prices on application.
P. EGAN, 80, North King Street, Dublin.

HYACINTHS, TULIPS AND OTHER BULBS.

WM. PAUL & SON

BEG TO ANNOUNCE THAT THEIR

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Is now ready, and will be sent Post-free on application.

COLLECTIONS of BULBS, from 10s. 6d. to 84s.

A Choice COLLECTION of CAMELLIAS, 30s. per doz. and upwards.

SPECIMEN CAMELLIAS, from 1 to 30 guineas each.

"Hyacinths were again the main feature.—Mr. WM. PAUL taking First Prize with a Collection that were as near absolute perfection as in the present state of our knowledge we can imagine."—*Gardener's Chronicle*.

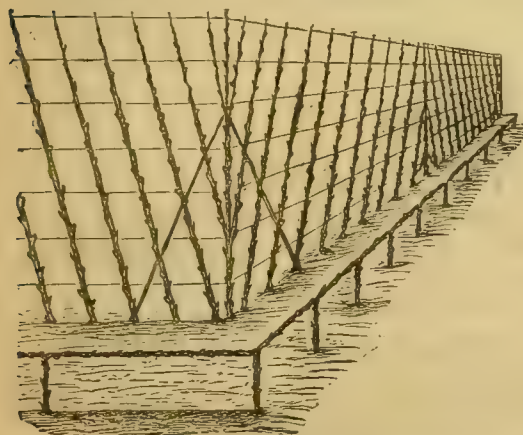
"Hyacinths formed the most important feature of the show, the principal exhibitor being Mr. WM. PAUL, of Waltham Cross, who was far in advance of any other in the size and beauty of the noble spikes which he placed in competition."—*Journal of Horticulture*.

"It is due to Mr. WM. PAUL's wonderful group of 24 Hyacinths, to which was awarded the First Prize, that a tribute should be borne here to their incomparable quality."—*The Florist*.

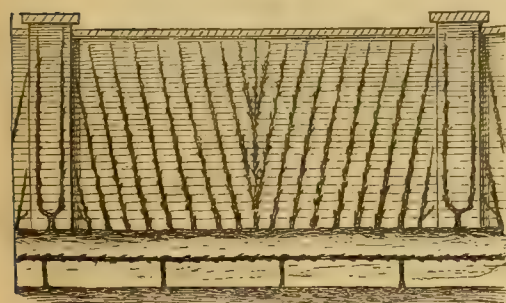
PAUL'S NURSERIES AND SEED WAREHOUSE, WALTHAM CROSS, HERTS.

CORDON FRUIT TREES.

J. CHEAL & SONS, LOWFIELD NURSERIES, CRAWLEY, SUSSEX,



CORDON AS AN ESPALIER AND EDGING.



CORDONS FOR WALLS AND EDGING.

Have a large stock of **FRUIT TREES** grown expressly for Cordons, under the management of Mr. Henry Shepherd, late of Paxhill Park, Hayward's Heath, Sussex, where he successfully carried out this system of growing Fruits, as shown by the First-class Certificates obtained by him from the Royal Horticultural Society.

The following is an extract from *The Garden*, of November 8, 1873:—"We have received some of the most superb Apples ever seen in London, from Mr. Shepherd, Gr., Paxhill Park, Hayward's Heath, all of which have been grown on the French Paradise Stock, and the trees which have borne them are described as far surpassing what the most flattering engraving of the French trees might have led us to expect. These Fruits have been pronounced by the best judges in Covent Garden to be the finest Apples ever known to have been grown in England. These have been obtained from Cordons, and, as may be seen, are magnificent results of that system of culture."

An article in the *Gardener's Chronicle* of September 22, 1880, by Mr. D. T. Fish, gives a full description and several illustrations of his experience of the Cordon system, and is well worthy the attention of all fruit growers.

J. CHEAL & SONS having a fine stock of **CORDON TREES**, to fruit next season, of all the best varieties, are prepared to supply any Orders, to select the varieties most suitable for different soils and localities, and to plant or superintend the proper planting and training of trees in any part of the kingdom.

A Priced and Descriptive **CATALOGUE** of Fruit Trees, containing illustrations and descriptions of different styles of Training Fruits, also ornamental Trees and Shrubs, Forest Trees, &c., sent post-free on application.

Descriptive CATALOGUE of DUTCH BULBS, now ready, post-free on application to

J. CHEAL & SONS, LOWFIELD NURSERIES, CRAWLEY, SUSSEX.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedensvaart, near Zvolle, Netherlands.

The New Wholesale Trade **CATALOGUE** of Fruit Trees, Conifers, Hardy Perennials, Alpine Plants, &c., gratis on application.

EAST LOTHIAN INTERMEDIATE STOCKS.—Purple, White, and Scarlet, extra strong plants, 2s. 6d. per 100, 20s. per 1000.

A. W. JAMES, Tivoli Nursery, Chapel Road, Lower Norwood, S.E.

CAMELLIAS, INDIAN AZALEAS.—A fine Stock of Budded Plants of the above now ready. Also of **PALMS, FERNS, Ficus elastica**, variegated *Aralia Sieboldi*, *Dracena terminalis*, *cannicifolia*, and others for table and general decoration, Ghent and Mollis **AZALEAS, SPIRÆAS, TUBEROUS BEGONIAS** and **GLOXINIAS** by thousands, &c., the whole, as usual, at very moderate prices. Special offer on application.
A. VAN GEERT, Continental Nurseries, Ghent, Belgium.

SURPLUS STOCK.—

SURPLUS STOCK.
1 Large **ADIANTUM FARLEVENSE FERN** in 14-in. pot.
2 Large **ADIANTUM CUNEATUM**, in 14-inch pots.
12 Dozen **ADIANTUM CUNEATUM**, in 48-pots, good stuff.
1 **DRACENA AUSTRALIS**, 4 feet high.
12 Choice **CALADIUMS**, in six varieties.
4 Standard **AZALEAS**, 2 feet 6 inches in height, 3 to 4 feet in circumference, well budded.
6 Good **CAMELLIAS**, 3 to 4 feet, well budded.
2 **YUCCA ALORFOLIA VARIEGATA**, 10-inch pots.
Also a quantity of **SEEDLINGS**, which will be sold cheap. The measurements are from top of pots. Price and particulars of T. FLETCHER AND SON, Florists, &c., Chesterfield.

STRAWBERRIES.

The best sorts for Forcing.
V. H. DE THURY. } Strong plants, all well rooted,
SIR JOSEPH PAXTON, } in small pots, prepared for
PRESIDENT, } forcing, 20s. per 100.
Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1000. Package free. Extra plants for carriage. Cash from unknown correspondents.
H. J. HARDY, F.R.H.S., Stour Valley Seed Grounds, Bures, Suffolk.

To the Trade Only.
DOUBLE FRENCH RANUNCULUS.

LEONARD ROOZEN AND SONS
superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, which will be sold single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)
LEONARD ROOZEN AND SONS, Bulb Growers, Overveen, near Haarlem, Holland.

HUGH LOW AND CO. have pleasure in informing their friends and the public that their stock of **WINTER and SPRING FLOWERING PLANTS** in this season unusually extensive and fine in quality, and well worth the notice of intending purchasers, who are very cordially invited to an inspection of the plants, which comprise amongst other things:—

Many thousands of **ERICA HYEMALIS**, of various sizes, a large quantity extra large.
Many thousands of **ERICA MELANTHERA**.
Many thousands of **ERICA GRACILIS**, of various sizes, many extra large.
Many thousands of **ERICA CANDIDISSIMA**.
Many thousands of **ERICA VENTRICOSA COCCINEA MINOR**, and other choice varieties.
Many thousands of **ERICAS** of the best varieties, including *alpeurocridis*, *colorans*, *cerinthoides*, *coronata* (in flower), *califra*, *Cavendishi*, *barbata major*, *grandinosa*, *Hyemalis superba*, *perspicua nana*, *persoluta alba*, *assurgens*, *Wilmorea*, &c.
Many thousands of **HARD-WOODED ERICAS**, in numerous fine varieties.
Many thousands of **GENISTAS**.
Many thousands of **EPACRIS**.
Many thousands of **AZALEA INDICA** in variety, of various sizes.
Many thousands of **AZALEA INDICA ALBA**, *narcissiflora* and other white-flowering varieties.
Many thousands of **AZALEA AMENA**, of various sizes.
Many thousands of **CAMELLIAS**, with flower-buds, various sizes.
Many thousands of **GREVILLEA ROBUSTA**.
Many thousands of **SOLANUMS**, well berried, some unusually large.
Many thousands of **BOUVARDIAS**, red and white.
Many thousands of **CLIMBERS**, Stove and Greenhouse.
Many thousands of the best **GREENHOUSE PLANTS**, such as *Aphelaxis*, *Acacias* in variety, *Acacia armata*, *Chorozemas*, *Correas*, *Daphnes*, *Eriostemons*, *Grevilleas*, *Genetivills*, *Boronias*, *Leschenaultias*, *Tremandras*, *Pimeleas*, &c.
Also on hand a very large stock of **ORNAMENTAL FOLIAGE and DECORATIVE PLANTS**, **PALMS, DRACENAS, FICUS ELASTICA, ARALIA VEITCHII** and others, **CROTONS, ADIANTUMS, PIERIS, LOMARIA GIBBA**, &c., suitable for table decoration.
OTAHEITE ORANGES, in fruit: **LAURUSTINUS**, on stems, fine white variety, full of buds.
FERNS in immense numbers. Many of the leading kinds can be supplied by the thousand.
ORCHIDS.—The stock of these is very large and healthy, contained in twelve houses, one of which is 155 feet long by 30 wide. *Aerides quinquevulvum* and others, *Vandas*, *Dendrobiums*, *Cattleyas*, *Odontoglossum Alexandræ*, *Odontoglossums* in variety, *Phalaenopsis*, *Cypripediums*, *Laelias*, *Saccolabiums*, *Oncidiums*, *Trichopilis*, *Mesospindiums*, &c., can be seen in very large quantities.
Of **ODONTOGLOSSUM ALEXANDRÆ** the stock consists of many thousands, of various sizes.
PHALAENOPSIS SCHILLERIANA and **AMABILIS** in large numbers, nice plants.
Special price by the dozen or hundred.
FRUIT TREES of good quality, consisting of Peaches, Apricots, Nectarines, Plums, Cherries, dwarf-trained and dwarf maiden.
Clapton Nursery, London, E.

DUTCH FLOWER ROOTS.



JAMES VEITCH & SONS,
ROYAL EXOTIC NURSERY,
CHELSEA.

HYACINTHS,
TULIPS, CROCUS,
AND OTHER
BULBS of SUPERIOR QUALITY.

Report of the Royal Horticultural Society's Exhibition, March, 1879:—There were many large collections of Hyacinths, but **Messrs. Veitch's surpassed all the others.** A Gold Medal was given for these flowers.—*Vide Times*, March 26.

VEITCH'S COLLECTIONS
OF
BULBS for INDOOR CULTIVATION,
at 10s. 6d., 21s., 42s., and 63s.,

VEITCH'S COLLECTIONS
OF
BULBS FOR GROWING IN THE
OPEN GROUND,
at 10s. 6d., 21s., 42s. and 63s.

For particulars see CATALOGUE, gratis and post-free on application.

Messrs. Veitch & Sons, Chelsea, contributed about 120 Hyacinths in superb condition, **unquestionably the finest of all those exhibited.**—*Vide Journal of Horticulture*, March 25, 1880.

VEITCH'S
"CHELSEA" COLLECTIONS
FOR
Greenhouse, Conservatory,
and Sitting-room,

Containing only the most easily cultivated and attractive sorts of Winter and Spring Flowers,

at 21s., 42s., and 63s.

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BULBS for SPRING GARDENING,
Large Quantities at Low prices.

J. V. & SONS have pleasure in stating that Her Majesty's Commissioners of Works have again accepted their tenders for the supply of Bulbs for the decoration of Hyde Park, Regent's Park, Hampton Court, &c., and will be pleased to give Special Quotations where large quantities of Bulbs are required for Spring Gardening.

ROYAL EXOTIC NURSERY,
CHELSEA, S.W.

DUTCH BULBS, &c.

WM. CUTBUSH & SON,

Who have so many years held the highest position in supplying

HYACINTHS, TULIPS, and other EARLY SPRING
BLOOMING BULBS of the very best quality,

Are happy to be able to announce that their supply for the present season has arrived, and advise their Patrons to order early.

Descriptive Priced CATALOGUES sent on application.

HIGHGATE NURSERIES, LONDON, N., or BARNET NURSERIES, HERTS.

THE GENERAL HORTICULTURAL COMPANY
(JOHN WILLS, Limited).

Central Offices: Warwick House, 142 & 144, Regent Street, W.

The Company having made large purchases from the leading Bulb Gardens of Holland and France, are now prepared to supply HYACINTHS, TULIPS, NARCISSI, CROCUSES, and all other BULBS for Autumn Planting, at low prices, and with a large discount to Shareholders; Non-shareholders will be treated with on the most liberal terms.

The Company also supplies all kinds of NEW and RARE PLANTS, Ferns, Fine Foliaged, New Holland Plants, Standard and Dwarf Roses, and all kinds of Fruit and Forest Trees, Evergreens, &c., GARDEN SEEDS for Autumn Sowing, FARM SEEDS, HARDY PLANTS for Winter and Spring Gardening, PLANTS for FORCING, &c., MUSHROOM SPAWN, and all kinds of GARDEN IMPLEMENTS and REQUISITES, at the lowest prices.

FRUIT, BOUQUETS, FESTIVE and MEMORIAL WREATHS, FLORAL CROSSES, DRIED FLOWERS, &c., sent to all parts of the country on receipt of letter or telegram.

The General Manager may be consulted as to the re-arrangement of Gardens, Laying-out of Grounds, and General Landscape Work, also for the Erection of Conservatories, Greenhouses, Forcing Houses, &c., and will attend at any part of the country for these purposes.

Catalogues on application. Early Orders are respectfully solicited.

JOHN WILLS, General Manager.

DUTCH FLOWER ROOTS.



B. S. WILLIAMS

BEGS TO ANNOUNCE THAT HE HAS RECEIVED HIS ANNUAL IMPORTATION OF

HYACINTHS, TULIPS, CROCUS, NARCISSUS,
Also other BULBOUS ROOTS, in fine condition.

ALSO FOR EARLY FORCING,

ROMAN HYACINTH, Paper White and Double Roman NARCISS.

Early Orders are respectfully solicited,

CATALOGUES containing a Select List of the above are now ready; also of New Plants, Fruit Trees, Roses, &c., Gratis and Post-free to all applicants.

VICTORIA and PARADISE NURSERIES, UPPER HOLLOWAY, N.

AUTUMN PLANTING.

SEEDLING and TRANSPLANTED FOREST TREES,
PLANTS FOR GAME COVERTS,

ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.

The immense stock of the above is this season in splendid condition, and special offers for future delivery will be made on application.

THE LAWSON SEED and NURSERY COMPANY (LIMITED),
EDINBURGH.

BY ROYAL LETTERS PATENT.

FLETCHER, LOWNDES & CO.

(LIMITED),

13a, GREAT GEORGE STREET,
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HORTICULTURAL BUILDERS,

And Sole Manufacturers of

Winter Gardens, Conservatories,
Vineries, &c.,

CONSTRUCTED ON THEIR

PATENT

TUBULAR RIB SYSTEM:

The First Prize, Original,
And only Light, Elegant, and at the same
time Safe, Method of Constructing



CURVED ROOFS

WITHOUT THE USE OF BENT GLASS,

By which means a considerable Saving
is effected.

F., L. & Co. (Limited) also construct

LARGE ROOFS and BRIDGES

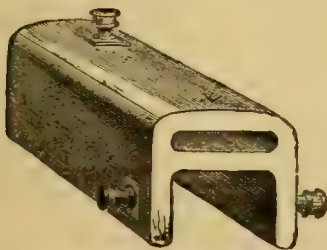
ON THIS SYSTEM,

Which is the Lightest and Strongest Form
of Rib Principal ever made.

HOT-WATER ENGINEERS.

Conservatories, Churches, Schools,
&c., Heated and Ventilated.

F., L. & Co. (Limited) strongly recommend



THE TERMINAL END SADDLE AND
FLUE BOILER,

As being the most powerful and economical
ever yet produced.

FERNERIES and ROCKWORK

Fitted up in the most Natural Style.

FLETCHER, LOWNDES & CO.

(LIMITED),

13a, GREAT GEORGE STREET,
WESTMINSTER, S.W.

SUTTON'S CHOICE EXHIBITION HYACINTHS.



"The Hyacinths which I had from you last year were excellent."—Mr. JAMES MCINTYRE,
Gardener to the Right Hon. Viscount Valentia, Bletchington Park.

"The Bulbs I had from you are now in splendid flower."—Mrs. MORRIS, The Priory, Wrexham.

We have again this season personally inspected the Bulb
Farms of Holland, and have also made careful trials of the
finest varieties of Hyacinths in our own grounds. The varieties
included in the following Collections cannot be equalled.

SUTTON'S COLLECTIONS of HYACINTHS FOR POTS and GLASSES.

100 in 100 very choice sorts	£4 4 0
100 in 50 very choice sorts	3 10 0
50 in 50 very choice sorts	2 2 0
50 in 25 very choice sorts	1 15 0
25 in 25 very choice sorts	1 1 0
12 in 12 extra fine sorts	0 12 0
12 in 12 choice sorts	0 9 0
12 in 12 good sorts	0 6 0

SUTTON'S "Special" Exhibitor's Collections.

25 Splendid Hyacinths for Exhibition	£2 2 0
12 Splendid Hyacinths for Exhibition	1 1 0

"If the Bulbs only turn out as well as those that you sent me
last year, I shall be more than satisfied."—W. E. LUSCOMBE,
Esq., Holly House, North Collingham.

"The Bulbs arrived safely, and I never saw a better lot for
the money."—Mr. T. MILLER, Gardener to H. F. Beaumont,
Esq., The Hall, Whitley Beaumont.

"I have some very fine spikes of Hyacinths from the Bulbs
obtained from you last autumn."—Mr. S. BOASE, Westfield
Place, Dundee.

For Prices and full Particulars see

SUTTON'S AUTUMN CATALOGUE

Gratis and post-free on application.

SUTTON & SONS,

THE QUEEN'S SEEDSMEN, READING.



THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 18, 1880.

A LANCASHIRE COLLIER'S GARDEN.

I HAVE lately come across a working man's
garden in this part of the country which
has been to me—and I have had a somewhat
varied and extensive knowledge of the gardens
in this country—a great surprise and pleasure.
I have thought it worth placing upon record
among other gardens, as a mark of industry and
zeal in a class of men of whom many speak dis-
paragingly, because so few understand them.
The owner is a working collier, but, with his
son, is an enthusiastic botanist. Now a few
years since, in a time of greatly inflated
trade, the working collier made very large
wages. About six years since I knew one family
of four sons who were working. The father
was a small farmer, and had a large family;
but these four sons were working at some pits
between Bolton and Wigan. These four would
receive from £20 to £24 per fortnight; and I
just mention this to show that it was a time of
high wages. The London and provincial press
made great fun about the working collier and
his piano; yet, alas! the greater part are now,
as they were then, uncouth and rough, and
much of their hard-earned wages is spent
foolishly. They are a puzzle to many, and a
difficulty to the philanthropist to know how to
reach them; yet, taken as a whole, they
are good-natured, and when once you can
gain their confidence you may lead them
to anything; but they are very suspicious
of a stranger interfering with them. Let them
but once get an idea fixed in their minds, they
give full play to their energy, be it what it may,
for good or evil, the man's full powers are
for the time engaged, and in nothing is this
more seen than in their recreations when they
have done their "shift"—that is, the eight hours
they are working down the pit. Be it a pigeon-
flying contest, or a dog-race, or anything
else, it is taken up with a zeal and heartiness
unsurpassed by those shown by any class of
men. When the typical collier becomes a
religious man, the same firm energy is shown
by untiring zeal and courage. His singing
is hearty, if not artistic.

I was informed by a clergyman in the district not
long since that there was a working collier who had a
fine collection of specimen Ferns, native and exotic, with
a collection of alpine and rare British plants. One day
lately I thought I would find this man out, and see for
myself. So I inquired, and found that he resided at
a village called Hazlehurst, near Worsley, in South-
east Lancashire. Following instructions, I "speered"
i.e., inquired for Robert's cottage, and passing a
group of fifty to sixty men engaged in the intellectual
sport of pigeon-flying, and who were using their lungs
as Lancashire men know so well how to do, I shortly
came upon a tall elderly man, and "speered agin"
for Robert's residence, if he could tell me. "Oh,
yes," he replied, "them are his greenhouses, that is
his cottage, and I'm his father. I suppose you want

to look at his plants, but I think he is not at home—he has had to go to a extra 'shift'; but I can show you them." I began to fear I should not see the person I sought, for I wished to see the man as well as his plants; but my fears were soon dissipated, for I was soon at home with Robert and his son, for both were at home. Both father and son have become infected with a sincere and ardent love for plants, which is a strong feature with many Lancashire working men, and being teetotalers they do not spend their leisure time as too many do, in sitting about, but find intellectual recreation among their plants. They gave me a hearty reception, and forthwith we started to see what was to be seen. The first thing which caught my eye was a fine plant of *Dracæna australis*, 8 to 9 feet high, planted out-of-doors. I was informed it had been there four months; it looked the picture of health, in good colour, bearing the sun's rays, wind and rain and smoke, with impunity. I was at once shown into the first house—a large one, of their own make, glazed with fluted glass, and heated with hot-water. I was not prepared for the sight which met my eyes on entering, for here were specimen Ferns in numbers, fine healthily grown plants, the fronds clean and fresh, although I was informed they had been to various local shows, they still looked fresh and well. I measured some of them across the top of the fronds, and I give a list of some of them. They would not have disgraced a metropolitan show, but I think would have carried honours for the owners, and many of them would be the envy of gardeners I have known. Among the most noted ones were *Adiantum gracilimum*, 2 feet 6 inches; *A. concinnum latum*, 3 feet 6 inches; *A. Capillus-Veneris*, 3 feet; *A. formosum*, 3 feet 6 inches; *A. cuneatum*, 3 feet 6 inches; *Pteris serrulata major magnifica*, 3 feet 6 inches; *Todea pellicida*, 3 feet; *Gymnogramma ochracea*, 3 feet; *Todea superba*, 2 feet; *Woodwardia radicans cristata*, 4 feet; *Microlepia hirta cristata*, 4 feet; *Blechnum pedunculatum*, 3 feet; *Pteris arguta polydactyla*, 4 feet; *Cibotium Schiedeii*, 10 feet; *Asplenium palmatum multifidum*, 2 feet; *Alsophila australis*, 12 feet; *Cyathea medullaris*, 14 feet; and amongst the British Ferns in another large house are a fine plant of *Osmunda purpurea*, of Stansfield, found by a friend of Mr. Tyldesley on Carrington Moss, near Warrington, in 1864, and is now 10 feet through—a magnificent specimen; also a curious seedling form of *Athyrium* between *corymbiferum* and some other variety having two classes of fronds; *A. Filix-femina todoroides*, 3 feet; a large pan of Irish Polypody, collected in Ireland; *Osmunda cristata*, 4 feet; *Scolopendrium crispum*, 2 feet; *Athyrium Filix-femina stipitatum*, 1 foot 6 inches; *A. F.-f. corymbiferum*, 2 feet 6 inches; *A. F.-f. ramosisimum*, 2 feet; *A. F.-f. laciniatum ramulosum*, 2 feet; *A. F.-f. laciniatum tortile*, *Lastrea montana nowelliana*, 2 feet; *A. F.-f. Wardii*, 2 feet; *Lastrea Filix-mas Lowei*, 4 feet; *L. f.-mas Craigii*, 3 feet; *L. montana cristata*, 2 feet; *Athyrium F.-f. crispum*, *Osmunda undulata*, *Polypodium elegantissimum*, 3 feet; *Polystichum plumosum*, 3 feet; *P. aculeatum cristatum*, 2 feet 6 inches; *Lastrea F.-mas ramosisimum*, 2 feet 4 inches, for which they have refused 6 guineas; a curious semi-transparent plant of *Athyrium F.-f. calythrux*, the Kew variety; a good plant of Dr. Morgan's variety of *Scolopendrium Brunonis*, and many other scarce and rare kinds, including *H. tunbridgensis*, a fine plant of *Dracæna indivisa*, a few Palms, and a *Cocos Weddelliana* (*Leopoldinia pulchra*).

I can but mention the collection of alpine and rare British plants, of which the growers are very proud, and well they may be, for it is seldom one sees such a rare collection of valuable plants in possession of one of Mr. Tyldesley's class. May they long enjoy their hobby, for they deservedly stand a head and shoulders above many Fern cultivators I have met with, and I doubt not one of these days the Messrs. Tyldesley will be heard more of. They deserve great credit for their knowledge of plants and skill in handling them. It was a great treat to see such a lot of fine stuff altogether, and I am sure if any one is in the neighbourhood and can spare a little time, it would pay them to visit Messrs. Tyldesley, for they informed me they were pleased for any one to do so.

I have mixed much among the working men of this district, and I wish I could persuade the landowners to confer a boon upon the working cottagers by setting apart some few acres of land for them as garden ground. I am persuaded that the workmen would pay a good price for it, and

it would save hundreds from the public house, for unfortunately very few here have any land at all. There is no recreation for them when they come from the mills, furnaces, forges, or workshops, but the public-house. We may talk about morality and temperance till the crack of doom, and not make or persuade working men to become temperate till we give them some healthy pleasant recreation like a garden. Give me the man who loves his little garden like the Messrs. Tyldesley, and I will show you the man who is not a drunkard. Unfortunately I have known many drunken gardeners and garden-labourers; but a hard-working artisan, who loved his garden and was a drunkard, I have never known. I honestly believe that the landowner who would set apart land for gardens, where there are mills and works, could get from £20 to £30 per acre rent for it, and would confer a great benefit on society—on the working-man himself and his family, by creating a healthy recreation for the man himself, and a good preparation for the next day in the mill—a benefit to his family by supplying them with fresh vegetables and fruits, besides creating a love for the beautiful in the minds of many, and thus tending to create many a happy and cheerful, because sober, home. *N. J. D.*

New Garden Plants.

ANTHURIUM HARRISII (Endl.) VAR. *PULCHRUM*, *N. E. Br.**

This is a beautiful variety of the rare *Anthurium Harrisii* of Endlicher, introduced from Brazil by Mr. Bull, from whose plant the annexed description has been taken. The variegated foliage, and the rich colour of the spadix set off by the creamy-white spathe, render it an attractive and desirable plant; and if it could be successfully crossed with such species as *A. ornatum*, *A. margaritaceum*, *A. Roezlii* and allies, or the curious *A. spathiphyllum*, it would no doubt yield some very striking novelties.

I have just now called *A. Harrisii* a rare plant. This may appear strange, since Professor Engler in his monograph, p. 127—129, has made it appear a common one, by uniting with it as synonyms and varieties about a dozen described plants, and I agree with him that most of them are probably forms of *A. Harrisii*, several of which are known in gardens under the names *A. lanceolatum*, *A. Beyrichianum*, *A. intermedium*, *A. erythropodium*, *A. consanguineum*, &c., and three are figured in Saunders' *Refugium*, viz., *A. rubricaulis*, t. 265; *A. Harrisii* (but not the typical form), t. 266; and *A. Urvilleanum*, t. 267. These are not unfrequently cultivated, and are not rare in herbaria, but the typical *A. Harrisii* is so rare that besides Mr. Bull's plant (which differs in nothing from the type except in the coloration of the spathe and spadix, and the variegation of the foliage), I have never seen the plant alive; and the only dried specimens I have seen are the type specimen of Graham's *Pothos Harrisii*, on which *A. Harrisii* was founded, preserved in the Kew Herbarium, and a leaf in C. Koch's Herbarium, which possibly belongs to the same form. *N. E. Brown, Kew.*

ERIA (ANIA) LEUCOXANTHA, *H. G. Rehb. f.*

This is a pretty variety of the well-known plant, having sepals and petals very faintly washed with the lightest brown, a spur orange-coloured outside and inside; a white lip, a little sulphur-coloured outside. The purple portion does not appear unless the flower is artificially opened; there are a few such spots on the lip in front of the column, and a dark purple pandurate figure, very much in the way of a *Staurastrum* (say *muricatum*). I have to thank Mr. J. Day for this. *H. G. Rehb. f.*

HYMENOCALLIS TENUIFLORA, *Herb.*

This delicate *Pancratium* has just flowered in profusion with Messrs. Peter Smith & Co., of Berge-dorf and Hamburg. It exhaled a delicious perfume, and was introduced from Maracaibo. *H. G. Rehb. f.*

NOTYLIA BIPARTITA, *H. G. Rehb. f.*

I remember to have read one day a note in *Paxton's Magazine*, stating that every Orchid might become pretty when grown in a mass. I believe there was a woodcut of a common small flowered *Brassavola* given to illustrate the statement. I could

* Caudex short in the plant seen, with very short internodes; scale-leaves ovate acuminate, 2 inches long, at first whitish, soon withering; their brown fibrous remains persisting. Petioles 1½–2½ inches long, flat on the face, with narrow crisped winged margins, rounded on the back. Lamina 10–12 inches long, 2–3 inches broad, elongate-lanceolate acuminate, base rounded or sub-cordate, bright green, closely marbled, or rather as if peppered with whitish, edges also whitish. Scape about 1 foot long, terete, pale green. Spathe spreading or deflexed, linear-lanceolate acuminate, 3 inches long, 5 lines broad, creamy-white, tinged with pinkish at apex. Spadix erect, sessile, ¾ inches long, 2½ lines thick, of a very rich deep crimson colour, changing to purple-brown with age.

not help thinking to-day of my old record (the book not being at hand), when Herr A. F. H. von Ohlen-dorff, of Hamm, near Hamburg, sent for my inspection this *Notylia*, forming a dense mass of perhaps thirty broad leaves on twelve bulbs or more, and six pendulous cylindrical racemes, each equaling a span in length, and consisting of very numerous gracious flowers, in the way of those of *Dendro-chilum*. The plant (lately also sent by Mr. Bull) impressed me with its elegant aspect. This mass had been managed by Mr. W. Drázdák, the skilful grower, with the best success. There was also another very small mass with shrunken leaves, without any "turgor-vitæ." This mass had a single peduncle looking quite distinct, more narrow, lighter in colour, and yet on careful inspection it proves to be identical. The plant was sent by our Mexican Hamburg traveller, Mr. Hoegel. It is also with Mr. Kramer, at Flottbeck, and at the Hamburg Botanic Garden, and was also sent by Herr Consul Kienast, from Zurich. *H. G. Rehb. f.*

TRICHOPILIA COCCINEA (Wats.) *FLAVEOLA*.

This variety has greenish-yellow sepals and petals, a white lip and a white column—the first with some yellow. It is the genuine plant, both by the nature of the flower and the narrow ligulate-linear pseudobulb. I am indebted to J. Day, Esq., for it. *H. G. Rehb. f.*

MORMODES BUCCINATOR (Lindl.) *MAJOR*, *n. var.*

I propose this name for a curious variety gathered, sketched, and dried (!) near Medellin, in New Grenada, by my countryman, Mr. Schmidtchen, one of Mr. Sander's numerous collectors. It came under the hammer in Mr. Stevens' rooms, Feb. 19, 1880. It has flowers larger than those of the common *Mormodes buccinator*, but in colour it is just like the marmorata variety—viz., ochre-coloured, with numerous cinnamon small dots, the lip with only few and obscure pallid marks on the sides. The extraordinary diagnostic features are the longer bulb and the very long peduncle. I learn from Mr. Day that his plant bears a peduncle 22 inches long, having six flowers standing from 1 inch to 1½ and 1½ inch apart. Both Mr. Schmidtchen's specimen and sketch show similar proportions. *Mormodes buccinator*, Lindl., being well known as the most polychromatic Orchid of the world, and as variable in shape, I prefer to leave this as a variety. *H. G. Rehb. f.*

MORMODES AROMATICUM (Lindl.) *OLEO-AURANTIACUM*, *n. var.*

Both my wild specimens, as also all those I have seen alive, or in the inflorescences obtained fresh from gardens, were of a brownish-purple colour, with darker spots. I felt, therefore, much surprised to receive a flower of a fine orange colour, with numerous little points and streaks of blackish-purple. It comes from Mr. J. Day's *παράδεισος* of Orchids. *H. G. Rehb. f.*

ONCIDIUM MEIRAX, *Rehb. f.*, 1852.

This curious little gem was discovered by my late friend, Hermann Wagerer, in Venezuela nearly thirty years ago. It was figured in my *Xenia* as a very small, tiny thing, with lenticular one-leaved bulbs, and an ancipitous zig-zag inflorescence of two flowers, spotted with little yellow and brown spots. Very tall specimens were gathered in Ecuador by Messrs. Spruce and Lehmann and Houde, and lately the plant was found in New Grenada by Mr. Chester-ton. I was exceedingly pleased to get, in July, a fresh inflorescence, the first I have seen, from Mr. F. Worlee, Hamburg, Wandsbecker Stieg, a very intelligent collector. *H. G. Rehb. f.*

CATLEYA GUTTATA (Lindl.) *PUNCTULATA*, *n. var.*

I propose this name for a very curious variety just obtained from Mr. J. Day. It is light sulphur coloured, and has only very few, very small purple spots on the sepals and petals. The lip and column are as usual. *H. G. Rehb. f.*

CATASETUM TABULARE (Lindl.) VAR. *RHINOPHORUM*, *n. var.*

The gorgeous *Catasetum tabulare* from New Grenada has appeared lately in the gardens of Sir Trevor Lawrence, Messrs. Veitch, Bull, and in the Hamburg Botanic Garden, under Mr. Donat's management. I remember of one of those having shown slight asperities on the table-like callus of the lip; there is just at hand a striking flower, sent by Mr. W. Bull, in which the whole surface of the callus is broken in innumerable irregular transverse-toothed lamellæ, of white colour, with spots of "burnt sienna," thus making one think of a file—hence the name. *H. G. Rehb. f.*

THE BOY'S NEWSPAPER.—Messrs. Cassell have issued the first number of this publication, which promises well, and doubtless will improve on further acquaintance. A little more natural history would be acceptable as time goes on.

THE LIFE OF PLANTS.

(Concluded from p. 377).

OF all the sources of artificial light, the most powerful is the electric light. Unfortunately, to produce it, costly machines are necessary, which most laboratories are not rich enough to be able to afford. Dr. Siemens recently showed in London plants whose growth had been singularly promoted by submitting them every night, for a few hours, to the action of the powerful rays of an electric lamp. He thus obtained the advanced vegetation of high latitudes which has been so thoroughly studied, lately by Schubeler, whose works have been made known to us by M. Tisserand, and by M. Bonnier and M. Flahaut. This action of luminous and calorific rays on the organs of plants is of the utmost importance, and it is necessary to observe how these rays are reflected, dispersed, and absorbed by the leaves. This study is far advanced; it is due to M. Maquenne, in great measure, who will show us how the most delicate physical processes are made to solve the questions of physiology. The study of vegetable respiration was merely indicated by Ingen-Housz. It dates from the more recent labours of M. Garreau, Sachs, Corenwinder, Boehm, Borodine, Rischewi, Meyer, and the experiments undertaken within the last few years at the Museum by M. Moissan. The study of the movement of water in the plant, on the other hand, is very ancient, and we find in the seventeenth century a primary memoir in the *Philosophical Transactions*, which treated of transpiration. This first attempt of Woodward's was followed by the much more complete researches of Hales. French physiologists have not been less ardent: Perrault and Mariotte, then Guettard, and later Duhamel du Monceau, measured the force requisite for forcing the water through the wood, and explained the well-known phenomenon of "bleeding of the Vine." They studied the conditions under which this flow is varied; they discussed the double circulation of the sap. Hales showed us what an enormous quantity of water circulates in the tissues of herbaceous plants. Guettard collected the water circulated, and showed the decisive influence exercised on transpiration by the direct action of the solar rays. Interrupted in the middle of the last century, the researches on transpiration have been continued with ardour, and many points left obscure by the first observers have been explained. Messrs. Lawes and Gilbert in England, Risler in Switzerland, Haberlandt and Wiesner in Vienna, Eder and von Hoemel in Germany, and finally the observations of Duchartre. The experiments performed at the Museum by Vesque, those which I myself made at the school of Grignon, have furnished valuable evidence. However, the analytical researches in which work done in the plants-themselves has been examined, have perhaps done less to determine the causes of the movement of water in plants than the researches in which the synthetical method of research has been used, and in which the phenomena occurring in plants have been imitated or reproduced with inert materials and the apparatus of the laboratory.

The memorable discovery of endosmose, due to Dutrochet, the elegant researches of Jamin on the capillarity were of exceptional importance—thanks to them, we begin to see how, in spite of gravity, water is able to reach the topmost shoots of the giants of the vegetable world.

The quantity of water which circulates through the tissues of a herbaceous plant is enormous. It is calculated that when a plant has increased the weight of its dry material by one kilogramme, 250 to 300 litres of water must have circulated through its tissues. When water is deficient in amount vegetation languishes, on the contrary, it develops with extraordinary vigour under the influence of irrigation. The works already carried out in our southern districts, to carry into the plains the water of the adjacent mountains, are very extensive. Those which remain to be performed will be costly to undertake. I do not believe anything will be more efficacious in re-establishing the prosperity of the regions devastated by the Phylloxera.

When a herbaceous plant is fully developed, it is the occasion of a highly interesting fact. The materials elaborated in the leaves are concentrated in the fertilised ovaries in the seeds. This migration of the immediate principles has been successfully studied by Isidore Pierre, whose researches on the maturation of Wheat and Colza are standard works,

and not only shall we explain them here, but we shall try to advance further than the eminent agronomist of Caen. We shall try to render intelligible the mechanism of this migration, taking as illustrations the phenomena of diffusion by means of which the celebrated physiologist, Sachs, as well as myself, have been enabled to explain the greater part of the motions of the soluble substances, transported from one organ of the plant to another. We shall lay stress on the inducing causes of this migration. We shall see how it is furthered or retarded by climatic conditions which have a greater influence on the interior work of the plant, than even on its general development.

The study of the maturation of fruit will be the last subject of vegetable physiology on which we shall have to treat this year. We shall trace the curious changes which take place in the tissues of the fruit. We shall see the hard resisting pectose, which the fruit first contains, change and become tender and savoury. We shall see the acids appear, attain their maximum and disappear little by little, while on the contrary, the different kinds of sugars, which we shall learn to distinguish one from the other, increase in proportion as the maturation advances. We shall have to define the influences excited by external conditions on these changes, such as heat and light. Illustrations will not be wanting: Bérard, Buignet, M. Cahours, St. Pierre and Magnien, Alberto Lewry, Macagno, the various physiologists of the numerous Italian agronomic stations, will supply them. *From M. Dehérain's Lecture.*

A HOLIDAY IN PEMBROKE-SHIRE.

LONDON possessed many attractions when I left it a week ago for Pembrokeshire. I had just discovered Palæolithic implements in two tributaries of the Thames where they had not hitherto been met with; Potatoes, with all sorts of interesting diseases upon and in them, were rolling in from different places; and my table groaned under the pea-parasites and the moths and maggots sent by Professor Westwood from Oxford for illustration in the *Gardeners' Chronicle*. The Professor's work ought not to have been neglected [Certainly not, nor any other. Eds. !], and of this I was dismally reminded whilst my train (the Wobbling Welshman) was proceeding through South Wales; here the Professor himself suddenly got out of a carriage adjoining mine, and asked me how his cuts of pea-parasites were getting on. It fortunately happened that there was no time for reply, for Mr. Park Harrison, the gentleman who excavated the Neolithic skeleton from Cissbury Camp a couple of years ago, now appeared, and recognising me, we (with a fourth friend, who soon after turned up) proceeded in peace to Pembroke, to join the meeting of the Cambrian Archæologists.

Pembroke must not be confused with Pembroke Dockyard, as the two are perfectly distinct. The former old place consists of one long street, of the dullest character. When the train arrived, the shops were shut, and the town was in darkness: we were informed that the "town" had quarreled with "the gas," so no lights were forthcoming. At a distant part of the street the town crier (manifest to the ears but not to the eyes) was flourishing a great bell about and making the evening hideous. After twice exclaiming, "Oh, yes! Oh, yes!" he informed his unseen Pembrokeers that the Cambium Archæological Association was at that time in Pembroke, and that meetings, exhibitions, and "excursions" (Shakespeare) were about to commence. A special tariff of charges had been printed by the managers of the chief hotel of the place, inscribed at the foot, "for members of the Cambrian Association only." Whether the "Cambrians" were here charged more or less than usual was not specified, but as the members are always supposed to be fond of ancient things, a very ancient turbot was (as a compliment to the society) kindly provided for the first day's dinner. About thirty members were present, including Mr. C. C. Babington, Professor of Botany at Cambridge; the Very Rev. Dean Allen of St. Davids, Mr. Treasurer Barnwell, and others.

Whilst the horses were being harnessed for the first day's excursion a visit was paid to Pembroke Castle. This is one of the finest ruins in South Wales, and it possesses a magnificent and unequalled (as far as this country is concerned) Norman tower.

Especial attention was paid to the so-called chapel, Prof. Babington afterwards giving it as his decided opinion that the presumed chapel was really the hall where the head persons of the Castle took their food and probably slept upon the floor, as was the custom in those hardy and warlike times. The Castle walls are now thickly clothed with *Cotyledon Umbilicus*, *Valeriana officinalis*, *Scolopendrium vulgare*, *Cheiranthus Cheiri*, *Clematis Vitalba*, *Chrysanthemum Leucanthemum*, *Parietaria officinalis*, *Linaria Cymbalaria*, *Asplenium Trichomanes*, *A. Ruta-muraria*, *Polypodium vulgare*, *Verbena officinalis*, and many other interesting plants. At one place a ruinous stone stair leads to a natural cave of large dimensions in the limestone rock. This cave is named the Wogan, and is on a level with the river: the roof is thickly covered with Hart's-tongue Ferns. These Hart's-tongues grow everywhere in the neighbourhood of Pembroke: they are not uncommon about old steps and stone courses in the buildings of the town itself. Monkton Hall, Church and Priory were visited, the latter ruins displaying large masses of Hemlock in various places; this plant appears to be common about all monastic ruins. St. Mary's Church, Pembroke, was then looked over.

The drags were now ready, and one could not help shuddering a little at the sight of the ample "kneecaps" provided for the horses, as the Association never meets without a mishap barely short of fatal. Professor Babington was in the chief drag, representing botany: the writer was on the box, representing the Potato disease; and Professor Westwood close by, as a representative of horticultural parasites in general. The driver had a Sunflower in his button-hole, no doubt as a compliment to the botanists; whilst the numerous nimble earwigs were looked upon as a compliment to Professor Westwood.

The party was bound for Tenby by Gurfreston and St. Florence; these places were visited, an interior of St. Florence Church drawn, and the "Ogham Stone" examined: this stone is probably one of the species known as a genuine "Bill Stumps." The water from the chalybeate springs in Gurfreston churchyard was tasted; these springs border and are inside the churchyard, they are 6 feet below the made earth of the closely-adjointing graves, and carbonic acid gas is constantly bubbling up through the water. I do not know where the "gas" comes from, but the rude ancestors of the village are close by, and the springs are celebrated. There is a mutilated mural painting in Gurfreston Church. Very little is left except a pair of naked legs, a pair of scissors, and a gridiron: the subject of this picture is mainly conjectural. A start was now made for Hoyle's Mouth Bone Cave, the botanical drag being in the rear. The horses had just got into a Welsh gallop when the riders in the middle drag suddenly stood up, and shouted wildly, "Stop! stop!" to the driver of the last drag, containing the botanists. The horses were suddenly pulled up in the stony road, the drag gave a sickening lurch, and at the instant of the party's descent one of the hind wheels came off. Another moment and we should all have been capsized in the road, with possibly a few broken necks. The driver coolly looked at the wheel from his box and said his "wheel-box" had gone. He walked back (for wheel and wo!) to look for it, and left the professors and non-professors (including the President, C. E. G. Philips, Esq., of Picton Castle) in the road to walk on to Tenby as they best could. The fares were paid in advance, and as a specimen of Pembrokeshire ingratitude it ought to be recorded that the brake proprietor did not offer to return the fares, although his bond as well as his brake was broken.

I felt uncommonly glad that my neck had not gone, for the article on a "New Form of Disease in Potatoes" was in the press, and I wanted specially to know something of the result. It is not desirable to let the young doctors, professors, and barons, at home and abroad have it all their own way. These gentlemen will no doubt speedily deny the existence of any fungus at all. One party will say he cannot see any septa in the mycelium, therefore in his next paper (to be read before the Royal Somnolent Society) he will alter the name: it cannot be a true *Sclerotium*, and its characteristics will be better elucidated when he in future always refers to it as a *Sclerophorum*; another will say the cellular structure is all a cell; a fourth will say his "unerring oil immersion" proves the growth to be the work of an insect; whilst a fifth will possibly say the *Sclerotia* are "a fanciful inven-

tion," and are really nothing but "blacks" from some Irishman's chimney.

The weather was tropically hot on the day of the accident to the wheel, the sun scorching like fire. One of the party (very stout) took off his coat and waistcoat and sat down under a bush in the shade; the others walked bravely on in the heat and discussed matters botanical and geological. One archaeologist in advance went into a field of Cabbages and cut off a large Cabbage leaf, this he placed on his hairless head (before he put on his felt hat) to protect his thoughts from the rays of the sun. This action we in the rear considered to be a compliment to horticulture; it also relieved our eyes, for the head before mentioned ever and anon blazed with the brilliancy of the electric light as it reflected back the bright beams of the sun.

The bone cave at Hoyle's Mouth could not be visited, as time was insufficient, and the party was wearied with walking. Tenby Church was examined and then a party was made up for Caldy Island, 3 miles south-west of Tenby: this place is famous for its Priory and Ogham Stone, and many wished to visit the place. There was, however, an almost insuperable difficulty in getting boats, till Mr. Hulm, the owner of a steam yacht, kindly offered to take us in tow. First of all a lug-sail fishing boat was crammed with archaeologists, this was secured with a rope to the stern of the yacht, then an ordinary rowing boat was filled, and this was attached in turn by a rope to the stern of the lug-sail-boat. For some reason (unknown) Professors Westwood and Babington did not venture into the boats, now so full of travellers as to remind a spectator of the boats in Raphael's Cartoon of the "Miraculous Draft of Fishes." The steam yacht steamed away, and the party soon reached Caldy Island without mishap. There is no landing-place at Caldy, so the visitors alighted on the rocks as best they could, and walked up a sandy beach to the old Priory church. When the party got there, brewing operations were going on in the chancel. The sands by which the Priory is approached are covered with an enormous crop of Sea Holly, *Eryngium maritimum*. The Ogham Stone was soon found prostrate in a dark corner of a school-room—weight 3 or 4 cwt., with plenty of spiders and spider's webs ornamenting it. As this stone had never been correctly drawn or minutely examined, it was necessary to take it out into the light so that the letters and oghams might be well seen; but so apathetic were all the party but two that they (on being asked to help to carry out the stone) said—"No, Smith; this stone ought not to be moved without permission of the owner of the island; we will go out and look for the owner of the island;" and out they went, but they never came back. It is to be presumed they could not find the "owner of the island." One gentleman who went out last said he thought the stone was a modern "take-in," for he could clearly see the word OMNIBUS upon it. The owner of the island and an islander, however, did turn up at a fortunate moment, and with their aid and that of a high-church clergyman and the younger son of the writer, the 4-cwt. sandstone slab was got outside the building, and transferred, with its Celtic oghams and ninth century Latin omnibustic inscription, to paper. With surprise I found myself esteemed as an expert oghamist: this error no doubt arose from the fact of my name having been recently printed as that of another expert crypt-ogamist;" and some people don't know the difference. This Ogham Stone was at one time used as a window-sill at Caldy.

Caldy Island is a sort of large farm, 1 mile wide and 3 miles long; number of inhabitants ninety-nine, and no tax-gatherers. They grow Potatoes at Caldy, and seeing some badly diseased plants I said to an islander on the spot, "Do you ever get the Potato disease here?" "Sir," he replied, "we has it awful; jist the same as they has it anywhere else." "I suppose you always select good sound seed for planting, do you not?" I went on. "Yes, sir, we do; we take the greatest possible care, but somehow it seems to 'blow over.'" And "blow over" no doubt it does, either from England, Ireland, America, or some other place. It is, however, quite probable that there may be an abundance of resting-spores in the fields at Caldy in the same way as these bodies exist everywhere else in this country, for there is no known fungus-growth more abundant than the resting-spores of the Potato fungus. The apathetics (wearied, perhaps, with their fruitless search for

"the owner of the island"), like an archaeological press-gang summarily hustled the writer into the lug-sail-boat with tripod and camera lucida and sailed off for Tenby. On the outskirts of the town *Eschscholtzia californica* grows as a garden escape on old walls. At 6 o'clock in the evening Mr. Charles Allen, brother of the Dean of St. David's, gave a sumptuous cold collation to the Cambrians at the Royal Gatehouse Assembly Rooms; afterwards the party returned by train to Pembroke, and an evening meeting was held, presided over by the excellent Dean Allen of St. David's. Mr. Edwards Laws, of Tenby, read an admirable paper on the Camps and Earthworks of Pembrokeshire; and then the members of the Association went off to their different lodgings in the dark, the "gas" remaining inflexible.

The plants and places seen during the next three days I will briefly refer to next week. *W. G. Smith.*

THE PEA MOTH.

THE insects infesting Pea crops described in our last two entomological articles (viz., the Pea Thrips, p. 206, and Pea Midge, p. 245) are so small as to be

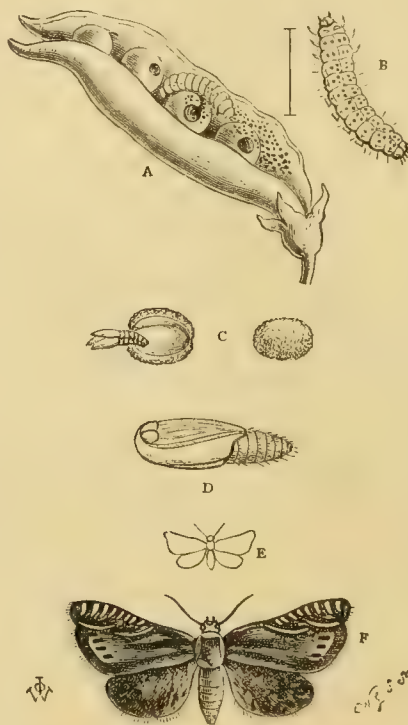


FIG. 68.—THE PEA MOTH (*TORTRIX NIGRICANA*).

easily overlooked by ordinary persons, but another species of larger size makes its presence conspicuous enough to our domestics whilst shelling Peas for dinner, being a caterpillar which is found within the Peapods (fig. 68, A), the Peas themselves being more or less gnawed, and the interstices between the Peas filled with moist little pellets of the excrement of the insect. Of course a careless servant generally lets the infested Peas with the caterpillar fall, with the sound Peas, into the collander, and the whole gets served at table, to the disgust of those who happen to know the real history of the creature. The caterpillar is found within what seems to be a sound pod, the egg from which it was produced being deposited within the foret whilst in a very young and tender state, the wound rapidly closing and healing; the caterpillar is, of course, not hatched till the Peas have grown within the pod large enough to afford food for it. It goes on feeding until it is full fed, when it makes its way out of the pod and falls to the ground.

The caterpillar (B) is about half an inch long, of a pale greenish buff or dirty whitish colour, with a chestnut coloured head, and dark horny jaws; the segment of the body succeeding the head is marked with two dark chestnut or fulvous transverse marks, and the following segments bear minute black tubercles from which spring very fine short hairs. There are about

eight of these on each joint, the six middle ones forming two triangles; there are three pairs of legs in front of the body, four pairs of middle prolegs, and two clasping feet at the end of the underside of the body.

On descending to the ground the full-grown larva forms for itself a small oval cocoon (C) of fine particles of earth, fastened together with a small supply of silk, within which it is transformed to a chrysalis, represented magnified in our figure (D); the hinder part of the body is armed with transverse rows of minute spines, which enable the pupa to push its way through its cocoon when ready to assume the perfect state, as shown in our figure.

Mr. Curtis included a short notice of this "maggot" in his chapter on the insects which attack the Pea crops, but he was not successful in rearing the moth. This was, however, done by Mr. H. Doubleday and M. Guenée, by the latter of whom the moth was described under the name of *Endopisa pisana*. It appears, however, to be identical with the long-previously described *Tortrix nigricana* of Fabricius and Haworth and *T. nebrimana* of Hübner, and is represented in all its details by Herr Ver Huell in the continuation of Sepp's beautiful work on the insects of Holland.

The moth when carefully examined, is a pretty little creature (E, F), measuring a little more than half an inch in the expanse of the fore-wings, which are of a rich brownish-black colour or dusky drab with an olive tinge, merging into paler brown towards the extremity of the wings, the disc varied with small ochre-grey scales, the fore margin of the wing with two dusky spots between the base and the middle, and beyond the middle are eight small white or cream-coloured oblique spots, the first and third produced into shining bluish lines extending nearly to the tip of the wing, and below these are a row of black marks on a patch of metallic scales; the hind wings are brown, with the base paler. It is not until the month of June in the year following that in which the caterpillars have gone underground to undergo their transformations that the moths are developed, at the time when the Peas are in bloom.

By Haworth, Wilkinson, and some other writers on the English small moths, there is another insect described as closely allied to this *Tortrix nigricana*, under the name of *Tortrix proximana*, which also feeds on Peas, the two species having been separated generically by Guenée under the name of *Endopisa*; but a careful comparison of a series of these moths appears to me to render their specific distinction somewhat doubtful. *J. O. W.*

ALPINE GARDENING AT WIMBLEDON.

A MORE enthusiastic lover of hardy alpine and herbaceous plants than Mr. Joad it would be difficult to find, possessing as he does almost every plant in commerce of value ("varieties excluded"), and in many instances many that cannot be obtained in nurseries he is fortunate to possess in specimens. On approaching the house by a long carriage drive, along one side of which is a goodly batch of *Cedrus Deodara*, we stand facing the lawn, at the opposite end of which are some long mixed herbaceous beds presenting a very gay appearance, with large clumps of herbaceous Phloxes, Sunflowers, *Helianthus multiflorus* plenus, Pentstemons, and others. The value of having such beds as these arises from the fact, that something of interest may always be found in flower. In a cold house Mr. Joad has had formed a rockery for growing the more rare alpenes, and which undoubtedly is a great success. A fine plant of *Meconopsis Wallichii*, some 4 feet high, was just giving out the last of its beautiful lavender flowers; this plant is still uncommon in gardens, as also is its yellow spring flowering ally, *M. nepalensis*, but of which there exists here a nice batch. These two beautiful biennials may, when the amateur grower has once got a start with them, be had in flower annually by planting out the best plants yearly, and starting the others in small pots, which would prevent their flowering till another season. Flowering also in the same house was a fine plant of *Argemone grandiflora*, belonging to Papaveraceae, with large pure white flowers; it must naturally be supposed that this is rare from the fact that one so seldom meets with it: it is a herbaceous perennial, a native of Mexico. Flowering freely in the same house was *Abelia floribunda*, a plant of shrubby habit, with pendent blush-

white flowers. Passing on, we came to the rockery, where an innumerable quantity of Alpines were thriving admirably, noticeable among these being some fine plants of *Primula capitata* (Hooker), with deep purple flowers on a stem 1 foot high, covered with a silvery farina, as also is the foliage, which resembles that of a miniature form of *P. denticulata*, and *Achillea clavennæ*, with whitish flowers and deeply serrated leaves. Some fine rosettes of *Saxifraga longifolia* are doing well, as also is *Omphalodes Lucilæ*, the rarest of the Navel Worts—a plant with sky-blue flowers, borne freely from stems of a procumbent habit, and foliage of a deep glaucous hue (figured in your columns in 1877, vol. viii.); this appeared a very fine variety, the foliage being much larger and broader, and flowers of greater size than is generally seen. *Anthemis aizoon* is a hardy rock plant, rather uncommon, with white flowers and silvery foliage: this forms a neat compact mass. On this rock also was *Papaver umbrosum*, and in a sunken nook were plants of the Cape Pond-weed, *Aponogeton distachyon*, flowering freely.

Continuing, we came to a variety of beds filled for the most part with the larger growing subjects. It will not be out of place to mention here that in planting an excellent system is adopted, namely that of choosing a suitable situation for each and every plant, and making the soil to suit the requirements of the plants, and, once planted, allowing the plant to remain. To accomplish this the natural soil is taken out and replaced by one suitable for the plants intended for the situation. By adopting this simple, though often neglected method, many who now fail would have success. At the same time, experience is required to know the requirements of each case. Much, however, may be gleaned from the nature of the roots; if these are fibrous they generally require peaty soil—if large and fleshy they prefer loamy and well enriched soil. Noticeable here in flower was a fine plant of *Astilbe rubra*, with deep rose-coloured flowers, and certainly an acquisition in its genus; it grows from 3 to 4 feet high, and is a most desirable plant. I also noted *Silphium perfoliatum*, *Sonchus palustris*, yellow, 14 feet high; and *Eupatorium verticillatum*. *Echinacea* (*Rudbeckia*) *intermedia* is a stately herbaceous plant, with rose-coloured flowers, as also is *Senecio pulcher*, of which so much has been said of late. *S. speciosus* is also a good and distinct plant. In the wilderness, growing in freedom, are a variety of Ferns, doing well, *Saxifraga peltata* evidently at home in a moist shady situation, and some very fine old plants of *Azalea amœna*. On the lawn is a goodly batch of evergreen Oaks, *Quercus Ilex* and several varieties. Leaving these we came to a new piece of rockwork in course of construction, while a little further a new herbaceous ground is being made to receive numerous plants from the various beds which are becoming too large.

In the houses is an endless variety of plants, among which were a nice lot of *Luculia gratissima* and *L. Pinceana*, both clean and well grown; *Abronia fragrans*, *Pelargonium tricolor*, a singular species. *Mentzelia ornata* promises to flower this autumn; it is rather new and of biennial duration: the flowers, which are creamy-white, are from 3 to 5 inches in diameter, with a wax-like appearance; it is of free branching habit and most distinct. *Fuchsia boliviensis*, with its scarlet flowers, was flowering profusely, as also was *Crocusma* (*Tritonia*) *aurea*, with orange-yellow flowers. At one end of another house *Cianthus Dampieri* has been making a fine display of its gorgeous flowers, and promising a quantity of seed. In this house was *Erythrina compacta*, with salmon-scarlet flowers; a large plant of *Othonna pectinata* is growing vigorously, and in a pan of water was *Aponogeton spathaceum* flowering. In the stove is a nice lot of the "Scarlet Skull-cap"—*Scutellaria Mocciniana*; and on the roof is *Allamanda Hendersoni* with large yellow flowers; a nice plant of *Pancratium fragrans*, with two spikes, scented its immediate vicinity. Here also are *Cypripedium Sedeni*, good strong plants in flower; *Bomarea Carderi*, and a nice plant of *Vanda cœrulea*, having two spikes of flowers. *Kæmpferia Roscœana* is a singular plant, with crystal white flowers $\frac{1}{4}$ inch high. *Alocasia violacea* is an exceedingly fine foliage-plant, having leaves 4 feet long and 2 feet 6 inches wide; and in the same house is *Stigmatophyllum ciliatum*, producing its yellow flowers in clusters, remarkably fine. *Ceanothus rigidus*, a neat, compact species, is doing well against the wall of a house. *Rudbeckia Neumannii* is flowering freely in one of the beds, while *Silphium laciniatum* is towering some 12 feet high, with its golden-yellow flowers, &c.

FALL OF OAK BRANCHES.

SOME time since, after a smart gale, I was surprised to see the ground under an unusually luxuriant Oak thickly covered with branches of various sizes, all apparently in the most healthy condition. There was not the



FIG. 69.—DISARTICULATION OF A BRANCH OF THE OAK.

slightest appearance of anything wrong about the leaves, but on picking them up all appeared affected with that peculiar disease, if such it may be called, which was described some years since in the *Gardeners' Chronicle* under the name of *Cladotopsis*. It is, in fact, due to just the same process as the separation of the leaf from the stem—viz., the formation of a quantity of loose cells at a peculiar point, which finally puts an end to the continuity of the leaf or

branch. They are indicated in the sections at A and B. These are in many cases very evident, especially in the case of the Vine, and the separation of the component parts of the spur from which a Pear has fallen. In many cases the base of the leaf where it is destined to fall forms a little cushion, and it is precisely this which has taken place in the branch of Oak before us. Not only is there a cushion where it has broken off, but there are two higher up clearly destined for the same purpose should the first formed fail (A, B). It is remarkable that where the branch has fallen, as in a portion of the disc, the loose cells were not formed—or, at least, very imperfectly. Where the separation took place the sound part split off by the mere weight of the leaves. *M. J. B.*

COLONIAL NOTES.

DOMINICA.—We greatly regret to hear of the death, from dysentery, on the 22d ult., of Dr. Imray, of Dominica. Ever since 1837 Dr. Imray has been known to the botanists of this country for his continuous zeal in the promotion of our knowledge of the flora of this island. He was a frequent correspondent of the late Sir W. Hooker and of Dr. Lindley, and to the last kept up regular communication with Kew, sending collections of plants, living and dried, and interesting notices concerning them. Our own columns have also occasionally been enriched by his contributions. Grisebach's *Flora of the West Indies* owes much to his diligence and zeal; indeed but for him next to nothing would have been known of the magnificent flora of Dominica. Among the most recent introductions to Kew due to him is the beautiful *Blakea trinervis*. Many plants have been named in his honour, such as *Vaccinium Imrayi*, *Cyathea Imrayana*, besides species of *Aspidium*, *Nephrodium*, *Monstera*, *Pleurothalli*, &c. Dr. Imray was not only a keen botanist, but a distinguished physician. His monographs on yellow fever and on the disease known as "yaws" constituted him an authority on these subjects.

CEYLON: THE COFFEE-LEAF DISEASE.—Mr. Marshall Ward has set to work with zeal and minute attention to study the life history of the fungus causing this disease. One great difficulty in the research is to separate the *Hemileia* from the other organisms with which it is associated, and to make sure to what species particular structures really belong. This is effected not only by careful and repeated observations under different circumstances and at different times, but by cultivating the particular fungus whose history it is wished to investigate apart from all others, and by watching its progress, under the microscope, night and day uninterruptedly till the whole history is made clear. Mr. Ward's conclusions to his preliminary report, just issued, are as follows:—

Derived from some source purely external, a fungoid organism finds its way into the passages between the cells of the leaf: here it has a term of existence shown to the observer by the origin and spread of the yellow "disease spots," caused by the changes in consistence and colour of the leaf contents at those places.

The outbreak of the yellow "rust" from the leaf-passages, through the stomata, takes place when the leaf begins to fail in supplying sap. Such an explanation is in accordance with all the facts yet known to me, and also with the present state of physiology. In seedlings the cotyledons especially become yellow, and in older plants the lower leaves usually suffer first; on wind-blown ridges, quartz patches and dry soil generally, bad attacks of rust are conspicuous when more sheltered and moist portions of the estate do not appear to be suffering; in sudden dry weather "an attack" commonly comes over an estate, while during the last stages of crop "leaf disease" is often very bad.

Now if the spawn, ramifying among the loose cells of the leaf, is absorbing its food from those cells, as is well known to be the habit of such parasites, we can see how so much more work is thrown upon the plant. Whereas a leaf normally supplies a certain quantity of elaborated food for the tree in a given time, we have here the same leaf compelled to provide food for tree and fungus—its cells must work the harder and its life be the shorter.

Until we fail to account for the ravages of leaf disease according to known principles we have no right to seek an explanation elsewhere. Many and in some cases elaborate experiments are being planned to establish the important point as to what actually occurs between the fall of the leaf, with its "rust" and mycelium, and the re-appearance of the yellow "pin-spots." I have already indicated the direction in which these are leading, and it only remains to patiently carry on research. When it is remembered that these germinating spores have to be kept under observation during the night as well as day, that all kinds of minute organisms have to be guarded against,

and hence that out of many attempts few succeed, I hope that the importance of this plan will be admitted. *H. Marshall Ward, B.A. Cantab., Cryptogamist.*

JAMAICA.—Extracts from the *Report on the Public Gardens and Plantations for the Year 1878-79.* By D. Morris, M.A., F.G.S., Director. During the year under review the department of public gardens and plantations was under the general control of the director of roads and surveyor-general. Mr. G. S. Jenman was superintendent of the Castleton Gardens, visiting the Parade Garden, Kingston, and the Coconut plantation at the Palisadoes; while Mr. W. Nock was superintendent in charge of the Cinchona plantations. Mr. Jenman left the island in August to proceed to British Guiana as superintendent of the new Botanic Gardens of that colony, and Mr. Nock was left in temporary charge of the department.

(Since the period covered by this report the department of public gardens and plantations has been reorganised and placed under the control of a director, who is directly responsible to the Governor. Mr. George Syme has succeeded Mr. Jenman, as superintendent of the Castleton Gardens, and Mr. Nock has been retained at the Cinchona plantation.)

A great demand has existed throughout the year for plants of economic value, such as Cacao, Liberian Coffee, Nutmeg, Clove, Cinnamon, Vanilla, Orange, Mango, &c.

The trees of the best Trinidad Cacao, now about six years old, have borne good crops, and seedlings have been liberally distributed without charge. As these trees become older and others come into bearing the resources of the gardens in this respect will become yearly more abundant, and it is hoped that Cacao cultivation in the island will thereby receive a material and appreciative impulse.

The Liberian Coffee trees have yielded a fair supply of seeds, and plants have been distributed in order to satisfy the numerous applicants who desire to try this robust and hardy plant. It would be well, however, to point out that the Liberian Coffee is more particularly adapted for the low lands and for elevations under 1500 feet. It prefers a rich deep soil, a sheltered situation, and districts with a rainfall not under 100 inches.

The demand experienced in former years for Orange plants, for Indian Mangos, Pine-apples, Nutmegs, Cloves, Cinnamon, Vanilla, Bhilsa Tobacco, has been fully maintained, and applicants have been supplied with as many plants as could be conveniently spared.

The total number of plants distributed to applicants in the island, free of charge, during the past year, amount to 24,141.

CINCHONA PLANTATIONS.—The several plantations included under this establishment have, during the last twelve months, been under the superintendence of Mr. W. Nock. It is satisfactory to find that the manifest disadvantages under which the plantations have hitherto laboured have been fully realised by Mr. Nock, and that he has endeavoured to remove them. The plantations are estimated to cover nearly 400 acres. Owing, however, to the practice of wide planting, which has been pursued here for so many years, and the inefficient character of the means adopted for supplying vacancies, the actual area occupied by regularly planted trees is, probably, only one half of the estimated area. The large quantity of land cleared and not planted up, together with the wide spaces allowed between the trees, have greatly increased the cost of the plantations without any adequate return. The first step necessary, in order to place the plantations on a satisfactory footing, is to establish a good nursery on each plantation, from which an abundant supply of strong healthy plants may at any time be obtained. From these nurseries the land, already cleared, may be carefully planted and, as circumstances permit, the space between the trees, now in some cases measuring 12, 15, and 20 feet, may gradually be reduced so that the trees may eventually present a compact and unbroken growth, "bowering" the ground and affording mutual support and shelter from strong winds. The advantages of close planting for Cinchona plantations have long been recognised. All the Cinchonas have the habit of throwing out a quantity of superficial rootlets, and young Cinchona plantations do not thrive until the soil between the trees is sufficiently protected from the sun to allow these superficial rootlets to perform their functions freely. The growth of weeds, which is a very important factor in tropical cultivation, is also checked by shade. By close planting, therefore, two desirable objects are speedily obtained, and, moreover, the trees are encouraged to produce straight clear stems yielding a larger proportion of trunk bark and less branch bark. On this well known habit of forest trees is founded the practice of close planting in forest plantations in Europe, the object being to produce long straight unbranching stems from which to cut timber of long scantling.

As the trees begin to press upon each other they can be thinned out and a quantity of bark may thus be got at a comparatively early period, with positive advantage to the plants that are allowed to remain

on the ground. It is true that the cost of close planting is greater than that of sparse planting, but on the other hand the reduction in the cost of cleaning and the manifest greater yield of the plantation will more than compensate for this.

The quantity of bark taken off during the year under review weighed, when dry, nearly 2500 lb., and the prices obtained in the London market were, for red bark, Cinchona succirubra, 2s. 10d., 3s. 5d., 3s. 6d. and 4s. per pound. The branch bark of Cinchona officinalis, grey bark, fetched 2s. 4d.; the trunk bark 5s. 9d., 6s., and 6s. 1d., per pound; whilst the root bark of the same species sold at 10s. 1d. per pound. The total amount realised by these sales was £425 11s. 2d.

JALAP CULTIVATION.—The tubers of this drug have hitherto nearly all been planted among the Cinchona plants, but as it was found to exhaust the soil very considerably, and otherwise injure the Cinchona plants, all the tubers have been taken up and a new plantation of about 2 acres has been formed. The removal of the tubers into new ground and the attack of insects, which has been rather severe upon the young growing shoots, will prevent an available return for this year; but doubtless after this the cultivation will be attended with a greater measure of success. The crop for the past year, amounting to 14,924 lb., was sold locally in the green state for £62 3s. 8d.

MEMORANDUM BY THE DIRECTOR OF PUBLIC GARDENS AND PLANTATIONS.—The following figures refer to a consignment (the fourth) of Cinchona bark forwarded from the Government plantations in April last, and sold in London, May 20, 1880. It consisted of 122 bales, containing in the aggregate 10,152 lb. (avoirdupois). The different species were represented as follows:—Grey bark, black marks (Cinchona officinalis), 4517 lb.; yellow bark (Cinchona Calisaya?), 308 lb.; red bark (Cinchona succirubra), 5327 lb. The prices realised were the highest yet obtained for grey bark, viz., 7s. 6d. per pound for "good quill" or trunk bark. Root bark sold at 7s. 9d. and 8s. 1d., and twig at 2s. 9d. per pound. The average price for the various qualities of grey bark was 6s. 5½d. For yellow bark the prices realised were 4s. 6d. and 5s. per pound. Red bark "good quill," or trunk bark, realised 3s. 6d. and 4s. 4d. per pound; root bark 3s. 4d., 3s. 7d., 3s. 8d., and 4s. 10d.; and twig bark 1s. 3d. per pound. The average price for the various qualities of red bark was 3s. 10d. per pound. The average price per pound for the whole consignment was 5s. nearly.

It is evident that where the grey bark can be successively cultivated, it is likely to prove the most productive of the kinds at present under cultivation in Jamaica. At the prices above mentioned grey bark, grown at elevations of from 4500 to 7000 feet, would realise at the close of eight or ten years at the rate of £500 per acre.

But, by a careful system of planting and cultivation, a first return should be realised from prunings and thinnings at about the fifth year. It will be noticed that at the recent sales twig bark of this species realised 2s. 9d. per pound, which fully bears out the possibility of an appreciable income from Cinchona plantations before the trees are actually cut down or coppiced.

With regard to the red bark (C. succirubra), which can be successfully grown in Jamaica at all elevations above 2000 feet, the results of these sales show that Jamaica red bark, at ten years old, is equal to the best produced, either in South America or the East Indian plantations.

If cultivated in or near Coffee lands, or in moderately sheltered situations where the soil is not clayey, this bark, on account of the extensive areas available for its cultivation in Jamaica, would become, in time, a most valuable product.

The most encouraging feature in the present sales is the fact that all the bark despatched in April was "sun-dried" bark. Considerable discussion has taken place during the last six years in England, Java, and Ceylon, with regard to the proper method of drying Cinchona bark. Some maintain that under exposure to strong sunlight the bark deteriorates and loses some of its valuable alkaloids. On the other hand the advocates of "sun-drying" affirm that in order to preserve the chemical components of the bark intact, it should be dried as rapidly as possible before any internal fermentation takes place. As Cinchona bark could not be dried here artificially except at a considerable cost, it was most necessary to test its value when dried by full exposure to the sun.

The result, as shown by the present sales, is most conclusive. In competition with artificially dried and other barks, it is satisfactory to find that Jamaica "sun-dried" bark obtained the highest prices. It may, therefore, be safely assumed that Cinchona bark cannot be dried too quickly or too thoroughly. To this might be added that it should be packed perfectly dry, and despatched with as little delay as possible.

The results of the Cinchona sales, up to date, not including the last consignment, are as follows:—Quantity of bark shipped, 21,099 lb.; gross amount realised, £406 17s. 11d., nett sum realised, £389 0 11s. 3d.

THE HURRICANE.—Notes on the hurricane of August 18, 1880, at the Cinchona plantation, Jamaica: elevation, 5000 feet.

During August 17 we had a high wind, and a fall of rain of 2.44 inches. This continued to the morning of the 18th, when the rain became heavy and continuous, with strong gusts from the north and north-west. At 4 o'clock on the afternoon of the 18th the wind became higher, and swept with heavy sheets of rain from the north-east. Observations made with a standard Negretti & Zambra barometer at 3.30 P.M. on the 18th, registered 25.11 inches. At 4.30 P.M. it was 25 inches; thermometer, 65° Fahr. By 7 P.M. the wind had increased to a gale, and pebbles, branches of trees, and various debris were blown about, some striking the windows and doors with considerable force. The barometer continued to fall, and at 7.15 P.M. registered 24.80 inches; thermometer, 64° Fahr. At 8 P.M. it was 24.75 inches; thermometer, 60° Fahr. Soon after 8 P.M. a momentary lull took place, which was followed by a terrific gale. The stable and some outbuildings near the residence were blown down, and the boards and scantlings carried in a stream of wreckage down a ravine for some hundred yards. Soon after the superintendent's office and the roofs of the propagating houses succumbed, and a large limb of a Juniper tree, growing on a sloping face east, was carried over the crests of the hill, through two fences, and landed with great force against the back verandah of the residence. This limb measured 39 inches in circumference 2 feet above the base, and was about 20 feet long. The verandah was broken and the doors and windows forced. In other places buildings suffered greatly, the occupants being obliged to leave them in a drenching rain, and seek shelter in more favoured situations.

About 11 P.M. the gale became a little moderated, but shortly after blew with increased force from the east and south-east. It was nearly 3 A.M. on the morning of the 19th before an appreciable lull took place, and this was succeeded by heavy downpours till nearly daylight. The rainfall during the 19th was 20 inches.

The effects of the hurricane on the vegetation around are most marked in ravines, in the direction of the wind force. Large trees have been uprooted or broken off a few feet from the ground. The foliage has been so completely stripped that only the midribs and a few secondary veins remain.

Succulent plants have been so battered that they exhibit all the characteristics of a severe frost-bite, while Ferns, grasses and the small herbage lie prone and battered, and crushed rigidly in the direction of the last gale.

The only plants that appear to have successfully stood their ground are the Dagger (*Yucca aloifolia*), but in many cases these also have succumbed. The Eucalypti have suffered severely, as also Firs, Casuarinas and Acacias.

The few plants of the indigenous Juniper (*Juniperus barbadensis*) in the neighbourhood, with the exception named above, have stood the effects of the gale better than any other. On exposed ridges the Cinchonas have been uprooted and damaged to the extent of about 15 to 20 per cent., the succulent and large-leaved red bark—Cinchona succirubra—being, as might naturally be supposed, the chief sufferer. It is remarkable that what were thought to be sheltered hollows and "bosoms," have suffered more than the open clearings. This may be accounted for by the fact that where these hollows were in the direction of the wind force, the wind let in at the top rushed down them with great and increasing force. Coffee has suffered very severely, leaves and berries in all stages of development being strewn thickly over the ground. The trees appear as if an army of caterpillars had passed over them, all the soft vegetable tissues between the veins having been whipped out by the vehemence of the storm. The total loss to the Coffee properties on these hills will, I fear, be a very serious one. The loss to the Cinchona, though severe, will in some measure be compensated for by the bark which the fallen trees will yield. It will not be so valuable as if the trees were older, and this time of the year is not the most favourable for drying it. *D. Morris.*

SCOLOPENDRIUM VULGARE DAVIESII.—Mr. D. M. Davies, of Beynawr, in South Wales, sends us fronds of a *Scolopendrium* found by him in that neighbourhood, and which, being distinct from others already known, may be called *S. v. Daviesii*. It is a finely developed form of the crispum type, with a sagittate base and toothed margins—that is, the margins are extended into distinct pointed teeth-like coarse serratures; in some of the fronds the apex is multiply lobed. Mr. Davies sends with it fronds of *Cystopteris Dickieana* found by him in Carnarvonshire and in Breconshire, which are, without doubt, identical with the true Aberdeen plant. *M.*

HITHERWOOD.

LOVERS of alpine gardening are always welcome guests of Mr. Latimer Clark, who never tires discussing the beauties appertaining to it, and who is always ready to encourage those who have a like taste. The house, which is situate on the top of Sydenham Hill, commands a very interesting view of the surrounding district, with its once fertile valleys, now replaced by streets and railroads; but these when lit by lamps on a dark night appear like so many stars, and in the distance can be clearly seen the lamps lighting up the Thames Embankment, also the Houses of Parliament, on whose tower the clock face may also be seen; while at one's feet and on the lawn are some good specimens of Beech trees—the wood, which forms a most interesting feature in this garden, being generally planted with Oak.

Some large sloping banks on the western side of the house are densely clothed with Rhododendrons, which have made some fine growths and are promising a grand display of bloom next spring. These extend into the rock garden, where a good specimen of the style of Mr. Pulham's rockwork is to be seen, at the base of which is a small pond, where some of the rarer water plants are placed, and in which *Orontium aquaticum* was flowering freely. This pond is supplied by the overflow from a terra-cotta fountain on the south side of the house, the surplus of which is made to run into the bog garden below, to which I shall presently allude. From the summit of the rock hang various plants of drooping habit, and on the sides are pockets in which are planted a variety of Ferns and other plants, including Clematis and the smaller-growing variegated Ivies; these latter are planted at the foot of the rock, and are making good progress. Close by in a sheltered corner is a plant of the New Zealand Flax—*Phormium tenax*—which has stood out for several winters, and is now progressing favourably. On the lawn are some beds filled for the most part with the rarer spring and autumn-flowering bulbs, where may be found many of the rarer Narcissi, Crocus, &c. Most noticeable at present are some exceedingly fine specimens of the major form of the Christmas Rose—*Helleborus niger* major—some 2 feet 6 inches in diameter, whose crowns are densely set with bloom-buds; these are protected with large bell-glasses as soon as they begin to expand. Great attention is paid to the various banks and slopes, which have throughout a very natural appearance, devoid of the straight lines and formal appearance which so often tend to disfigure the bulbous plants in great variety, such as *Phloxes* work of the landscape artist. On the opposite side are various beds filled with herbaceous and of the decussata group, *Iris germanica* in variety, *Aquilegias*, *Liliums*, *Lychnis chalcidonica flore-pleno*, and many others. Immediately below this is the croquet lawn and lawn tennis ground, which is held up on the west side by a rockwork wall with pockets on the top, in which are planted a variety of *Helianthemums*, *Sedums*, *Dianthus*, &c. Below this, on the left, is another rock for plants requiring partial shade, and again to the left we find ourselves in the wood and wild garden, of which especial notice is taken. Continuing our course, we come to the bog garden, where there are many very attractive plants. In one bog bed, which was specially prepared, the one half for *Cypripediums* and the other for Ferns, were huge masses of *Cypripedium* spectabile, the Great North American Lady's Slipper, which had the remains of the old flower-stems—on one plant numbering upwards of twenty spikes, each having had two and three flowers. These were planted some five years ago, and have not since been disturbed. In the portion containing Ferns were masses of the Oak and Beech Fern, *Polypodium Dryopteris* and *P. Phegopteris*; the sensitive Fern, *Onoclea sensibilis*; the crested form of the Royal Fern, *Osmunda regalis cristata*; and *Struthiopteris germanica*, in quantity, growing in the greatest luxuriance—*Campanula hederacea* forming a dense carpet underneath, and smothered with its miniature blooms. In another bog bed, with *Osmunda regalis*, are fine specimens of *Rhexia virginica* and *Parnassia palustris*, the former of a dwarf bushy habit, with rosy-purple flowers, from North America (see fig. 49, vol. x., 1878), the latter of a caespitose habit, with numerous white flowers; *Bletia hyacinthina*, and *Gentiana Pneumonanthe*. The Marsh Gentians were also doing well in this bed. These two bog beds have a stream of water continually running under them, with

a free drainage, which seems to suit the growth of these plants admirably.

Great attention is given to the naturalising of plants in the wood, which in many instances is attended with success. Masses of the wood *Anemone*, *Anemone nemorosa*, are placed in all directions; *Primroses* abound everywhere; *Bamboos*, *Polygonums*, *Gynieriums* occupy good places; and a very fine double *Bramble* forms a very striking plant (see fig. 43, vol. x., 1878), as also does *Telekia speciosissima*.

Grown in pots are an endless variety of rare alpinos, including a fine collection of *Saxifrages*, noticeable among these being *S. cæsinæ*, *S. aretioides*, *S. valdensis*, *S. pygmaea*, *S. Hirculus*, a yellow flowered species; *S. virginica*, *S. cochleata*, *S. Mawana*, *S. Bursariana*, *S. janipterifolia*, *S. Fortunei*, a late autumn-flowering species in the way of *S. repanda*, with whitish flowers; and *S. gibraltarica*, a deciduous species of the mossy section. A large collection of *Sedums* is also grown. Mr. Clark is also fortunate in the possession of the rarely seen *Parochetus communis*, a plant belonging to Leguminosæ, which was introduced as far back as 1820 from Nepal, but which seems almost extinct in gardens; it is of trailing habit, with obovate trifoliate leaves, and large blue-purple flowers. In the frames in pots is a goodly collection of the species of *Primula*, including *P. Munroi*, *P. minima*, *P. farinosa*, *P. glaucescens*, *P. intermedia*, also fine clumps of *Ramondia pyrenaica*, *Soldanella alpina*, *S. minima*, and *S. montana*; *Gaultheria procumbens*, *Ourisia coccinea*, *Globularias* in variety, *Pinguiculas*, *Astrantia major* fol. var., which is only seen in ones and twos, and that seldom; *Orchis foliosa*, fine pots of which had been flowering freely; *Campanulas* in great variety, and a host of others. Among hardy Ferns were *Asplenium septentrionale*, *A. Halleri*, *Athyrium Goringianum* tricolor, a very striking plant, having fronds of a bronzy-red and white, margined with green; *A. F.-f. Victoræ*, very distinct, the pinnae of the fronds linear, crossing each other in the centre and crested; *A. F.-f. Vernoniæ*, distinct, with closely set fronds; *Lastrea Filix-mas cristata angustata* is all the name implies—a most distinct and desirable variety, the fronds of which attain the length of from 2 to 3 feet, densely set on either side with heavy crests, the extremities of the fronds being deeply divided and heavily tasselled.

I was about taking my leave when my attention was drawn to a splendid specimen of the giant *Hellebore*, *H. niger maximus*, which is handsome in or out of flower; also a fine plant of *H. lividus*. A wall facing north-west and nearly perpendicular is planted between the joints with *Saxifrages*, *Sedums*, *Thymus*, *Erinus alpinus*, of which there are some nice tufts, seeming quite at home; and many more. The soil was taken out from the back of this wall 2 feet wide and 2 feet deep some time ago, to benefit the alpinos, and filled in with old mortar rubbish, which is no doubt doing them good. ♀.

NOTES FROM THE PINE-APPLE NURSERY.

Bomarea Carderi.—For a greenhouse climber few plants (see fig. in vol. v., 1876) can surpass this very free-flowering subject; trained to the roof of a house in this nursery it has been flowering profusely, some widely branching heads of bloom before the seed-pods had formed measuring 3 feet across.

Griffinia Dryales.—A striking summer-flowering stove bulbous plant belonging to *Amaryllidææ*, the colour of the flowers closely resembling that of the well-known *Lasiandra macrantha*; the flowers, which are numerous, are borne on erect stout stems 1 foot high. It is now flowering here.

Odontoglossums and *Masdevallias*.—That these can be well-grown without the aid of much fire-heat is illustrated by a very fine batch, which has had no artificial heat since May last; a more creditable and healthy lot it would be a difficult thing to find. The *Odontoglossums*, of which all the best varieties are grown here, including many good forms of *O. Alexandræ*, have all made very fine growth, and promise to flower well. Among *Masdevallias* are noticeable *M. Lindeni*, *M. ignea*, with salmon-red flowers; *M. Harryana*, and many others. Also doing well in the same house I noticed *Goodyera japonica* and *G. Menziesii*, the former of stiff erect habit, beautifully marked, and, I believe, rare.

"*Sundews*" or *Droseras*.—These form a singularly interesting group, and are well worth growing, the

great variety of species having such widely different habits. Not the least beautiful is our British *Sundew*, *Drosera rotundifolia*, having short erect stems and terminal orbicular leaves densely set with spines. This is common in most boggy situations, or where sphagnum moss is prevalent. *D. capensis* is also a distinct species, with short linear stems and rather broader angustiform leaves; *D. spatulata* is of prostrate habit, *D. dichotoma* is of erect branching habit. *Drosophyllum lusitanicum* is a plant near akin, of erect habit, and has the singular characteristic of catching its victims on the under surface of the leaves. These, with other carnivorous plants, are doing well in this nursery, where they are made a speciality.

Tolæa superba.—A houseful of these presents a most pleasing and striking appearance, the deep green of their leaves tending to darken the house in which they are grown. This house, which faces north, is of lean-to structure, and is quite unheated. These plants were kept in this house through the whole of last winter, and, to use Mr. J. O'Brien's words, appeared like one dense sheet of crystal on entering it. The fact of these being so extremely hardy cannot be too widely known; many of the old fronds are still upon the plants, and appear no worse than under their general treatment, viz., that of being closely kept in cases in very dark houses, the heat averaging from 40° to 45°; the treatment they receive here being that of having no artificial heat the year round. In the growing season they cannot be watered too freely, and only shaded with ordinary canvas or tiffany.

Pyrethrum Parthenium fl.-pl.—This is without doubt a most useful plant for cutting purposes; the flowers, which are perfectly double, are a good useful white, and most suitably adapted for even the most choice bouquets. A large mass of this in the Pine-apple Nursery, where it is largely used, now presents a very striking appearance.

Oncidium unicorn.—A fine batch of this charming little plant is growing well here. It is a free-flowering species, many of the plants having from 150 to 200 blooms on a plant, which, with its graceful pendent spikes, forms a most pleasing acquisition.

Hardy and Half-Hardy Lycopods.—These generally form a most interesting group, of which there are many varieties as well as species. Of the hardy varieties may be mentioned *L. alpinum*, *L. annotinum*, *L. Selago*, an erect species; *L. clavatum*, the Club Lycopod; and *L. selaginoides*. Of exotic species the most noticeable are *L. Phlegmária*, *L. laxum*, of a loose, straggling habit; *L. dichotomum*, and *L. ulicifolium*, this latter very closely resembling one of our British water-weeds (*Hippurus vulgaris*). These, with several unnamed species, which are also very distinct, occupy part of a cold house in the above-named nursery. ♀.

THE GLADIOLUS.

THE blooming season of this handsome autumn flower is now over, and as the season for ordering a stock of roots is now at hand, a few observations may be useful. It seems to be the fashion now-a-days to institute comparisons between one class of flowers and another in a way which cannot bring about any useful results. A man may be an enthusiast in Auriculas, and even prefer them to the Rose, but that is no reason why he should push his flowers to the front at all times and under all circumstances, because there is no comparison at all between the queen of flowers and the monarch of alpinos. I am quite old enough to remember the disturbance in floral circles caused by the late Dr. Lindley or some one else naming the Phlox in this journal in comparison with the "lumpy Dahlia." The learned writer had probably a good deal of right and reason on his side, as the Dahlia at that time was perhaps over-praised, to the neglect of many other beautiful flowers, and amongst them the Phlox. There are a considerable number of showy flowers unfolding their beauty at the same time as the Gladiolus does, but amongst them all it holds a foremost place; for not only is it well adapted for planting in beds and masses, but also for cutting to decorate large vases or glasses it is most distinct and beautiful. If a spike is cut with two or three flowers open at the base, the others will unfold very beautifully if its end is inserted in a glass of water. In previous numbers of the *Gardeners' Chronicle* I have given full details of the method pursued to obtain good spikes for exhibition,

and the monthly notes supply all other necessary information. The seasons of 1878 and 1879 were very disastrous to them. In those two years I did not obtain any of the imported French roots, and in our garden, as they do in most others in this country, home-grown roots very speedily degenerate. They look healthy enough, but the spikes become shorter and the green of the leaves is not of such a healthy colour, showing a lack of vigour most unmistakably. Through the kindness of the Editors of this paper, I was enabled to grow a very fine collection of roots, sent to them by Messrs. Vilmorin, Andrieux & Co., of Paris. They were planted about the third week in April, and the weather for some time seemed to suit them well; they grew very strongly until the wet, cold weather set in, when I had to chronicle several losses amongst them. In July we had a change to warmer and drier weather, which acted like magic. The healthy plants made splendid growth, many of them measured over 5 feet in height. In such cold seasons the *Gladiolus* does not succeed well. The spikes will often die off even when the flowers are ready to expand—but it is only fair to add that some sorts seldom do this, while others are very liable to do so; and if an amateur can make up his mind to purchase a good collection, it is a source of great enjoyment to cross the best varieties for seed-bearing. If a judicious selection of varieties be made for this purpose, it is quite certain that good and distinct varieties will be obtained, and one has not very long to wait for them. I have sown seeds in April, and had strong flowering plants from them the year following; indeed, the spikes are mostly strongest the first season. There seems to be some difference

flowers rosy-lilac tinged and flamed carmine. I have had eleven flowers open at once on this variety.

Ambroise Verschaffelt forms a good spike of purplish-crimson flamed flowers on a light ground; the flowers are rather rough.

Sylvie is a very pretty blush flower, the petals rather edged than flamed, the flowers of good shape, but the plant is of weakly growth.

Panorama is a useful flower to cut for vases, but would not do for exhibition.

Chloris is another variety with well-formed flowers, but the spike is too short for exhibition.

Christophe Colombe, an exceptionally good variety, with long spikes of perfectly-formed flowers, rosy-purple flamed with crimson-purple.

Eglantine, blush-white, with flamed purplish-rose, the centre whitish, distinct, and with a long spike.

Matador, light red, base of the petals white; a good and distinct variety.

Léandre, a very distinct variety with a long and vigorous spike; the flowers lilac with a white centre, and a white line down the centre of each petal.

Octavie.—If this were one of the long-spiked varieties it would be grand, as the flowers are of large size, well-shaped, and of great substance, reddish-purple, heavily flamed crimson.

Le Vésuve, a grand variety, with long spikes of glowing crimson-scarlet flowers; healthy grower.

Schiller has pale yellow flowers, marked with dull red; it is distinct and good.

Seduction, distinct pale rose flowers, shaded purple, with white centre; weakly grower.

ties the following may be named out of the above:—Eglantine, Atlas, Ondine, De Mirbel, Matador, Orphée, Horace Vernet, Christophe Colombe, Leda, Carnation, Le Vésuve, and Mons. Legouvé. These are the best dozen from the whole collection. *J. Douglas.*

CARPET-BEDDING AT ASHFORD FORD.

At fig. 71 we give a plan showing the mode of planting the flower garden at Lord Ardilaun's, Ashford Gardens, Cong. Co. Galway, under the superintendence of Mr. Andrew Campbell. The illustrations show one of four square beds on grass, all planted alike, and also one of four oblong beds. The whole is sunk 5 feet below the level of the terrace. The effect is much admired. The beds are planted in the following manner:—No. 1, fig. 71, the central circular bed, has in the middle a Date Palm 4 feet high, encircled with *Alternanthera magnifica*. From this radiate oblong masses of *Sedum glaucum*, edged with Golden Arabis, the whole encircled with three lines of *Echeveria secunda glauca*. Beds Nos. 2, 3, 4, and 5, placed around the central circle, and separated from it by grass, consist of a series of triangles whose bases rest on semi-circular segments, and whose apices touch a wavy line, the whole being edged with three lines of *Echeveria secunda glauca*. The triangles are filled respectively with *Iresine Lindenii*, *Kleinia repens*, and *Mesembryanthemum cordifolium*; the semicircles are filled with *Sedum pallidum* dotted with *Sempervivum tabulaeforme*, and edged with Golden Arabis. The oblong beds, No. 6, consist of a series of diamond-shaped

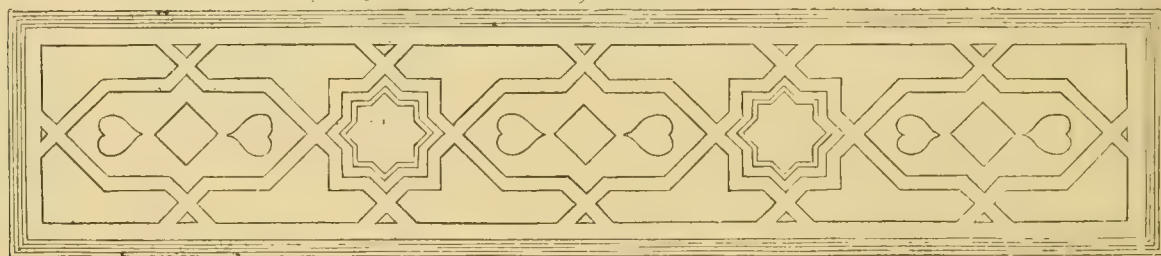


FIG. 70.—CARPET BED AT ASHFORD, CO. GALWAY.

of opinion between the French growers and English amateurs as to what constitutes a first-class *Gladiolus*. On our side of the water a long spike, with the flowers well formed, and all of them facing one way, are the primary points; substance and decided colours are of course also very desirable.

Amongst those I grew this year, Shakespeare was the first to open its flowers. A fine old variety it is, and should be grown in the most select collection. The spike is not so long as some, but the flowers are large, well formed, white, slightly flaked rosy-red, with the same coloured throat.

Amalthée is a good flower of the same class; the flowers are also white, slightly flushed with reddish-purple; the throat of the same colour.

Adolphe Brongniart is another distinct fine flower of the largest size, with a good spike.

Horace Vernet I consider the best flower of its colour—crimson-scarlet, with creamy base to the throat. It is a healthy plant, with a long spike.

Rossini is another fine flower of the crimson shade of colour.

Merveille is a purple flower with crimson lines; the flowers are of good substance and fine shape, but the spikes are not long enough.

Zampa has very large flowers of a good shape, blush, flamed with rosy-red. Its spikes are too short.

Ondine is a splendid flower, with long spikes; flowers white, purple base to the lip, and a few lines or flashes of pale purple on the petals.

De Mirbel must also be placed amongst the first-rate flowers, owing to its long spikes of well-shaped blush flowers, heavily flamed with purplish-crimson.

Perle is one of the flowers to be avoided, owing to its poor constitution.

Orphée is the best in its class; the spike is long,

Hesperide, a fairly good flower in the style of Adolphe Brongniart, but the individual flowers are not so good.

Norma, white, with lilac throat.

Beatrice is another flower of this class, but both of them are displaced by Madame Desportes, which is the best of the white varieties.

Mons. Legouvé, fiery-red flowers, petals marked with white, centre white; good spike.

Jupiter, long spike of fairly well shaped flowers, deep red, flamed rich crimson.

Africaine, a novel variety, dull scarlet, marked with a slaty colour, the petals marked with white.

Carnation.—This is also a very good variety, with large well opened flowers, flesh or pinky, flamed with carmine, long spike.

Atlas is a grand rather late-flowering variety; it has a long spike of perfectly formed flowers, purplish blush, flamed reddish-purple.

Pygmalion, very perfectly formed flowers, purplish crimson, with white throat, slightly marked with purple; not a long spike.

Conquête, lively crimson, flaked with darker crimson; white at base of petals.

Phœbus.—This is always latest to flower, as Shakespeare is the first. It is much like Mons. Legouvé, but has large flowers and not so long a spike.

The above notes have been taken as the flowers opened, and the names are placed very nearly in the order of flowering. The Continental raisers would do well to study the English taste to a certain extent. We cannot appreciate short spikes, or those that have the flowers pointing in different directions. There are a number of varieties that will have from nine to eleven flowers open at once. These are sure to form the best exhibition spikes, even if the individual flowers are not so perfect. As types of the best varie-

patterns, enclosing circles and edged with three lines of *Echeveria glauca*. The circles are filled with *Sedum Sieboldii*, surrounded by *Mesembryanthemum cordifolium*. The ground-work of the diamonds consists of *Sedum oppositifolium*, the boundaries of the diamond picked out with *Echeveria rosea*; the spaces between the diamonds are filled with *Sedum glaucum* dotted with *Echeveria californica*. The side beds, No. 7, also consist of diamond or lozenge-shaped patterns, carpeted with *Sedum glaucum* and edged with three lines of *Echeveria rosea*. The circles in the centre are filled with *Echeveria metallica* surrounded by *Gnaphalium lanatum* pegged down flat. Outside this is a carpet of *Sedum oppositifolium* edged with golden Arabis and with large plants of *Nertera depressa* at the point where the diamonds touch. The semicircles near the edging are filled each with *Sempervivum calcareum*. The circular beds, No. 8, at the four corners, have each in the centre a plant of variegated Maple, 4 feet high, surrounded by *Sedum aizoides variegatum*, the interlacing triangles picked out with *Kleinia repens*, the intervening spandrels filled with Golden Feather; outside comes a carpet of *Sedum oppositifolium*, the whole edged by three lines of *Echeveria glauca*. The large oblong beds, No. 9, fig. 70, at the end of the garden, are each 55 feet long by 10 feet 6 inches wide, and are thus planted:—Going from without inwards there is first an edging of four lines of *Echeveria glauca*, enclosing a belt of *Mesembryanthemum cordifolium variegatum*; the adjacent 3-lobed segments are planted with *Kleinia repens*, with small triangular patches of *Alternanthera magnifica* in between. Then comes an edging of Golden Arabis bounding alternately oblong and star-shaped sections. The oblong sections consist of a carpet of green *Saxifraga* with heart-shaped beds of *Alternanthera magnifica*, and a

lozenge-shaped centre of *Coleus Verschaffeltii*, with *Gnaphalium lanatum* at the base edged with Golden Feather. The star-shaped segments are bordered with *Sedum oppositifolium*, green Saxifrage, with a centre of Mrs. Pollock Pelargonium.

AN AMATEUR GARDENER'S EXPERIENCES.—IV.

VEGETABLES. — The sowing and planting the remainder of my little garden with vegetables, and their subsequent cultivation, afforded me another experience, on which subject I will only say that the

cuttings, or in any other way, of sufficient space to admit light and air in a degree necessary to each individually for its full development. Amateurs are almost always afraid of thinning out seedling plants sufficiently, thinking that by leaving them growing thickly together they will yield larger and more abundant crops; whereas the exact opposite is the result: a crop of anything so thinned as to allow each plant to fully develop will, other things being equal, always yield better and more valuable produce than crowded plants of the same sort occupying a like space. The object of the gardener in sowing more seeds than are required or ought to be allowed ultimately to grow into complete plants is to guard

bearing signs of inattention in this respect: instead of the plants being individually sturdy and robust they are lanky and feeble from having been drawn up too rapidly in their attempts to get freed from their surroundings. Their environment has robbed them of their vigour, and, like all victims of undue competition, they suffer by the strain they are subjected to. It is only the fittest which survive the trying ordeal, and they almost always show signs of having passed through it.

The degree of thinning out necessary in each instance will vary with the space required by each plant when fully grown. In some cases a partial thinning will suffice at first, to be followed later on by

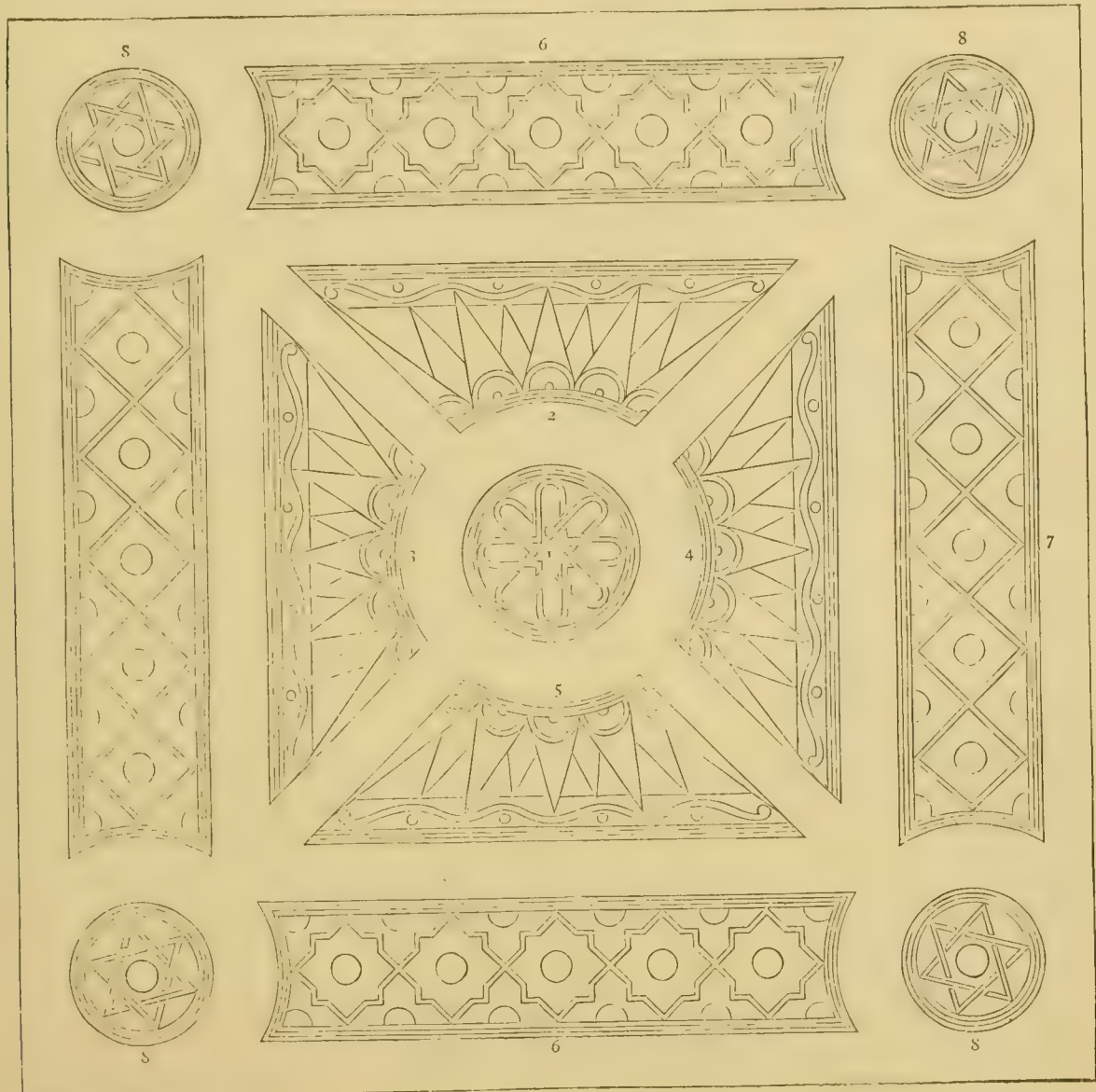


FIG. 71.—FLOWER-BED AT ASHFORD, CO. GALWAY. (SEE P. 364.)

proper preparation of the soil already described, the depth of tilth provided, the use of good seeds, and the aid of a genial season, brought me in due time a satisfactory lot of vegetables; indeed they seemed to me then almost super-excellent. I have, however, to confess that I sowed my vegetable like my flower seeds, too thickly, and did not thin out the seedlings nearly enough, with the result of over-crowding and incomplete development of the individual plants. This is a matter of much importance, and I shall perhaps save amateurs from disappointment and failure by speaking about it at some length, for, obvious as all I shall say is to the skilled gardener, there is probably nothing harder for the amateur to realise than the value to plants, whether raised from seed or

against seeds not germinating, the depredations of insect and other pests, the vicissitudes of seasons, &c. But directly the seedlings are sufficiently forward to be safe from the troubles and dangers of the infantile stage of existence, then a sufficient thinning should at once take place, by which is meant the removal of every plant which, if left, would interfere with the full development of the plants which it is proper to leave to complete the processes for which they were sown. Thinning should always be done as early as possible, so that the plants left to grow may not be injured by over-crowding, which is sure to be the case if the operation is delayed until a struggle for existence has begun. Every one doubtless has noticed how common it is to see crops in amateurs' gardens

the renewal of the operation, where such plants as are drawn out at the second thinning are available for food at once or for transplanting, and so growing into that use later on. But where no such purpose can be served, as in the case of Turnips, the thinning had far better be done once for all at the earliest moment fittest for the work, and the plants left to grow will be all the better for the space devoted to them.

Of all crops grown in gardens none are more generally overcrowded than Peas. Too many Peas are usually sown, and notwithstanding the depredations of birds and mice too many are left to grow. The result is, they are not often seen growing to anything like a full size of stem near the ground; and when hot, dry weather sets in the powers of endurance

of such overcrowded Peas are soon taxed to the utmost, and they flag or prematurely ripen the crop. Compare with Peas so grown, others grown under more favourable conditions, and the least informed will realise at once the advantages of a sufficiency of room for full development. I shall be glad indeed if I can induce amateurs to try the effect of thin seeding in the case of Peas if in no other crop.

On one point I was, at the time to which my experiences now refer, fastidiously particular. I would have my garden tidy to look at. Weeds properly had no quarter. My ideal of tidiness, however, went further than the eradication of weeds; it included a smooth and well-raked surface. The rake was then constantly in my hands, and was regarded by me as the most essential of implements. One consequence was that I very soon found the surface of my soil getting far too close and compact to permit healthy growth. I was then unaware of the value of a frequently stirred and open, porous surface, and the hoe and fork were not regarded as they deserve. Experience has long since taught me their value; now they are my most cherished tools, because, by their aid, particularly that of the fork, I am continually loosening the surface of every part of my garden, especially when the summer is hot and dry. This statement may, perhaps, startle some of my readers, and, therefore, it may be as well for their comfort to point out the reasons for and the results of the practice.

For plants to grow and thrive continuously, they must be so placed with reference to their surroundings, that their various functions can be exercised in a degree and manner most natural to their requirements. Roots and leaves must always, within certain but varying limits have a given relationship. For instance, if a large portion of the roots of a vigorously growing plant are suddenly cut off, the leaves will at once show by flagging that they have been deprived of part of their usual sources of food and moisture. Whenever a plant is growing vigorously its main roots and their branches are continually extending in length, the purpose being to bring the absorbent surfaces in contact with unexhausted supplies of suitable food in a fit condition. These youngest portions of the roots are of a somewhat loose texture as compared with the older portions, and are furnished with the cells or inlets through which the food of the plant is admitted, and from whence, by means of its circulatory system, it is rapidly transmitted to the remotest parts of the plant. The food stored up in the soil naturally, or added to it by means of judicious manuring, to be available for the plants' requirements, must be in a soluble condition and must be held in solution; the solid particles must obviously be of very minute size, so small indeed as to be inappreciable to human sight even when aided by powerful magnifying power. To convert the fertilising constituents of the soil into the state which renders them available for plant food the presence of water, air, and heat in proper quantities is absolutely needful; the warmth, air, and water in combination bringing about those physical and chemical changes which result in the disintegration and decomposition of the food-substances, and the water holding them in such a degree of minute solution as admits of their entrance into and passage through the absorbent skin or membrane pervading the plants from the inlets in the roots to the remotest leaves and every part of them.

Now any one who fully realises what is involved and intended to be conveyed by this description will, I think, easily enough see why it is advisable that the soil should be so dealt with as to bring about the condition which experience teaches is most conducive to the nourishment, health, and growth of plants. No operation tends more to this end than the constant stirring and loosening of the soil at its surface, for thereby the freest access is afforded to water, air, and warmth, which, as I have pointed out, are the natural means for producing such changes in the soil and its component parts and presenting them in such conditions that it is possible for the roots to absorb them. If the soil, from not being loosened, is allowed to get firm at the surface, the admission of air, heat, and moisture is at least retarded if not altogether prevented. Plants growing on soil in this condition show immediate results on any long continuance of hot dry weather by flagging, which ensues as a natural consequence from a lack of harmony between the requirements of the leaves and the supplies afforded by the roots. In other words, there is an obvious deficiency of moisture and of the food of which

it is the carrier. If, before this condition has lasted long enough to materially injure the plants, the surface of the soil be loosened and rendered porous, and water in sufficient quantity to reach the absorbing portion of the roots be supplied, a rapid change in the condition of the plants will take place, their tissues will become plump, and evaporation from the leaves will be counterbalanced by the supply of moisture absorbed by the roots, and the plants will be able to carry on their varied functions healthily.

A moment's consideration will satisfy any thoughtful person that if plants are to thrive they must never be allowed to flag during the growing period, and the easiest and most successful method for preventing this undesirable condition—that is to say, the method most likely to keep soil in the state most conducive to the health of plants—which, as I have pointed out, involves it being easily permeable by water, warmth, and air—is the constant stirring and loosening it at the surface; while the most handy and efficacious tool for the operation is a steel fork, the prongs of which are not very large, and the whole weight of which renders it convenient and pleasant to use. The ordinary digging-fork is far too heavy and cumbersome to be always in the amateur's hands, however suitable it may be for the rougher and heavier work done by the labourer. It is my good fortune to have a friend who humours my whims, and who is a maker of spades and forks of the best quality. He has made me several of these tools of a size and weight exactly adapted to the requirements of amateurs. My fork weighs only 2½ lb. It is made of the very best materials, and its dimensions are as under:—Length of handle and prongs, 40 inches outside; width of prongs (five in number), 6½ inches; length of prongs, 9 inches. This is a tool small enough to use for surface-stirring among all sorts of vegetable crops and in the flower garden, and too light in weight to be burdensome. The consequence is, it is constantly in use, and by its aid I am able to keep the surface of my soil loose and porous, and feel a pleasure in doing so. In this way atmospheric influences are utilised to the utmost in my garden; plants thrive in it as they never do where the surface is allowed to get caked into a firm impervious condition; water passes through it rapidly after the heaviest storm, and in dry weather the effects of drought are minimised, for every spot of dew is utilised and absorbed. Another result is, that a uniform temperature is maintained in the soil, which is a point of much importance. *Philanthes*.

Notices of Books.

Traité Théorique et Pratique sur la Culture des Orchidées. Par le Comte François du Buysson. Paris: A. Goin.

Although this book has been published for some time, it is only recently that we have become acquainted with it, but its merits are such that we make no longer delay in bringing it under the notice of our readers. The author of this treatise on the culture of Orchids describes himself as "amateur-praticien." Of course he uses the expression in its French sense. Looking at his book with English eyes we should say it is the work of a practical man, a man personally familiar with the details of the subject on which he writes, and not a mere *dilettante*.

The work is divided into four principal portions. The first comprises a general sketch of the morphology of Orchids and of the conditions under which they can be cultivated. The second section is devoted to the management of the heat, light, moisture, and manual agents. The third section comprises the practical application to particular groups of Orchids of the principles previously laid down, and, in accordance with the physiological state of the plant in growth, at rest, or in the flowering period. The cultural details of potting, blocking, fertilisation, &c., and a brief summary of the injurious effects produced by insects and various diseases, are alluded to. The section is concluded with a general calendar of operations for every month in the year, and with a list of the species which usually flower in each month. The fourth and last section comprises a brief botanical description of representatives of no less than 107 genera, and of the method of cultivation appropriate to each. The work is essentially practical, as witness the remarks made on the varying degrees of temperature and moisture even in the same compartment,

and the consequent desirability of placing the plants in particular positions. The details of treatment are drawn up more particularly with reference to the climate of Central France, where the conditions of heat, light, and moisture during the different stages of growth are very different from what they are in this country; nevertheless they are so clearly laid down that no intelligent cultivator will experience any difficulty in making the necessary modifications. The colder the country whence any particular plant comes the longer should be the duration of its resting stage. In the growing period, Orchids in general, of whatever nature, require nearly the same amount of moisture and heat, or at any rate the difference between the requirements of the cool and of, say, the East Indian Orchids, is not so great in proportion as at other times. During the disastrous winter of 1870—71 the temperature in Comte du Buysson's garden remained for a fortnight between 0° and 13° F., factories were closed, the roads blocked with snow. Under these conditions the north front of the Orchid-house was covered with straw packed in beneath the straw mats, and kept in place by planks. For a period of fourteen days the temperature of the Orchid-house remained at about 42° F. during the night, but was raised to 59° F. by day by the aid of wood fires. Under such circumstances the *Aerides* and *Vandas* flowered with unusual freedom and beauty. Comte du Buysson's Orchid-house is clearly not one of those symmetrically arranged structures into which Orchids and nothing else are ever admitted. We have no doubt, for commercial purposes, this is the best system, but to enjoy an Orchid-house thoroughly as an amateur, a less formal plan is desirable. Comte du Buysson's house is divided into three compartments, separated one from the other by fine plants of *Scindapsus pertusus*, *Maranta zebrina*, *Rhaphis flabelliformis*. In front, on the south stage, is *Panicum maximum*, with stems 15 feet in length, and on the other side *Hibiscus Cooperi*. The roof is shaded by *Hæxacentris mysorensis* on one side, and *Cissus discolor* on the other. In the autumn the roof creepers are pruned in so as not to obstruct the light, while on the contrary the plants forming the partitions between the several compartments are kept as thick as possible near the glass. The first compartment is devoted to East Indian Orchids, such as *Vandas*, *Aerides*, &c., the second to *Cattleyas*, *Lælias*, *Stanhopeas*, and many others; while the third is devoted to cool Orchids. The different temperatures for each compartment are secured by a greater or less extent of pipe, according to circumstances. The fourth section of the book, or monograph of the principal genera and species, is drawn up for the use of amateurs. It supplies a brief popular description of the species and details as to the method of cultivation. This section appears to us to be exceedingly well drawn up, and to convey just the information an amateur is likely to want. In fine, we strongly advise all those who are in want of a good guide-book to the knowledge and culture of Orchids, and to whom the language in which it is written offers no objection, to make themselves possessors of this book, one of the very best of its class that we have met with. Those who are sufficiently interested in the matter to require the book at all will speedily learn how to vary the precepts here given according to their own special requirements.

Garden Operations.

FLOWER GARDEN.

The equinoctial gales will shortly be upon us, and all plants or shrubs likely to be injuriously affected by high winds should be seen to forthwith. Irish Yews, Junipers, Cupressus, and other upright-growing shrubs, unless confined to single stems in the first stages of growth, get overweighed, and the branches are apt to break away, to the disfigurement of the plants. All these should therefore now be seen to, and, if necessary, be drawn together with tar cord, not too tightly, but sufficiently so as to prevent the wind having any power over them. Castor-oil plants, Hemp, and, indeed, any similar tall-growing ornamental plants, will also need supports, or the rain and wind will soon make short work with them, as it will also with standard Roses and climbers that are not securely staked or tied. As soon as this work is all done, clip Yew, Privet, Thorn, and other hedges, as growth being over for the season, they will then present a neat appearance throughout the winter. Trim up Rose beds, by the removal of all bad blossoms and weeds, and peg down any strong

shoots for which there may be room; the rest may be cut off, or only shortened back, according as there is room for them. Untie the ligatures of those budded this season, and persistently remove all suckers and bitter shoots as soon as perceived. Asters (Michaelmas Daisies), Solidagos, Chrysanthemums, and other tall-growing border plants require staking, others in the same border need to have the old flower-stems removed, and the borders throughout should be kept free of weeds, fallen leaves, &c. Now that the plants are fully grown is the time to make note of any that need to be removed, when the proper season arrives—also of those it is desirable to increase of by seeds, division, or cuttings. Annuals that have been sown in such borders for spring flowering, need to be thinned out, and in showery weather should be protected from slugs by an occasional dusting over with soot. Every pains should be taken to prolong the beauty of bedding plants as long as possible; to this end regularly go over the beds to remove decaying flowers and foliage, and regulate rampant growers by judiciously thinning out the most unsightly shoots. The heavy rain of the last few days has injuriously affected flowering bedding plants, indeed has left them almost flowerless, and shown effectively the advantage of foliage over flower arrangement—the former, in spite of the storms, being brilliant as ever, and this, too, with as little labour as is required to keep ordinary bedding plants in neat condition. Any propagation of tender plants for stock for next year, yet to be done, should be got out of hand at once, after which cuttings of Calceolarias and Violas should be put in; these we prefer to strike, and to winter where they are struck in cold frames. On dry soils Violas winter well without protection, and strike readily on south borders where the cuttings should be put in firmly in lines 6 inches apart and 3 inches from each other. All other kinds of hardy bedders may be propagated in like positions, whilst offsets of Echeverias and Sempervivums may be struck and wintered in safety on banks of soil, made up against the walls of houses, pits, and frames. Kleinias may be struck in boxes in the same way as Pelargoniums are propagated, and will winter in a similar temperature; most other succulents are best to be lifted soon as frost makes it necessary, and cuttings be taken during the winter. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

Among the most neglected of our most useful hardy fruits may be enumerated the Gooseberries and Currants in their several varieties. I say neglected, because they are allowed to occupy the same plot of ground for years, until the soil is actually worn out, and the crops deteriorate in consequence as well as the trees. Now is a good time to give such matters consideration. It is not necessary to destroy trees if they are at all worth keeping, but it will infuse new life into them to have them transplanted into quarters of fresh soil. Such operations have to be anticipated if there is to be anything like system in a garden, because changes affect the arrangements for crops other than those immediately concerned. In preparing for such contingencies the soil should have early consideration, in order that it may be in a fit state for planting when the proper time arrives. I prefer having the main supplies of bush fruits, as far as practicable, in brakes, where a net can be made to render good service against the attacks of birds, which in many localities (including our own) are of a very serious nature. Bush fruits, I fancy, will be more in request shortly than they have been of late years, and by way of anticipating the exigencies of the times I would suggest that greater attention be given to a selection of varieties such as will yield a satisfactory succession of fruit over the longest possible period. It must, however, be remembered that selection of situation has as much to do in effecting this end as selection of varieties. We have planted a portion of a north border with Strawberries, the varieties being Sir Charles Napier, Auguste Nicaise, Marguerite, and Oxonian; and the remainder of the border we intend to plant with late varieties of Gooseberries, so that when crops of these have done bearing in earlier situations a succession will be forthcoming from this border. Lists of these will be given in due course, meanwhile the necessary arrangements will have to be made as already indicated.

The period of drought through which we have recently passed has been succeeded by copious showers of rain, which have refreshed vegetation, and may tend to mislead the inexperienced and induce them to relax their attention in supplying fruit trees with a sufficiency of moisture artificially. We have recently been obliged to drench standard fruit trees in a south border, and to make a basin round the base of each tree in order to do it effectually. Choose a dull day for the work, and repeat the applications until the whole body of earth is effectually moistened, and then regulate the surface-mulching as before.

Wall-trees should be seen to in a like manner; they lose more by evaporation, owing to their position, than trees in the open, and will not swell and

develop their fruit-buds fully if their roots are rendered partially inactive by an insufficient supply of moisture at the roots. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

FIGS.—We now have a resting period of about two months before us. During that time the early pot trees must be kept moderately dry and as cool as possible. If they persist in making growth, the roots that have found their way into the mulching may be cut through with a sharp paring-iron run round each pot some 12 or 18 inches from the rims, and as an additional means of starving them into rest, the plunging material thus severed may be taken out quite down to the bottom of the pot. Remove all unripe fruit, and prevent spider from extending by giving the trees an occasional dash with the syringe, until the leaves fall, when the annual cleansing may be performed. Meantime if the interior of the house and the roof lights require painting, advantage should be taken of fine weather for getting it done and properly hardened before it becomes necessary to subject it to the trying influences of steam and confined moisture. The trees in succession-houses are still ripening off quantities of useful Figs, the fine weather of the past month having been favourable to the admission of a free circulation of dry warm air—an important item in the production of clean high-class fruit. Where it is necessary to keep these trees in bearing, a little dry fire-heat with ventilation through the night will be necessary, and any root-watering that may be considered necessary must be performed early in the morning, when the day promises to be fine. Brown scale at this season is often very troublesome, and if left undisturbed it soon extends to the leaves and fruit, from which it cannot be dislodged without injury. Prevention in this case, as in all others, being better than cure, the shoots affected should be well washed with a solution of Gishurst Compound, 4 oz. to the gallon of water, before it has time to spread. Thin out any useless spray that may have accumulated now, instead of waiting until pruning time, and allow the regular succession of shoots intended for giving next year's crop to find their way up to the glass, where warmth and light will mature the points much better than will be the case if they are kept closely tied to the trellis. If any of the young pot plants still under glass have rooted through into the bed in which they are plunged they should be cut off, as a means of inducing rest; while others that may require another shift before they are forced should be transferred to larger pots without delay. Cut off all straggling roots when potting, and use rich turfy loam, bones, and lime rubble in a dry state. Ram it very firm as the work proceeds, otherwise the water when they are again started will pass away, the old balls become dry, and the first crop of fruit drop. Where variety is an object the pot system answers best, as many of the moderate growers can be accommodated in a small house, and, being extremely prolific, plenty of heat and moisture, supplemented by good feeding, will result in the production of a plentiful crop of delicious fruit. For furnishing large houses, strong growers, like Castle Kennedy, should be planted in well drained internal borders, where they can be lifted and root-pruned annually. *W. Coleman, Eastnor Castle.*

MELONS.

With the end of the present month in the generality of places the Melon season will be drawing to a close, after which date, as a rule, Melons are not of much account, being rather watery and wanting in flavour; however, much depends on the nature of the weather and other circumstances during the month of October. In the meantime those plants which are now swelling their fruit will need pushing on with despatch; the shoots should be kept well thinned, the laterals stopped, the fruits fully exposed to the influence of the sun, and a minimum temperature of 70° maintained. Where the fruits are approaching maturity a chink of air should be left on at night. *H. W. Ward.*

CUCUMBERS.

Plants in full bearing will now be considerably benefited by receiving a top-dressing of three parts light loam and one part well-decomposed manure; after which, if dry at the root, they should be watered with tepid and clear water, as it will not be advisable to apply liquid manure until the roots have pushed well into the new soil, which they will do very speedily. Let the stopping, thinning, and tying be duly attended to. A nice growing temperature of from 70° to 80° during the day with fire should be maintained, and from 75° to 85° with sun, shutting up early—say at from half-past 2 to 3 o'clock, according to the condition of the weather, and running up to 90°; night temperature, 65° to 70°. Ventilate freely on all favourable occasions. Syringe the plants twice a day on bright days, and otherwise maintain a sweet and growing atmosphere. Plants growing in frames will require to have the linings made up weekly or fortnightly according to the state of the weather and the fermenting material at the time the work is being

done. Young plants which have some time since been shifted into their fruiting-pots and boxes will now be the better for having some suitable soil added to the hillocks on which the plants have been planted in the said pots and boxes, in sufficient quantity to cover the young roots as they push through the soil. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

STOVES.—The spell of fine sunny weather we have been favoured with for some time past has been of great advantage to plants of all descriptions, as at this season solar heat is very essential for ripening and consolidating the summer shoots, without which hardening few things pass through the winter well or flower in a free manner. In cases, therefore, where roof-climbers are grown it is a very important matter that they be properly thinned out so that light may be freely admitted among the branches, which will not only tend to their benefit, but let in a full flow to the occupants beneath, where its assistance is even more needed. To aid the sun and light in their work, moderate dryness at the roots ought to be maintained with Bougainvilleas, Allamandas, and Clerodendrons; the secret of success in their cultivation, however, is to keep the foliage fresh and healthy till its functions are carried out in doing its part towards developing and maturing the buds. Euphorbia jacquiniæflora is one of the most useful plants that can be had for the season so shortly before us, and to have it in fine order for cutting the best way to manage it is to stand the pots along the front wall of the house, or in such a position that the shoots may be tied to strained strings or wire near the glass, as there the blossoms come most brilliant in colour, and the texture so stout and good that they last a considerable period in water. As these plants, together with Poinsettias, Eranthemums, Sericographis, and others of that class will now have exhausted the limited body of soil allotted them, they should at once receive the help of weak liquid manure, which will enable them to maintain their leaves healthy and green and push up their flowers with vigour. To prevent these latter from suffering any check it will be advisable to get the plants out of any cold frames in which they may have been grown, and place them where they can be afforded a little artificial heat, should we get an adverse change, as with the advanced season this may occur any day. In view of this, everything connected with stoveholes, boilers, &c., ought to be in order, that there may be no breakdown when the strain comes.

GREENHOUSES.

To keep these structures continuously gay it is necessary to look ahead and provide for the wants of winter and spring, for which purpose it is high time to set about the potting of bulbs such as Hyacinths, Lachenalias, Ixias, &c., all of which are most beautiful and not half so much grown as their merits deserve. In regard to Hyacinths, the most useful for early blooming and cutting are the Romans, which, being small, and not requiring much root-room, eight or ten may be put in a 7-inch pot, but the larger sorts require that size for three, and when grown together in that way they make a grand display, the massive spikes and colour of the numerous bell-shaped flowers when brought into such close juxtaposition being most effective. If potted singly, as is usually done, 6-inch pots are quite large enough, as rich soil may be used, and the plants well fed by-and-by with liquid manure. The soil most suitable is a good fibry loam, to which some sharp sand and dry decomposed cow or sheep droppings should be added, and in this mixture the bulbs pressed tolerably firm so that when finished they may be buried to about one-half of their depth. This done, the next thing is to stand them on a bottom sufficiently hard to be impervious to worms, and then to cover all over with cocoa-fibre, leaf soil, or ashes, and allow them to remain under such protection for six weeks or so to form plenty of roots, when they will be ready for forcing. Ixias and Lachenalias do best plunged in ashes in cold frames. Later on they may with advantage be placed on shelves in a greenhouse near the glass; but on no account should either have heat, as they are most impatient of that if administered artificially, which may readily be seen in the quick way they draw up, and the weakening effect it has on their growth. It has become the practice to plant out such things as Salvias, Richardias, and Solanums, which not only saves much time and attention in watering, but from the greater freedom they have it suits much better, and more especially is this so as regards the two latter, which should now be lifted, as when Solanums are left late there is not time for them to get hold of the fresh soil before they are wanted for use, and the consequence is the leaves flag and fall, whereby the plants lose much of their beauty. To save disfigurement they should, when potted, be stood in a pot where they can be shaded and kept close for a time, and heavily springed twice a day, by which means they will be encouraged to form fresh rootlets. *J. Sheppard, Wootton Bassett.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Sept. 20	Sale of Dutch Bulbs, at Stevens' Rooms; and at the Auction Mart, by Protheroe & Morris.
TUESDAY, Sept. 21	Sale of an Importation of 1000 Plants of Anthurium Andreanum, at Stevens' Rooms. Sale of Winter-blooming Heaths, &c., at Mount Ash Nursery, Lee, by Protheroe & Morris.
WEDNESDAY, Sept. 22	International Potato Exhibition, at the Crystal Palace (two days). Sale of Winter-flowering Heaths, &c., at Fraser's Nursery, Leyton, by Protheroe & Morris. Sale of Dutch Bulbs, at Stevens' Rooms. Sale of an Importation of Odontoglossum vexillarium, at Stevens' Rooms.
THURSDAY, Sept. 23	Sale of Winter-blooming Heaths, &c., at the Brunswick Nursery, Tottenham, by Protheroe & Morris.
SATURDAY, Sept. 25	Sale of Dutch Bulbs, at Stevens' Rooms.

THE Parks have been aptly called the lungs of London. So far as relates to the breathing of relatively pure air, no doubt the Parks would be just as good if they consisted of nothing beyond green grass, trees, and shrubs, with not a flower of any kind to adorn them. But having provided the Parks, it is also a matter of importance to make them inviting and attractive, with a view to induce those for whom they are intended to frequent them as much and as often as they can. To accomplish this we hold there is nothing within the Parks that attracts the populace so much as the flowers, taking them collectively from the time that the first Hyacinths and Tulips make their appearance in spring until the last bit of colour in the carpet-beds is washed out by the autumn rains. If any one doubt this let him take the trouble, as we have often done, to find out where the greatest numbers congregate, and he will see at any time of the day all through the season, that where the flowers are, and where these are the gayest, there the people are in the proportion of at least two to one as compared with other parts of the grounds. The managers of the Parks still carry out a reasonable amount of bedding in the different styles of combination that have found and are likely to still find favour with the great majority of people, quite as much amongst what are called the educated portion, as those who in this respect are their inferiors. There can be little question that this is the right course to adopt, for if an attempt were made to follow every chimerical theory that is broached about what it is advisable to do and what to leave undone, the term gardening as applied to the Parks would at once become a misnomer. To form a just conception of what is done in the way of flower gardening in the Parks, it is necessary to see them several times during the season, both early and late, as there is considerable difference in what is done in them.

As those who have an opportunity of seeing Hyde Park in the spring are doubtless aware, bulbs are largely planted in most of the beds adjacent to Park Lane, and a very fine display they usually make at a season when flowers are most acceptable. This spring, notwithstanding the cold sunless weather, they were fairly successful. The continuance of cold and wet, long beyond the time at which we generally have plenty of sun warmth, was most detrimental to an early display of flowers. Pelargoniums, Calceolarias, Ageratums, Lobelias, and all blooming plants were necessarily late in being got into their places, as also were the fine-leaved things that are made to do duty; but from the time the warm weather set in the display of bloom left nothing to be desired. The specimen Palms, with their pots plunged in the grass, do much here to relieve the flat surface that would otherwise exist from the even low-spreading bedding plants. The flowering things seem to fail in their blooming earlier here than in the other Parks, no doubt owing to the nearer proximity to the town and the consequent presence of more dust and smoke. The carpet-beds kept their character better under the adverse conditions that left the flowering plants devoid of colour. Without them, despite their stiff formality, there would have been nothing to break

the sameness of the green grass on the surface and the green leaves of the trees. The large number of fine-leaved plants placed at the eastern extremity of the ornamental water had a very good effect, overshadowed as they were by trees which gave the necessary shelter from wind, and helped to keep the sun from discolouring their foliage. Such plants, however, should be kept isolated, backed up by ordinary trees and shrubs, and not mixed in with them.

Battersea Park never looked better, either in respect to the quantities of tender green and coloured-leaved things, or the Tree Ferns and Palms. Amongst the most effective plants were *Cannabis gigantea*, which attained full 14 feet in height, lasting fresh and green right up to far in September; *Polymnia grandis*, equally fine; a number of varieties of *Cannas* were likewise used which thrived very well. Tree Ferns and Palms kept their colour better than usual, no doubt partly owing to the season, and to their being sufficiently prepared beforehand for turning out. These and a host of other plants of a like character have looked well up to a late period, as also have the different carpet arrangements, which are well worked out here.

In Victoria Park the bedding has this season been unusually well done. Up to the beginning of the present month—September—the flowering plants were a sheet of bloom, the different colours and shades artistically arranged so that the most fastidious colourist could see nothing offensive, but much to admire. The large crescent-shaped piece of ground, so well known to those who have been in the habit of seeing this Park in past years, and always amongst the most effective pieces of this kind of gardening with which we are acquainted, has been even more effective than hitherto, and although some of the plants cannot be expected to keep on equal to what they were earlier, nevertheless until cold weather comes they will be bright and cheerful, as the atmosphere of this Park appears to admit of many things flowering later than in the others. Nothing could be more telling than the large circles standing at intervals filled with *Coleus Verschaffeltii*, encircled with a medium breadth of *Mesembryanthemum cordifolium variegatum*, and edged with a double row of *Echeveria metallica*. The different beds in this part of the Park, and beyond the broad walk to the north side of the lake, filled with carpet plants, are as faultless examples of their kind as there is ever a likelihood of obtaining. The green groundwork, in some cases composed of the Gibraltair Mint, and in others of *Herniaria glabra*, is perfect in its way; the same may be said of the *Alternantheras*, *Coleus*, *Iresine Lindeni*, variegated *Mesembryanthemums*, *Pyrethrums*, *Echeverias*, and kindred things that are used to work out the patterns. When a third of the month was past it would have been a difficult matter to have found a speck as big as a bronze coin that was not as perfectly clothed as it could be. A large space is devoted to handsome foliaged plants, such as are usually employed in the so-called subtropical department. These are well chosen, nothing being used that does not look happy in the situation in which it is placed. This is an important matter, that should never be lost sight of, for a very few frowsy-looking individuals spoil the appearance of those that are healthy. *Wigandias*, *Aralia papyrifera*, *A. Sieboldii*, different varieties of *Canna*, several of the big-leaved *Solanums*, *Tobacco*, *India-rubber* plants, *Erythrina Crista-galli*, the latter flowering; *Acacia lophantha*, variegated *Maize*, and the like, were all in beautiful condition.

A circular bed filled with *Amaranthus salicifolius* is a striking example of what this elegant plant is when well done; its drooping foliage comprises every shade of crimson, red and pink, mingled with yellow, that can be imagined: near or distant it is effective. Not far from the

lake, in a sheltered nook, in a green carpet of different close-growing spreading things, are a number of large succulents, such as *Agaves*, *Yuccas*, and allied plants, that so placed look as much at home as if in quarters where they would stand all the year.

— THE INTERNATIONAL POTATO EXHIBITION. — This annual show, which takes place on Wednesday and Thursday in next week, promises to be one of the best yet held, as the entries up to date are unusually numerous, and include 1700 dishes of the noble tuber. Other entries yet to be received will bring the aggregate number of dishes to something considerably beyond what is usually seen at the Crystal Palace. More than a thousand feet run of table space will, it is expected, be filled. In addition several large collections will be staged, not for competition. It may be stated, for the sake of intending exhibitors, that Early Ohio and Triumph are not eligible for exhibition in the class for four dishes of Potatoes, distinct, new varieties, in commerce, not offered to the public before season 1879, as they were both offered for sale in 1878. The Scotch growers are said to be in excellent form this year, the season having suited them well. It is expected also that the exhibition will be one of the best as to quality held, judging from what has been seen of the tubers and the reports which have come to hand.

— PROPOSED INTERNATIONAL FRUIT SHOW IN EDINBURGH. — At the luncheon, presided over by Mr. THOMSON, Clovenfords, on the first day of the Royal Caledonian Show, the Chairman said the Council had resolved to have another International Show of Fruit in September, 1882, and that he hoped that those present would help the good work forward to as successful an issue as the other shows of a similar kind held in Edinburgh had resulted in. A very general feeling of satisfaction was expressed, and, as there is ample time to make preparations, it cannot be doubted that the aim of the promoters will be achieved.

— OUR CURIOSITY SHOP. — It is some time since we had any additions to the Museum Hulletianum, and as that is a thing of the past we may as well change the name. That we do intend to deal in curiosities when we meet with them may be inferred from the following extracts, taken from the catalogue of Messrs. PELORCE & Co., members of the Agricultural Societe (sic) of Paris. The catalogue throughout is a real curiosity, being written in some language intended for English, but much more French in its character. Here are some choice curios:—

"*Strawberry tree ananas muricata*.—A monstrous fruit very good eating discovered in 1852, by the celebrated botanist M. Fortune on the Mexican coast, by nam Galappa. This plant, amateurs are particularly requested to notice the fruit of this plant weighs as much as 1 pound."

"*Large Collection of Fruit Tree of the newest kinds, as yet procured in Europe 1878 to 1879*.—4 Varieties of Sicily, with large Fruit Weighing one pound each:—1 Gold yellow; 2 Yellow spotted rose; 3 Rose; 4 Rose spotted with yellow. 4 Varieties of Sicily, Cherries, with monster fruit, 12 weighing a pound."

"*Bulbous Plant*.—Grand-Mogol which attains the height of 6 feet, in furnished with beards and a pyramid of flowers at the top, of a foot high. It is green, with violet and blue ring and got the vanillas perfume. It remains four months in blossoms."

"*Comte de Mogador*, of four colours, red, yellow, blue, and with a white heart."

"*Princess Belle-Etoile* which produces a stalk of a yard. Furnished with red flowers, varieted with bleu and spotted with yellow Plant of great scarcity imported from the Cap of Good Hope."

"*Notice*.—The admirable and strange plant called Mont-Vesuve, the classification of the plant called not having yet been found. This marvellous plant was sent us from Holland by the clever and courageous botanist collector M. Fortune from Hinalaya, near summit of the Chamalari Macount. This splendid plant deserves the first rank among all kinds of plants which the botanical science has produced till now in spite of all the new discoveries. This Bulbous plant gives several stems on the same subject. It grows to the height of 6 feet. It is furnished with flowers from bottom to, of a lively red colour. The centre is of aurora yellowish colour. The vegetation of this plant is so fertile that when its blossom is near coming out, its yields a great heat if pressed in the hand and when the bud opens, it produce a noise like report. The flowers succeeding one to the other give the satisfaction of having flowers during 7 or 8 months. This plan may be cultivated with success in pots in

apartments or in gardens. We call the attention of the public to this plant as to a thing of great curiosity.

"*Admirable Plant*.—Arabas of the Biscals with large rose flowers striped with blue. This admirable plant remains 6 months in blossom with the sweet smell of Jasmim. It is the ornament of gardens.

"*New Plant* (Main de Dieu) of different Kinds.

"Store, 12, Collins Street West, open at —, for fourteen days only."

We are rather glad our Melbourne friends are to be visited for fourteen days only—for many reasons. At the same time, we must say we hope the colonials will sufficiently appreciate all these wonders to keep them in Australia, and not send them here.

— **DOUBLE-SPATHED ARUMS.**—These are getting common, and would be more so did gardeners select seeds from the plants which bear them, or, better still, propagate them by division where practicable. Mr. NESBIT sends us a specimen of *Richardia ethiopica* with two spathes—Mr. WILLS, one with three; but these are as nothing to the spike of *Anthurium Scherzerianum* lately figured by us, where each little flower on the spike had its own scarlet boat-shaped bract. There is no reason at all why some one with zeal and patience should not institute a race of these forms, for which Nature has so laid the foundations that Art could readily rear the superstructure.

— **PERTHSHIRE ESTATES.**—The *Perthshire Constitutional* is publishing weekly a series of excellent accounts of the woods and forests of Perthshire. The reports are so interesting and instructive that we hope to see them in due time reprinted in a collected form.

— **DROWNED IN A VINERY TANK.**—A sad disaster occurred on Friday last in the garden of Mr. Alderman BREFIT, at Barnes, when a young child, little more than two years old, son of Mr. FRANK BUCHANAN, the gardener, met with his death in a very sad manner. The tank was only some 2 feet deep, and contained about 16 inches of water. The child was missed after an absence of a few minutes only, and was at length found in the tank just mentioned, to the bitter grief of his parents. The moral is to keep children out of danger, or if they must be admitted to vineries to see that the tanks are covered.

— **SEEDLING CLEMATIS.**—What may, perhaps, prove the first of a new type of Clematises has just been submitted for inspection by Messrs. CRIPPS & SON, Tunbridge Wells Nursery. It is said to have resulted from the valuable old sweet-scented Clematis flammula hybridised with *Viticella rubra*; and the result is a variety with flowers of the size of those of Miss Bateman, white, with a distinct reddish-pink centre occupying a good portion of the flower, the blossom being richly perfumed. The new type has all the free-blooming qualities, pleasant perfume, and fine habit of growth of flammula, but with the flowers very much larger, and delicately tinted with the colour of the male parent. No doubt something will be seen of this interesting stranger next season.

— **THE ELECTRIC LIGHT.**—We are glad to hear that extensive preparations are being made at Dr. SIEMENS' establishment at Sherwood Park for carrying on further experiments during the coming winter.

— **HARDY FRUIT TREES.**—"What a season we're 'a havin'," said an enthusiastic but somewhat illiterate weather critic the other day. The same expression was given utterance to thousands of times last year, but then with dolorous shakes of the head and sad misgivings. Now the very same words have a very different meaning, because the critic rubs his hands together and smiles joyously. Taken altogether we have had a very fine season, and although some gardeners who have here and there been afflicted with too much moisture will find flaws in it, yet, taken for all, it has been very good to us indeed. We have had grand garden crops, splendid Potatoes, an average harvest, and such weather in which to gather it as could not be excelled; and then, just as the Winter Greens, root crops, and other products, began to want moisture, down comes the rain and makes all Nature to rejoice. But the splendid harvest weather did something more than please the farmer—it has laid in a store of wealth for the fruit growers next year. Look at the Apple and Pear trees now, and see on all, no matter what sort, or whether

standard or dwarf, whether root-pruned or not, whether free-growing or knife-mutilated, all the wood is covered with fruit-buds; and such buds, too!—not long things that are pointed as a pencil, but good rounded, plump spurs, mature and vigorous, such as may be expected to carry bloom of a genuine fertile kind. How often have we laid our spring failures at the door of the frosts?—how much more of this was really due to the immature and imperfect nature of the bloom and consequent deficiency of pollen, we have seldom stopped to inquire. Accidents from unusual weather may happen, as they will under even the highest as well as the lowest culture, but just now enough may be seen to warrant the prognostication that next year we shall have a wonderful wealth of hardy fruits if—

— **THE LANTANA.**—The Lantana is one of those useful plants—like capable of great service in the greenhouse and flower garden—that has declined in cultivation of late, and yet while English gardeners have ceased to cultivate it, the Continental raisers have produced a large number of new varieties, many of which should receive more attention than is falling to their lot. Mons. VICTOR LEMOINE catalogues not less than fifty varieties, many of which are of recent production. Mr. BARRON has a bed of some of the newer forms at Chiswick, which, ere the summer is over, will be sufficiently developed to judge more accurately of their merits. Among them are tall growing types of the *L. Cammara* pattern, and some that are quite dwarf. A tall-growing variety, named *Griselle*, is very attractive, the flowers opening deep yellow, changing with age, as is the custom with Lantanas, to a reddish-orange; it is a very fine and showy plant for decorative purposes. Occasionally, at a winter show, very fine examples of *Lantana Le Grenadier*, one of the richest coloured of the Lantanas, may be met with in a collection of stove and greenhouse plants, and there it is a subject of great beauty, and always admired. There is a dwarf section, some of which appear to be well adapted for the flower garden. *Bijou*, pure yellow; *Reveil*, a bright deep yellow, and one of the very best, because there does not appear to be any change in the colour up to the time that the flowers decay; the former of the foregoing and *Pluie d'Or* change to orange-brown; and *Figaro*, another dwarf type, does the same. The changeable character of the blossoms is well indicated in the case of *Griselle*, as the young flowers are white with yellow centres, changing to deep pink and reddish-orange, with a bright rosy-purple centre. Some of the lilac and lavender shaded flowers are very pretty also, and visitors to Chiswick can hardly fail to be interested in the collection Mr. BARRON has in one of the open beds.

— **STIRLING CASTLE APPLE.**—If certain varieties of the Apple may be justly denominated "perpetual bearing," Stirling Castle should be one of them. Mr. FRANCIS DANCER, of Little Sutton, Turnham Green, has had it in fine condition, and quite small trees have been heavily laden with fruit, the branches weighted to the ground with the grand fruit they have carried. Mr. DANCER considers it one of the best and most remunerative Apples that a market gardener can grow, and asserts that, if he were desirous of planting several acres of Apples, he would confine the planting almost wholly to Stirling Castle. It is in all respects an excellent early culinary Apple, coming into use in August, and it does well as a bush tree, that being the class of tree grown by Mr. DANCER. Small's Admirable is also a very fine crop on bush trees this year; this is an excellent kitchen and dessert Apple, and an immense and certain bearer. There is scarcely a fruit on Cox's Orange Pippin this season, and it is something like five years since that anything like a crop was gathered.

— **CHANGES IN PLANT LIFE.**—A writer (Dr. HERMAN BEHR) in the *American Naturalist* states that the present vegetation of the peninsula of San Francisco is more Australian than Californian, and if it were not for the beauty of the Sequoias, Pines, and Firs of the Californian mountains, scarcely any Californian tree would have found admission. Associated with the Australian shrubs and trees is a herbaceous element derived from Europe and Africa. As in many other recently colonised countries—Australia and New Zealand, for example—the original vegeta-

tion has very little power of resistance. The woody element, of course, is usually destroyed by the early settlers in a country, and then the native herbaceous element is unable to hold its own before the amazing fecundity of introduced weeds. *Silybum Marianum* is the most formidable introduced weed in California, as it is in many other countries; wherever it gets a hold of the soil the native vegetation disappears. *Cotula coronopifolia* does the same work in moist ground that is begun by *Silybum* in the more arid tracts of soil. This weed, Dr. BEHR states, has transformed the former varied aquatic vegetation of the places invested by itself into one monotonous green mass with yellow buttons; and the graceful *Azolla* that formerly ornamented abundantly the creeks by its floating turf is scarcely to be found now.

— **GROWTH OF TREES IN SCORIA SOIL.**—Anything connected with arboriculture is sure to interest some of our readers. We extract the following information from some notes by Judge GILLIES in the *Transactions and Proceedings of the New Zealand Institute*. In the autumn of 1866 he planted a variety of trees on a piece of scoria land at the foot of Mount Eden, Auckland, and in February, 1879, he carefully measured them. The surface of the land was covered with scoria boulders, the partial disintegration of which had formed soil below, in which were also imbedded scoria boulders. The original vegetation was grass and Ferns. When planted the young trees were from 1 to 2 feet high; probably two to three year old seedlings. Oaks and other deciduous trees did not thrive, and ultimately died off, except the upright Poplar, one badly grown Elm, and the Weeping Willow. Peach trees grew rapidly, and fruited well, for a few years (about seven), and then ceased to bear. Apple trees grow well and fruit freely for a few years, and then die off "from a sort of dry-rot at the roots." Plums, Apricots, and Cherries do badly in this soil; but coniferous trees succeed wonderfully, making extraordinarily rapid growths, especially *Pinus insignis*, *P. radiata*, *Cupressus macrocarpa*, *Taxodium sempervirens*, and *Arucaria excelsa*. In barely thirteen years the following dimensions were attained:—

	Height.	Girth.
<i>Pinus insignis</i> ..	54 to 52 ft.	5 ft. 10 in. to 7 ft. 6 in.
.. <i>radiata</i> ..	49 .. 49 ft.	6 ft. 0 in. .. 6 ft. 6 in.
.. <i>Pinaster</i> ..	30 .. 35 ft.	4 ft. 4 in.
.. <i>muricata</i> ..	22 .. 35 ft.	3 ft. 7 in. .. 4 ft. 6 in.
.. <i>Pinea</i> ..	20 .. 27 ft.	3 ft. 11 in. .. 4 ft. 3 in.
.. <i>longifolia</i> ..	21 ft.	3 ft. 0 in.
.. <i>sylvestris</i> ..	19 to 21 ft.	1 ft. 9 in. .. 2 ft. 6 in.
.. <i>Pumilio</i> ..	4 .. 5 ft.	
<i>Cupressus macrocarpa</i> ..	29 .. 49 ft.	7 ft. 0 in. .. 7 ft. 2 in.
.. <i>torulosa</i> ..	22 ft.	
.. <i>sempervirens</i> ..	31 ft.	2 ft. 8 in. .. 3 ft. 2 in.
<i>Taxodium sempervirens</i> ..	28 ft.	3 ft. 6 in.
<i>Arucaria excelsa</i> ..	35 ft.	2 ft. 5 in. .. 3 ft. 1 in.
<i>Cedrus Deodara</i> ..	21 ft.	2 ft.

The foregoing is a selection from a considerable number of measurements, but it is sufficient to show what to plant profitably in soil of the nature described.

— **ABUTILON MEGAPOTAMICUM.**—Some low standard-trained plants of this curious and picturesque Abutilon are just now very attractive at the Chiswick Gardens. The plants are grafted, one being worked on a strong growing stock, and among the variegated shoots there have shot out vigorous green shoots which pleasantly contrast with the golden-blotched leaves of the variegated form. The plants also are flowering freely, and especially the green shoots. The curious eardrop-like flowers, composed of tints of black, red, and orange, are very handsome indeed, and almost unique.

— **THE CULTIVATION AND USES OF THE SOY BEAN (SOJA HISPIDA).**—The cultivation of the Soy Bean (*Soja hispida*) is being strongly recommended in France as a green vegetable. For this purpose the seeds should be sown from about the middle of April to the middle of May, in rows about 18 inches apart, two or three seeds being dropped in one hole, as is mostly the case with Scarlet Runners and Haricot Beans. The Soja requires a soil neither too dry nor too wet, but rather dry than otherwise. The seeds are ready for gathering as a green vegetable about the end of August, and will continue to yield crops to about the middle of October. Experiments have shown that the plant will stand as much as 3° of frost. The Soja Bean is referred to not only as an important addition to our list of green vegetables, but also as a valuable food adjunct, containing, as it does, a very large percentage of nutritive matter. It is thought that as the culture becomes more generally known the plant will come more and more into use as a vege-

table. The greatest use to which the plant is put in China and Japan is in the preparation of soy and of various kinds of food from the ripe seeds. The manufacture of shoyu, or soy, is thus described in a descriptive catalogue of agricultural products of Japan exhibited at the late Sydney International Exhibition. Equal parts of Beans and Wheat are used; a small part of the Wheat is mixed with koji, which is an alcoholic preparation from Rice, and allowed to ferment, the remainder is roasted, and the Beans are also roasted. The roasted Beans and Wheat are then mixed together with the fermenting Wheat, placed in shallow wooden boxes and kept for some days at a fixed temperature in a warm chamber with thick walls until the whole mass is covered with fungus. It is very important that the temperature of this chamber should be kept at the proper point. By these processes part of the starch of the Wheat is converted into dextrin and sugar, and lactic acid and acetic acid are formed. It is then mixed with salt lye. The mashings are removed to large vats, and kept there for at least twenty months, but more often for three or five years, the better qualities being those that are kept for the longer periods. The best soy is produced by mixing that kept for five years with that kept for three years. After it has been kept a sufficiently long time, it is strained through thick cotton bags, and the residue submitted to pressure. Before filtering honey is sometimes added. The residue after pressing is again mixed with salt and water and again pressed, the yield being soy of an inferior kind. Sometimes water is added to this second residue, and it is again pressed. The residue first obtained is occasionally used as food, and the last residue as manure. (See *Gardeners' Chronicle*, vol. xiii., new series, pp. 178, 209, 242.) Shoyu, or soy, is a very important condiment; it is mixed with a great many kinds of food, and is produced and consumed in very large quantities. Regarding the use of the Soy Bean as a vegetable in Japan, the writer of the foregoing remarks on soy says:—"It is the vegetable which approaches nearest in chemical composition to animal food (meat), containing, as it does, one-fifth of its weight of fat, and often two-fifths of nitrogenous matter. It is an extremely valuable adjunct to the food of a people who subsist so largely on a purely vegetable diet, of which the bulk is Rice, so rich in heat producers—starch, and poor in flesh formers—albuminoids."

— *ZEPHYRANTHES CARINATA*.—Undoubtedly the finest of the genus, its flowers are of a deep rose colour, and measure from 2 to 3 inches across, and in the opening buds are simply magnificent; it is a very free bloomer, and should it prove hardy will form a good acquisition for the border and rockwork. On dry well drained situations on the rock it will no doubt prove hardy. Mr. WARE, in his nurseries at Tottenham, has it planted in a variety of situations, on the rock and in the border to test its hardiness. *Z. tubispatha*, a rare and distinct species, with pure white flowers, is also in flower.

— *BOUQUETS EN ROUTE*.—Mr. ANDERSON, of Meadowbank, had the honour of supplying a bouquet of Orchid racemes for the decoration of the table in the saloon of the Perth refreshment rooms on the occasion of the Prince and Princess of WALES going North this week. It was composed, among other things, of a charming spotted variety of the Princess of Wales Odontoglot, a large and fine variety of the lemon and sienna barred *O. grande*; noble arching racemes of *Dendrobium Dalhousianum*, the finely sweet-scented *Mormodes pardina*, some Lady's Slippers and Cattleyas, mixed with the brilliant crimson *Nerines*, and fringed with a drapery of the telling *Adiantum Farleyense*, which made up an exquisite whole and was much admired.

— *MAIDSTONE CHRYSANTHEMUM AND FRUIT SOCIETY*.—This amateur society, open to all Kent, has arranged to hold its annual exhibition at the Corn Exchange, Maidstone, on November 19. The prize schedule, which is drawn up on a liberal scale, has been recently issued. Two of the classes are open to all England, namely, that for thirty-six distinct incurved large-flowered *Chrysanthemums*, the 1st prize for which is a ten-guinea silver cup, and the 2d and 3d £4 and £2 respectively; and that for eighteen plates of distinct varieties of Apples, the 1st prize for which is a silver cup, presented by H. A. BRASSEY, Esq., M.P., value five guineas, the 2d and 3d prizes,

of two guineas and one guinea, being presented by R. LEIGH, Esq., M.P. There are thirteen classes for *Chrysanthemums*—six for pot plants, and seven for cut blooms; and there are nine classes for fruits, which comprise dessert and kitchen Apples, dessert and kitchen Pears, and black and white Grapes. The Society has an influential list of Patronesses, President, and Vice-President; and this, together with the liberal character of the prize schedule, should bring together a fine exhibition of flowers, fruits—and visitors.

— *ALEXANDRA PALACE*.—We hear that the weekly Horticultural Exhibitions at the Alexandra Palace, which have been very successfully carried out by Mr. J. F. JOHNSON, are now discontinued, partly in consequence of the lateness of the season, and partly by reason of Mr. WILLING's term of occupation drawing near its completion. It is probable, however, that they may be renewed in some form or another under the new arrangements which will be made.

— *PAPAYER UMBROSUM*.—This showy annual Poppy, noticed at p. 274, was not, it appears, introduced to this country from the Continent, as there stated, but is claimed by Mr. W. THOMPSON as one of his introductions. It is described and offered for sale in the supplement to Mr. THOMPSON'S Seed Catalogue for 1876.

— *SALE OF THE LATE MR. A. B. STEWART'S PLANTS*.—We understand that the valuable collection of plants got together during the last ten years by the late Mr. A. B. STEWART, of Rawcliffe Lodge, and Ascog Hall, will be sold by auction at Rawcliffe Lodge, Langside, near Glasgow, on October 6.

— *PLEASE TAKE NOTE*.—Botanists and gardeners do not know everything. "M. C.," of Liverpool Street station, is in advance of his time. Such a Darwinian as he we do not know. This is what he tells the readers of the *Globe* as a fact, upon the accuracy of which they may rely:—

"*TOMATOS*.—(To the Editor of the *Globe*).—Sir, in your article "Tomatos" in your issue of this evening you have omitted a very interesting fact, which no doubt will surprise you, *i.e.*, the Tomato of South America (Chili) is the result of the cultivation of the Potato seed, but I understand also that it grows again from its own seeds. This is a fact, and you can rely on its accuracy."

Has not "M. C." something more surprising yet to tell us? We hope he will not withhold it.

— *GOLDEN-LEAVED TULIP TREE*.—Some leaves of this very fine ornamental tree, forwarded by Messrs. THOMAS CRIPPS & SON, Tunbridge Wells Nurseries, represent a most striking and handsome variety of this magnificent tree, with the centres of the large leaves marked with a large splash of bright gold. It is of Continental origin, and was figured in VAN HOUTTE'S *Flore des Serres* some time since, and though not strictly new is yet very scarce. Probably, as its name implies, the leaves come margined with gold as well as splashed in the centre with the same, but the leaves sent did not display this character. The grandeur of the foliage of the Tulip tree is an article of common knowledge, but when we have a variety with the leaves marked in the way described above its effectiveness is considerably enhanced. Seeing that it is characteristic of the tree that its branches naturally feather to the ground, it thus displays the finely marked foliage to the best advantage. The variegated form is a peer among ornamental trees, and seeing also that it is quite hardy and not fastidious as to soil, it should be largely planted when sufficiently numerous to be generally attainable.

— *TONG-PANG-CHONG*.—In the Kew report for 1877 reference is made to a Chinese drug known under the name of "Tong-pang-chong," and used in China as a remedy for skin disease. As stated in the report just alluded to, the only material received consisted of a few fragments apparently of a woody root, the produce of a plant which grows in Siam and finds its way to China, where it is said to have become very generally used in certain cutaneous affections. Regarding this drug Mr. HANCE, the British Vice-Consul at Whampoa, writes:—"I only know of one plant brought from Siam, and used in cutaneous affections, and a specimen of this plant sent to me for determination proved it to be

Rhinacanthus communis. In conversation with a well-known physician residing in Hong-Kong some time afterwards, he told me it was exceedingly efficacious in herpes and some allied eruptions, often very intractable under treatment, and that, indeed, he knew nothing to equal it." Upon comparing the specimens of "Tong-pang-chong" received at Kew with specimens of *Rhinacanthus communis*, previously contained in the Museum, there seemed but little doubt that the two were identical. A larger and fuller supply of Tong-pang-chong has recently been received by Messrs. CHRISTY & Co., of 155, Fenchurch Street, so that we hope soon to hear more of the real prospects of this interesting drug.

— *POTATOS IN 1783*.—A correspondent has obligingly sent us a copy of the reprint of the *Gloucester Journal* of Monday, Nov. 3, 1783, and which was printed by R. RAIKES, in the Southgate Street. The reprint was issued as a supplement to the *Gloucester Journal*, on the occasion of the Sunday School Centenary, in 1880. From it we extract the two following scraps, which may interest our readers:—"A farmer in Warwickshire lately took up a crop of Potatos that were the astonishment of all the neighbourhood; he had 8000 bushels from 10 acres, and sold them on the spot, as they arose in the field, for £800. This is £80 per acre, and the fee simple of the land they grew on did not exceed £12 per acre." "On Thursday night some villains broke into Lord NORTH's greenhouse, at Bushy Park, and carried off all the Pine-apples that were ripe, without discovery."

— *BOOKS RECEIVED*.—*A Manual of Rational Bee-keeping*, C. DE REBEAUCOUR (DAVID BOGUE).—*Annual Report of the Public Gardens, Jamaica*, by D. MORRIS, M.A.—*Preliminary Report on the Coffee-leaf Disease, Ceylon*, by H. M. WARD, B.A.

— *NEW FORM OF DISEASE IN TURNIPS*.—We have been informed, through Mr. WORTHINGTON G. SMITH, of an overwhelming attack made upon Turnips in Dorsetshire by a fungus which has probably not assailed the Turnip before. The mildew is now so profuse on the Turnips that it whitens the boots and trousers of any one who goes through the crops. We hope to publish an illustration and description of this pest in our next number, as no figure appears to have been published hitherto, but which is, however, believed to be the *Oidium Balsamii* described by Mr. BERKELEY in our columns in 1854, p. 237.

— *THE WEATHER*.—General remarks on the weather during the week ending September 13, issued by the Meteorological Office, London:—Weather was generally fine during the first two days, but afterwards became very unsettled and rainy in all parts of the kingdom. In most parts of England the rain was very heavy, and on the 12th was accompanied by thunder. The temperature was slightly above the mean in most districts, but in "England E.," the Midland Counties, and "Ireland N.," readings were about their mean value. The thermometer was highest on the 10th, when it rose to 80° in London, and to between 75° and 79° in several other parts of England. The minima were rather low, and at some of our inland stations were as low as 37° or 38°. At Silloth the thermometer exposed on the grass fell to 30° during the early morning of the 8th. The rainfall was rather less than the mean in "Scotland W.," but more in all other districts. Over the southern, central, and eastern parts of England the excess was very great, owing chiefly to the heavy falls which occurred on the 11th and 12th. Bright sunshine shows a light increase in Ireland, but a decided decrease elsewhere. The percentage of total possible duration ranged from 52 in "England E.," to 33 in "England S.W." The wind was generally westerly or north-westerly on the 7th and 8th, but shifted to the south-eastward on the 9th, and to the southward on the 10th, and during the remainder of the period blew, with slight interruptions, from the westward or south-westward. In force the wind was generally moderate or light, but occasionally blew rather freshly at some of our western stations.

— *GARDENING APPOINTMENTS*.—Mr. P. CONWAY, Second Gardener to Lord LECONFIELD, Petworth Park, Sussex, has been appointed Gardener to the Marchioness of BATH, Muntham Court, Sussex. —Mr. STEPHEN OSBORN, late Gardener and Bailiff to the Earl of EFFINGHAM, Tusmore, Bicester, has been appointed Gardener and Bailiff to the Earl of FIFE, Upper Sheen House, Mortlake, Surrey.

UPLEATHAM HALL.

THIS is one of the seats of the Earl of Zetland, and is situated in Cleveland, within a short distance of the comparatively new watering-place, Saltburn, which lies some 3 miles distant to the north. The approach is by the Marske Road that leads through the village of Upleatham. This consists of a number of substantial stone-built cottages picturesquely disposed along with the little church in the beautiful, well-sheltered glen formed by the high ridge known as the Upleatham Hill to the north. A continuation of the Cleveland range extends eastwards until it ends abruptly immediately above Saltburn. When once fairly on the road before reaching the village of Upleatham it is impossible to avoid being struck by the beauty of the scenery. If the day is clear, a glance to the north-east will disclose the broad expanse of sea with scores of vessels under weigh making for the eastern headland, or returning in an opposite direction. To the left is the long sloping range studded with homesteads, and one or two villages in the distance with enough woodland to sufficiently clothe the surface; to the right hand is the thickly wooded hill already mentioned, whilst in front the view extends up the valley for some miles, with the dense timber-clad surroundings of Upleatham near at hand. Coming through the Cleveland iron district, with its huge, smoke-begrimed smelting surfaces, thick on the land, and fit to awaken feelings akin to such as arise from a contemplation of Dante's "Inferno," the visitor when thus far, with these grim scenes of toil shut out from view, cannot help comparing earth's fair face as left by Nature to that which man has made. The results of this dismembering of the earth are vastly useful, but the process blots the landscape terribly. Possibly in no other place within so short a distance, are the extremes I speak of so fully exemplified, as on the opposite sides of Upleatham Hill. The village is particularly noticeable for the clean and comfortable appearance of the houses with their pretty gardens in front, mostly occupied by those employed on the Zetland estate, and which give unmistakable evidence of the thoughtfulness bestowed by the Earl upon those dependent on him.

The entrance to the grounds is at the extreme western end of the village, where there is a neat, commodious lodge; passing this the road leads in a winding direction for some distance before reaching the Hall, the entrance front of which faces westward, looking over a wide stretch of grass land, from which the dressed ground is separated by a ha-ha fence. The ground for a considerable distance in this direction rises gradually until it merges in the thickly-wooded heights, a continuation of the northern ridge before spoken of, which here comes round with a bend so as to effectually shut out the western gales, giving to the mansion and its immediate surroundings the shelter everywhere agreeable, but much more needed in this part of the country, where the wind, if unchecked, comes coursing on with a power unknown in some portions of the kingdom. The advantage of this shelter is at once apparent by the growth of the trees in the grounds in all directions, for although there are none that have attained a size to compare with those that exist in parts of the country where all the conditions essential to extraordinary development are present, still most of the deciduous species, such as Beech, Oak, Ash, Elm, Lime, and Sycamore, grow to a handsome size, at once showing the good qualities of the land. From what little opportunity I have had of forming an opinion on the subject in this part of Yorkshire, I think that the absence of very large trees is more owing to defects in the climate than in the soil. Sycamore appears to grow to a larger size comparatively than any other kind; there are numbers of this tree on the side of the hill to the back of the village, and in the immediate vicinity of the mansion, that have reached a size not met with in many places where Oak and Elm are unusually big. There are some fine Silver Firs in the grounds, but here, as in most places, this tree seems after it has attained a certain size to stop in growth, and make little further progress. Such of the newer species of evergreen trees that have been introduced not only thrive well, but, what is still better, the growth they make is evidently of a character able to resist our severest winters. Araucarias, Deodars, and kindred trees do not appear to have suffered in the least, looking as fresh and green as if they had just passed through an ordinary winter.

The Hall is a very substantial stone building, of considerable size, commanding beautiful views to the

east and south, taking in an extensive range of country in both directions from the height above Saltburn all the way round across the valley to and beyond Skelton Castle and the village of Skelton, following on in a south-western direction until the opening in the hills shows the entrance to the open plain on which the town of Guisborough stands. The whole neighbourhood of these places and the surrounding country teem with the most interesting historical associations, connected as they are with men and times long past, but which will ever live fresh in the memory of all who study the history of their country. There is a wide drive, about two miles in length, which leads from the Hall, taking first a south-eastern course until it reaches the eastern extremity of the hill, from which point it winds round on the opposite side, commanding a view over an immense tract of land and sea as far as the eye can reach—over Redcar, Middlesbrough, Hartlepool, and all the district in that direction; and to the west over the more distant portion of the Cleveland Hills, with Rosebery topping far in the distance. On the north side of the mansion, not far away, is a deep winding dell, its head beginning opposite the Hall, leaving which it continues in a southward direction for a considerable distance. The steep slopes on each side are thickly wooded. Running its length a walk has been formed, which is a most agreeable retreat in warm weather. It is one of the natural inequalities of surface occasionally met with in a garden which, when turned to account so as to make the most of it, as in this case has been done, becomes a feature very difficult to realise where the land is level and unbroken.

A raised terrace runs on the east side of the Hall, some 330 feet long, with a broad walk made of cement running the whole length, always clean and firm to walk upon. Adjoining this is the flower garden, occupying ground considerably lower; it is approached from the terrace by two very wide flights of stone steps at different points. Immediately to the back of the central portion of this garden is a massive stone basin, with fountain, the whole backed up and flanked right and left by trees and evergreen shrubs, which much enhance the appearance. The arrangement is in the usual geometrical fashion, a simple design of beds cut out of the grass. The plants used this year consist of Pelargoniums Cloth of Gold, Robert Fish, Mangles Variegated, Waltham Seedling, Master Christine, Vesuvius, Bijou, Maréchal MacMahon, and Mrs. Pollock; Violas Admirable, Cloth of Gold, and a dark purple Pansy, with Lobelias, Iresine Lindeni and I. Herbstii, yellow Pyrethrum, the variegated *Dactylis glomerata*, with *Cerastium* and *Echeverias* for edging. A few large stone vases are filled with plants, which relieve the even surface of the flowers in the beds.

Following the walk through this garden we come to a handsome stone bridge crossing the ravine already mentioned, and which, looked down upon from this point, is very effective. Extending in a straight line from the bridge is another terrace, 200 yards in length, bounded on the left by a high wall separating this part of the grounds from the kitchen garden; to the right is a low stone wall with balustrade; at the end of this terrace is an arbour. There is a wide border between the walk and the kitchen garden wall, filled with Roses on their own roots, including most of the best Hybrid Perpetual and Tea varieties, growing well and blooming beautifully. This wall, which faces south, was replanted three years ago with Peaches, which have grown well, but, as at most other places in this district, they have little fruit on them this season. Returning through the flower garden and following the terrace immediately overlooking it, to the northern end there is another flight of steps leading eastwards to the long walk in the direction of the kitchen garden and the principal range of fruit and plant houses; the western end of this walk terminates with a large round bed filled with tropical plants, which have a very good effect. They consist of large examples of *Dracena indivisa*, *Chamerops humilis*, *Latania borbonica*, *Ficus elastica*, variegated Yuccas, Cannas, *Wigandias*, variegated Maize, and a number of the larger growing succulent plants, the whole carpeted over with *Herniaria glabra*.

To the left of the walk leading eastward there is a high wall, a portion of which is covered with a number of large Magnolias, that have been injured very much during the last winter, a good deal of the wood being killed. In front of the wall, betwixt it and the walk, is a border 9 feet wide by 100 yards in

length. Sloping slightly to the walk, it is planted carpet fashion. The design consists of an oval bed in the middle of the border, from which radiate a series of circles in match pairs right and left of the centre. The filling is composed of the usual materials, such as *Alternanthera amabilis magnifica*, *A. paronychioides* major, *A. versicolor* and *A. versicolor grandis*, *Iresine Lindeni* and *I. Herbstii*, *Mesembryanthemum cordifolium variegatum*, *Coleus Verschaffeltii*, yellow *Pyrethrum*, *Echeverias*, *Antennaria tomentosa*, with dot plants of *Sempervivum tabulaforme*, *Echeveria pulverulenta*, *E. metallica*, and others, with Gibraltar Mint and *Herniaria glabra* to supply the green ground colour. The latter is liked much the best by Mr. Letts, for as it grows here it looks equally as well as the *Mentha*, and does not require near the labour after it is planted to keep it in order. The centres of the circles are each occupied by a small plant of *Cordylina*, *Yucca*, or something of a similar character, to take off the flat appearance. The whole is very effective, and not at all glaring in colour. It is the largest carpet arrangement I remember to have seen, having in it over 100,000 plants. Lady Zetland takes much interest in the garden, especially in the bedding and the plants generally, of which there is a very good collection grown in the various houses that will be noticed hereafter. T. B.

(To be continued.)

AGRICULTURAL CHEMISTRY.

(Continued from p. 45.)

LIEBIG'S second report, presented at the meeting of this Association in 1842, and published under the title of *Animal Chemistry, or Organic Chemistry in its Applications to Physiology and Pathology*, perhaps excited even more attention than his first; and, probably from the manner as much as from the matter, aroused a great deal of controversy, especially among physiologists and physicians. Liebig was severe upon what he considered to be a too exclusive attention to morphological characters in physiological research, and at any rate too little attention to chemical phenomena, and, so far as these were investigated, an inadequate treatment of the subject according to strictly quantitative methods.

He combated the view that nervous action, as such, could be a source of any of the heat of the body; and he adduced numerous illustrations and calculations in support of the view that the combustion of carbon and hydrogen in the system was sufficient to account for, and was the only source of animal heat.

He compared and contrasted the general composition of plants and animals. In accordance with Mulder, he pointed out that whilst plants formed the nitrogenous bodies which they contain from carbonic acid, water, and ammonia, animals did not produce them, but received them ready formed in their vegetable food; that, in fact, the animal begins only where the plant ends. But, going beyond Mulder, and beyond what had then, or has since been established, he maintained the identity in composition of the admittedly analogous nitrogenous compounds in plants and in the blood of animals.

Omitting the fat which the carnivora might receive in the animals they consumed, he stated the characteristic difference between the food of carnivora and herbivora to be, that the former obtained the main proportion of their respiratory material from the waste of tissue; whilst the latter obtained a large amount from starch, sugar, &c. These different conditions of life accounted for the comparative leanness of carnivora and fatness of herbivora.

He maintained that the vegetable food consumed by herbivora did not contain anything like the amount of fat which they stored up in their bodies; and he showed how nearly the composition of fat was obtained by the simple elimination of so much oxygen, or of oxygen and a little carbonic acid, from the various carbo-hydrates. Much less oxygen would be required to be eliminated from a quantity of fibrine, &c., containing a given amount of carbon, than from a quantity of carbo-hydrates containing an equal amount of carbon. The formation of fatty matter in plants was of the same kind; it was the result of a secondary action, starch being first formed from carbonic acid and water.

He concluded from the facts adduced that the food of man might be divided into the nitrogenised and the non-nitrogenised elements. The former were capable

of conversion into blood, the latter incapable of such transformation. The former might be called the plastic elements of nutrition, the latter elements of respiration. From the plastic elements, the membranes and cellular tissue, the nerves and brain, cartilage, and the organic part of bones, could be formed ;

be a question whether gelatine taken in food might not again be converted into cellular tissue, membrane, and cartilage, in the body.

At that time, adopting and attaching great importance to Mulder's views in regard to proteine, he says : — "All the organic nitrogenised constituents of the

of blood into the various tissues, and of these into the secretions and excretions.

He states that the process of chymification takes place in virtue of a purely chemical action, exactly similar to those processes of decomposition or transformation which are known as putrefaction, fermenta-



FIG. 72.—*ROSA RUGOSA*. (SEE P. 376.)

but the plastic substance must be received ready-made. Whilst gelatine or chondrine was derived from fibrine or albumen, fibrine or albumen could not be reproduced from gelatine or chondrine. The gelatinous tissues suffer progressive alteration under the influence of oxygen, and the materials for their re-formation must be restored from the blood. It might, however,

body, how different soever they may be in composition, are derived from proteine. They are formed from it by the addition or subtraction of the elements of water or of oxygen, and by resolution into two or more compounds."

He seeks to trace the changes occurring in the conversion of the constituents of food into blood, of those

tion, or decay. Thus, the clear gastric juice contains a substance in a state of transformation, by the contact of which with the insoluble constituents of the food they are rendered soluble, no other element taking any share in the action excepting oxygen and the elements of water. All substances which can arrest the phenomena of fermentation and putrefaction

in liquids, also arrest digestion when taken into the stomach. Putrefying blood, white of egg, flesh, and cheese, produce the same effects in a solution of sugar as yeast or ferment; the explanation being, that ferment, or yeast, is nothing but vegetable fibrine, albumen, or caseine, in a state of decomposition.

Referring to the derivation of the animal tissues, he says they all contain, for a given amount of carbon, more oxygen than the nitrogenous constituents of blood. In hair and gelatinous membrane there is also an excess of nitrogen and hydrogen, and in the proportions to form ammonia. We may suppose an addition of these elements, or a subtraction of carbon, the amount of nitrogen remaining the same. The gelatinous substance is not a compound of proteine; it contains no sulphur, no phosphorus; and it contains more nitrogen, or less carbon, than proteine.

He next, as he says, attempts to develop analytically the principal metamorphoses which occur in the animal body. He adds that the results have surprised himself no less than they will others, and have excited in his own mind the same doubts as others will conceive. He, nevertheless, gives them, because he is convinced that the method by which they have been obtained is the only one by which we can hope to acquire an insight into the nature of organic processes.

Referring to the animal secretions, he argues that they must contain the products of the metamorphosis of the tissues. He says a starving man with severe exertion secretes more urea than the most highly fed individual in a state of rest, and he combats the idea that the nitrogen of the food can pass into urea without having previously become part of an organised tissue.

Having shown the chemical relations of bile and urine to the proteine bodies, he illustrates by formulæ the connection between allantoine and the constituents of the urine of animals that respire. He insists that in the herbivora the carbo-hydrates must take part in the formation of bile; and he calculates the number of equivalents of proteine, starch, oxygen, and water, which would yield a given number of equivalents of urea, choleic acid, ammonia, and carbonic acid. The non-nitrogenous constituents in the food of the herbivora retard the metamorphoses of the nitrogenous bodies, rendering this less rapid than in the carnivora. It may be said that proteine, starch, and oxygen give the secretions and excretions, carbonic acid by the lungs, urea and carbonate of ammonia by the kidneys, choleic acid by the liver. It is the study of the phenomena which accompany the metamorphoses of the food in the organism, the discovery of the share which the atmosphere and the elements of water take in these changes, by which we shall learn the conditions necessary for the production of a secretion or of an organised part.

He traces the possible formation of taurine from caffeine or asparagine by their assumption of oxygen and of the elements of water. And from the composition of the vegetable alkaloids he suggests the possibility of their taking a share in the formation of new, or the transformation of existing, brain and nervous matter.

Finally, in reference to these various illustrations and considerations, he says however hypothetical they may appear, they deserve attention in so far as they point out the way which chemistry must pursue if she would really be of service to physiology and pathology. Chemistry, he says, relates to the conversion of food into the various tissues and secretions, and to their subsequent metamorphosis into lifeless compounds.

After this lapse of time it will certainly be granted that, quite irrespectively of the admissibility or otherwise of the particular illustrations adduced, or of the truth or error of any of the conclusions drawn—and some at least are so true that they seem to us now all but truisms, and you may be disposed to ask me why I should tell you over again a story so often told before—there is no doubt that Liebig's manner of treating the subject did exert an immense influence, by stimulating investigation, by fixing attention on the points to be investigated, and on the methods that must be followed, and thus by leading to the establishment or the correction of any special views he put forward, and to a vast extension of our knowledge on the complicated questions involved.

In the third part of Liebig's second volume he treats of the phenomena of motion in the animal organism. It is to his views in regard to one aspect only of this very wide and very complicated subject

that I propose to call your attention here, as it is chiefly in so far as that aspect is concerned that the question is of interest from the point of view of the agricultural chemist. He says:—

"We observe in animals that the conversion of food into blood, and the contact of the blood with the living tissues, are determined by a mechanical force, whose manifestation proceeds from distinct organs, and is effected by a distinct system of organs, possessing the property of communicating and extending the motion which they receive. We find the power of the animal to change its place and to produce mechanical effects by means of its limbs dependent on a second similar system of organs or apparatus."

He points out that the motion of the animal fluids proceeds from distinct organs (as, for example, that of the blood from the heart), which do not generate the force in themselves, but receive it from other parts by means of the nerves; the limbs also receive their moving force in the same way. He adds: "Where nerves are not found, motion does not occur." Again: "As an immediate effect of the manifestation of mechanical force, we see that a part of the muscular substance loses its vital properties, its character of life; that this portion separates from the living part, and loses its capacity of growth and its power of resistance. We find that this change of properties is accompanied by the entrance of a foreign body (oxygen) into the composition of the muscular fibre . . . ; and all experience proves that this conversion of living muscular fibre into compounds destitute of vitality is accelerated or retarded according to the amount of force employed to produce motion." He adds that a rapid transformation of muscular fibre determines a greater amount of mechanical force, and that conversely a greater amount of mechanical motion determines a more rapid change of matter. "The change of matter, the manifestation of mechanical force, and the absorption of oxygen, are, in the animal body, so closely connected with each other that we may consider the amount of motion and the quantity of living tissue transformed as proportional to the quantity of oxygen inspired and consumed in a given time by the animal." Again:—"The production of heat and the change of matter are closely related to each other; but although heat can be produced in the body without any change of matter in living tissues, yet the change of matter cannot be supposed to take place without the co-operation of oxygen."

Further, on the same point:—"The sum of force available for mechanical purposes must be equal to the sum of the vital forces of all tissues adapted to the change of matter. If, in equal times, unequal quantities of oxygen are consumed, the result is obvious in an unequal amount of heat liberated, and of mechanical force. When unequal amounts of mechanical force are expended this determines the absorption of corresponding and unequal quantities of oxygen."

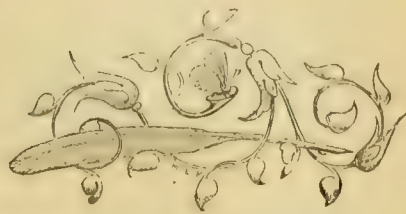
Then, more definitely still, referring to the changes which take place coincidently with the exercise of force, and to the demands of the system for repair accordingly, he says:—

"The amount of azotised food necessary to restore the equilibrium between waste and supply is directly proportional to the amount of tissues metamorphosed. The amount of living matter, which in the body loses the condition of life, is, in equal temperatures, directly proportional to the mechanical effects produced in a given time. The amount of tissue metamorphosed in a given time may be measured by the quantity of nitrogen in the urine. The sum of the mechanical effects produced in two individuals, in the same temperature, is proportional to the amount of nitrogen in their urine, whether the mechanical force has been employed in the voluntary or involuntary motions, whether it has been consumed by the limbs, or by the heart and other viscera."

Thus, apparently influenced by the physiological considerations which have been adduced, and notwithstanding in some passages he seemed to recognise a connection between the total quantity of oxygen inspired and consumed and the quantity of mechanical force developed, Liebig nevertheless very prominently insisted that the amount of muscular tissue transformed—the amount of nitrogenous substance oxidated—was the measure of the force generated. He accordingly distinctly draws the conclusion that the requirement for the azotised constituents of food will be increased in proportion to the increase in the amount of force expended.

It will be obvious that the question whether, in the feeding of animals for the exercise of mechanical force, that is, for their labour, the demands of the system will be proportionally the greater for an increased supply of the nitrogenous or of the non-nitrogenous constituents of food, is one of considerable interest and practical importance. To this point I shall have to refer further on. *From Dr. Gilbert's Address at the British Association.*

(To be continued.)



Home Correspondence.

Erythrina Crista-galli.—This noble plant, usually considered a greenhouse plant (in the North at least) has withstood the past two winters, and is now flowering as freely as possible with us in the open. The stools are planted close to the ends of two vineries facing the south, so that the situation is not an exposed one. What a picture such a plant would be for the sub-tropical garden! In a well-drained soil in the South of England, with a slight protection of litter over the surface in winter, there is no doubt that this plant would succeed perfectly in sheltered situations, if not in the open garden. It would make a charming associate with *Hydrangea paniculata grandiflora*, which comes into flower about the same time, and the rich green leaves and profuse inflorescence of both would produce a very telling and agreeable contrast. *W. Hinds.*

The Gibraltar Mint.—A rather singular case of mealy-bug attacking *Mentha Pulegium gibraltaricum* is now to be seen in one of the carpet-beds at Hampton Court. This pest is quite bad enough with us on certain plants under glass, but its appearance in the flower garden is rather a surprise. I confess I could hardly believe Mr. Graham's word that such a thing existed until I was convinced by the evidence of my own eyes that the mealy-bug will not only live upon the *Mentha*, but also that it seems to enjoy a degree of vitality and activity there which is hardly equalled in a warmer temperature. The patch of *Mentha* to which my attention was drawn was literally overrun with the pest, giving one the idea at first sight that the plant was damping off. Upon closer inspection, however, the white woolly covering of the insect was seen there in quantity, and the insects themselves upon being touched moved about as jauntily as if they enjoyed a temperature of 80°. The hot summer has no doubt been favourable to them, but the singular thing is that they attack a plant that is nearly, if not quite, hardy. Mr. Graham suspects the bugs were taken out-of-doors upon some plants of *Alternanthera*, and from them transmitted to the *Mentha*. *Visitor.*

Tuberoses Out-of-Doors.—I can fully endorse "Visitor's" remarks (see p. 342) respecting the successful growing of these in the open air. The plants now flowering in Mr. Ware's nursery were started in a little warmth in pots in early spring, and transferred to their present position in May last, and are now flowering profusely. Those who must have single and double white sweet-scented flowers at this season of the year cannot do better than grow these in quantity, as for purity and fragrance they cannot be surpassed. I may add that some tubers of these stood out in an open bed through the winter of 1878 and 1879; many were killed complete, and the remainder, although sound and plump, failed to produce any good results. *J.*

New Kinds of Potato.—Several correspondents have paid me the honour of asking for information as to the kinds of Potatoes eligible to compete in the class F at the ensuing International Potato show. Sorts to be eligible must have been put into commerce since the summer of 1878, or dating from the winter of 1878-79. The queries should have been addressed to the committee of the show, and as the number is limited, it would have saved considerable doubt had the names of those eligible been inserted in the schedule when first published. They are Hooper's Round White, Beauty of Kent, Vicar of Laleham, Early Purple, Pride of Ontario, Matchless, Avalanche, Heather Bell, Pride of America, Mammoth Pearl, Reading Abbey, and Woodstock Kidney. Probably there are others, but this list includes a dozen kinds,

and affords an abundance from which to select four kinds only. *A. D.*

Calanthes in Small Pans.—It is a privilege at all times to inspect the superb collection of Orchids at Messrs. Veitch's nurseries at Chelsea. Even the leaves, as they are kept at these nurseries, are worth looking at, so beautifully fresh and clean are they kept at all seasons of the year. But what I wish to draw especial attention to is the collection of *Calanthes*, which are just beginning to show their flower-spikes. Many of the bulbs are growing in little pans not much larger than the bulbs themselves. The pans are either set upon shelves, or suspended by a piece of wire from the roof of one of the Orchid-houses, and I dare say such results would startle many gardeners who have not previously seen how well these *Calanthes* can be grown singly with comparatively little pot-room. The collection is of course grown in a variety of ways, in pots and pans of various sizes; but the small pans are, from a cultural point of view, decidedly producing the best results. *Visitor.*

Warner's King Apple.—This splendid Apple is remarkably fine here this season, standards of twelve years' growth producing a grand sample, plenty of fruit ranging from 10 to 12 inches, and very handsome. I think even cordon trees would find it hard to beat these. We had here on the night of the 11th a tremendous downpour of rain, quite an unusual fall, for several hours, and I quite expected to see many of the fruits lying on the ground next morning, but all were safe. This shows that Apples are healthy this year, and may be trusted to fully ripen on the trees. *A. D.*

Mutations of Imported Agaves.—When these plants are first imported they are very various in the development of their foliage and spines—some being short in the leaf, with strong spines; others longer, and with much less spine development. Some have very flat and others concave foliage, with a very thick base. Thus in *A. horrida* we get the large flat-foliaged varieties called *A. Regalii*; small concave plants, *A. De Smetiana*; *A. horrida*, the moderate sized plants, with broad concave foliage; and some pigmy forms. In about four or five years, if they get liberal treatment, these gradually change their characters, and take up the ordinary form of *A. horrida*. In the varieties called *A. Roezlii*, *A. Gilbeyi*, &c., we get, in the first-named, a very strong thick-leaved plant, about 2 feet 6 inches through; *A. Gilbeyi*, 1 foot, very sturdy; but the short one has grown long, and the large plants (especially some) have narrowed and elongated, until I can see the characters of the old species, *A. univittata*—of which I have no doubt they are forms—peeping out. The same thing is going on in the forms of *Agave* called *Kerchovi* and *Beaucarni*—gradually the foliage lengthens, and the spines grow less vigorous, until the old *A. heteracantha* is shown. A few years ago I thought we were getting a quantity of new species of the noble plants, but now I look upon such plants as *A. Verschaffeltii*, *Leopoldii*, *Saundersii*, *Scolumus*, *cochleata*, &c., as seedling forms of *A. amena*. The same is true of forms of which *univittata* is the type, others as of *heteracantha*. The only plants that I look upon as new are *A. Victoriae*, *Reginae*, *A. Bessereriana*, *A. utahensis*, *A. Peacockii*, and *A. Seemannii*. *A. Parreyi* is so much like a compact *applanata* that I suspect it. There are some good distinct varieties in each section, but with time we shall find that these will grow out on flowering. We shall never see the like again, except they be reimported. Many of the plants may be kept dwarf, and so retain their peculiarities by exposure and the Banting system, but give them ordinary treatment and they will follow their parents. Peculiar climatic conditions have produced them, but give them the conditions of the original parent and we shall get reversion. This I have found to be the case with *Agaves*, and especially with *Cacti*, more than any other set of plants. *J. Croucher, Sudbury House.*

William I. Pea.—I enclose six pods of William I. Pea; the seed was sown on July 16, so that they have only been eight weeks growing. *J. A.* [A very good and well-filled sample. *Eds.*]

***Tropæolum speciosum*.**—Lovers of this beautiful hardy climbing plant will be interested to know that their favourite is blooming very well here. It was planted out last autumn among some *Azaleas* in a peaty soil, with some manure, and is now a very pretty object. *Geo. Payne, Abinger Hall Gardens, Surrey.*

Bandoline-producing Wood.—With regard to the wood referred to by Mr. Thomas Christy in the *Gardeners' Chronicle*, p. 310, I may perhaps be allowed to say that the bandoline-producing wood mentioned by him as being used in China for the hair is in all probability distinct from that of the so-called Bottle-tree of North Australia—*Sterculia rupe-*

tris. The presence of a tragacanth-like gum is one of the distinctive characters of the *Sterculias*, so that a mucilaginous substance in appearance like jelly could easily be procured by pouring hot water on shavings or pieces of wood of some of the species. The wood of the *Sterculias*, however, is very light, soft, open-grained, and porous, and this is particularly the case with the Bottle-tree. In the Kew Museum is a specimen of wood which is comparatively hard, close-grained, and heavy. This specimen was presented to the Museum some years since, with the information that a mucilage obtained from it by soaking the shavings in water was used by the ladies in China as a bandoline, and that the wood was supposed to be imported into China from Siam. This wood, which has not yet been identified, is certainly not that of a *Sterculiaceus* plant, and may possibly be identical with the wood which Mr. Christy says he sent from China to the late Mr. Daniel Hanbury. *John R. Jackson, Museums, Kew.*

A Week in Sussex.—Your correspondent, Mr. G. S. Boulger, has, in last week's paper and the week before, given two very interesting articles headed "A Week in Sussex." At p. 266 he mentions that the first gun cast in England was at Buxted; this is quite correct, and I have no doubt it will interest your correspondent and many others to learn that for many a long day this same gun lay on the village green here, and the inn is called "The Gun;" a rude representation of the gun is on the sign-board. Tradition says that this gun was cast at Hugget's furnace—

"Stephen Hugget and his man John
Did cast the first cannon,"

and that it is now in the British Museum. Some four or five winters ago the forester and his men were engaged planting some trees on the green, and, strange to say, came upon several cannon-balls lying in a heap together. These no doubt belonged to the original gun, and one I keep in my office and show to visitors as a curiosity. It might be also interesting to many to know that the year iron-smelting ceased in Sussex, that very year the cultivation of Hops began, thus affording employment in some measure for those thrown out of work. *J. Rust, Eridge Castle, Sussex.*

Phalænopsis Cultivation.—No one can undervalue the excellent article of last week on the cultivation of *Phalænopsis*, still I think a few words might be added. The general idea of *Phalænopsis* growers is to treat these rare and beautiful *Ochids* as though they were something terribly difficult to cultivate. This is a mistake. Having had in my collection a few *Phalænopsis* for some years, I may, perhaps, be allowed to say a word or two about them. The ones I refer to are growing in a stove, on a shelf near the light. A small blind is kept near at hand, so that when the sun bursts forth they may be sheltered from its rays. One of the first *Orchid* growers in the North of England, though growing to perfection nearly all other *Orchids*, could never succeed in getting his *Phalænopsis* to thrive. His mistake was this—he allowed the sun to shine on them. Though they like light, *Phalænopsis* cannot stand sun. In the day a door leading into the house where the *Phalænopsids* grow is left open so as to give them fresh air. Twice a day are the *Phalænopsids* syringed. In a word, the two essential requirements for a *Phalænopsis* grower are light and fresh air. To conclude, I may state that at the side of the *Phalænopsis*, *Pitcher*-plants are flourishing; the syringing of these keeps the *Phalænopsis* from getting dry too soon, and, as the saying is, "suits them to a T." *S. B. C.*

Resting-spores in the Potato Disease.—In Mr. Thiselton Dyer's evidence before the Select Committee of the House of Commons he refers to the resting-spores of *Peronospora infestans* (p. 3), and says:—"I think it may be stated with some degree of certainty that whether these resting-spores exist in the case of the Potato fungus or no, they are comparatively rare bodies, and it is not by them that I think the Potato fungus is perpetuated from year to year." Mr. Dyer again (p. 4) (quoting Professor De Bary) says:—"If they are the real thing they are very rare," and, as he is at present advised, he attaches very little importance to them. Again, at p. 7, Mr. Dyer says, "the occurrence of the resting-spores seems to be so rare that it hardly becomes a problem of practical importance to consider what part they play in the perpetuation of the disease." Now Mr. Dyer makes a great mistake in supposing these resting-spores to be "very rare;" on the contrary, they are extremely common, and any one who looks for them at a proper time, in a proper place, and in a proper manner, may find them by hundreds of thousands in any infected Potato field in this country. I cannot answer for Strasbourg, as I have not looked for them there. They exist in uncountable numbers in nearly every old exhausted Potato tuber belonging to

infected plants. I have not only of late years invariably found them in abundance myself, but every observer who has corresponded with me has found them also. I was present one autumn when the Rothamsted Potatoes were dug up, and I took away a large basket of old seed tubers for examination—every example, without exception, carried thousands of the resting-spores. I am in the habit of occasionally asking my correspondents for their experience in their fungological observations, and the following replies are to the point. In answer to a query as to resting-spores, the Rev. J. E. Vize, of Welshpool, replies:—"Of course, I have often seen oospores (*i.e.*, resting-spores) in old Potatoes." Your correspondent, Mr. William Phillips, of Shrewbury, writes:—"I have seen these bodies occasionally," and "Plowright sent me some magma of an old tuber, in which I readily found the brown spherical bodies." Mr. C. E. Plowright, surgeon, of King's Lynn, writes:—"I have found oospores abundantly in the old seed Potatoes from which young Potatoes grow. You will often find only the remains of the old tuber, consisting only of skin, the starch having all disappeared, but there will be abundance of oospores. This is, I believe, the explanation of the disease starting from so many centres of a field at once." It must not be forgotten either that Mr. C. E. Broome, of Bathaston, repeated my experiments with Potato foliage, and got enormous quantities of resting-spores at once and with ease. Resting-spores were erroneously supposed to be rare in 1876, when Professor De Bary published his paper, but many observations have been made since then, all pointing in the direction of the very great abundance of the resting-spores. Mr. Dyer also says that Professor De Bary's observations convey to his mind a very strong feeling of probability that the mode in which this Potato fungus is carried on from one year to another is by means of filaments of the fungus, and which apparently pass into a dormant condition in the tubers of the seed Potato. No doubt the mycelium of nearly every fungus is able to go into a state of hibernation at times, and the Rev. M. J. Berkeley pointed it out as a condition of the mycelium of *Peronospora infestans* a quarter of a century before it was mentioned by Professor De Bary, although the latter gentleman says, he himself was "perhaps" the first to call attention to it (*Journal of the Royal Agricultural Society*, vol. xii., p. 265, 1876). As far as my experience goes, however (and few persons have examined a larger number of diseased Potatoes than I have), mycelium in the tubers that are reserved for planting is of the rarest possible occurrence. One of the most hopeless tasks conceivable is the detection of a mycelial thread in the tissues of a diseased Potato. Hibernating mycelium in the Potato disease, speaking from my own experience, I consider rare. On p. 5 Mr. Dyer says, "I have no doubt the tubers carry on the mycelium from one year to the other," but a few lines further back he is asked, "The only thing that could remain in the ground with vitality would be these resting-spores, if they did exist?" and Mr. Dyer answers, "Yes." This is all very unsatisfactory. In reference to the resting-spores, there is no difficulty in finding any number any autumn, the difficulty from a botanical point of view rests in keeping these bodies alive and noting their germination when they are a year old. The *Pythium*, as it was called, described by Professor De Bary, germinated "within twenty-four hours," a very different amount of time from a year, and from that to three years—the rest invariably taken by the oospores of *Peronospora infestans*. Mr. Dyer may say in reply that he was only quoting the opinions of Professor De Bary as expressed in 1876, but in a subject so important as the Potato murrain, and in evidence given before a tribunal so important as a Committee of the House of Commons, I would respectfully say that the latest results should be given. No proper search had been made for the oospores in the exhausted seed tubers of October at the time when Professor De Bary's paper was written. *W. G. Smith.*

The Dove Plant.—This has long been a favourite of mine. It generally flowers pretty freely with us. One reason of its starved look and shy flowering in places is that it is grown too much out of the soil. It does best treated exactly like the old *Bletia Tankerville*—that is, potted in the usual way in a good mixture of peat and loam, with the base of the pseudobulb resting on rather than plunged into the soil. Thus treated and grown in a common stove, without shading, it will thrive well and flower freely, throwing up a flower-stem, and forming a new pseudobulb every year like *Calanthes* and other *Orchids*. The same pseudobulb only flowers once. Spring plants are, however, frequently found on the crowns of the old pseudobulbs, which also frequently throw out two or more new growths from their base. The plant is remarkably sweet as well as beautiful. The flower is exactly like a white dove, surrounded with a sort of canopy. It is sometimes called the Holy Ghost plant, in consequence of its purity and

dovelike appearance. It is a general favourite, and the single flowers would form choice material for bouquets. The flowers are of great substance, and will keep for weeks after they are gathered if not arnished or rubbed. *D. T. Fish.*

Reproduction of *Zamioculcas Loddigesii* from its Leaflets.—At p. 273, in your issue of August 28, I find a note quoted of this occurrence in the Botanic Garden of Kiel University. I feel an interest, therefore, in saying that this method of propagation was made use of at Kew for purposes of distribution soon after the introduction of the plant. This, indeed, is the explanation of its being so soon and so widely distributed. Excellent plants were soon obtained in small pots fit for sending anywhere, and being of so much interest was soon, it is safe to say, in all the chief botanic gardens of the world. When the leaflets grow a large white callus is formed at the base, in shape like a young *Gloxinia* tuber, and from the top of which after a short time the shoot springs. The circumstance of discovering this vital energy I do not remember, though I believe, as under certain circumstances the leaflets fall readily, that some were observed to grow in the bed on which the plants were standing. *R. J. L.*

Ouvirandra fenestralis.—I think your correspondent, Mr. Fuller, has mistaken the name of the plant growing at Purdysburn. I enclose a description of the two. *O. Berneriana* resembles *O. fenestralis* in general habit, the leaves, however, being much narrower and longer, and the nerves are much closer, and do not present such a striking net-like appearance. The flower-stem is divided into four spikes at the apex, and the colour is a very pale rose. *O. fenestralis*.—The leaves of this species attain the size mentioned by me, oblong, with an obtuse apex, spreading out horizontally beneath the surface of the water; they are of a dark green colour, and consist of a strong midrib, presenting a greater appearance of network than in *Berneriana*. The flowers are inconspicuous, they rise from between the leaves upon a scape, which at the apex becomes forked or split into two spikes, upon which the greenish white flowers are situated. If these are fertilised, and the seeds allowed to fall in the water, they will germinate very freely in a short time. They are both natives of Madagascar. Perhaps the above description will convince Mr. Fuller that I am quite right in calling the *Ouvirandra* at Purdysburn *fenestralis*. *A. O.*

American Potatoes.—As the exhibitor of the new varieties of American Potatoes mentioned by your correspondent in his account of the recent show of the Royal Horticultural Society of Ireland, held in Dublin on the 2d inst., I can assure you that there is no mistake stated on my card as to the yield from 3½ lb. of the seed of the fine round blue Potato named Manhattan (not Marshallton, as he reports to you). The produce was 150 lb. of good Potatoes, and quite filled two large flat-bottomed baskets, such as I receive plants in from England. The other varieties I took up specimens of were Trophy, a magnificent variety, my finest tuber of which weighed within an ounce of 2 lb., and the produce of which from 3½ lb. of seed was 146 lb.; and Mammoth Pearl, also a splendid variety, producing 130 lb. of sound tubers, of great size, and 21 lb. of waste. *W. E. Gumbleton, Belgrove, Queenstown, Co. Cork, Ireland, Sept. 12.*

***Phænospërma globosum*.**—Can you or any of your Graminophilist readers give me any information about what seems to me a new and most distinct and ornamental grass, named *Phænospërma globosum*, sent to me last autumn by a nurseryman in the North of Ireland, and now producing its remarkable and elegant seed-spike among other grasses and Bamboos on an island in my pond? The height of the spike is 4 feet 10 inches, and on top are about six whorls extending horizontally from the stem, and bearing round ball-like green seeds not yet quite matured. It is perfectly hardy, having stood out last winter quite uninjured, but seems rather a shy bloomer, only one of my two plants having produced a single spike. The leaves are from 12 to 16 inches in length by half an inch in width. *W. E. G.*

The Disaulming of Potatoes.—I have read the Rev. J. M. Taylor's criticisms on my advice on this matter over and over again (see p. 342), and confess my inability to comprehend his meaning. He could hardly have had my letters before him when he wrote, "if I need not disaulm before the disease hits the roots then I need not disaulm at all." Of course not, for then the evil would be done. But the whole force and point of the advice given is centred in the fact that the disaulming is to be accomplished before the disease hits the roots. And as to the stage of growth being ignored, why, in all I have written it was constantly insisted upon that semi-maturity was one, probably the chief, producing cause of the disease. With these facts so patent on all I have written, I really

cannot follow Mr. Taylor, through his to me involved labyrinth of words without meaning on p. 342. It is gratifying to hear that some *Magnum Bonum*s have escaped; I regret to say that ours are as bad as any other variety. On the general question I can add but little; that, however, may prove important. Disaulming to be of any use must follow hard on the first symptoms of the disease. A few days' delay and it is useless, as far as saving the affected crop is concerned. It may, however, be of the highest service in preventing the future spread of the disease to disaulm and destroy the haulm of all diseased Potatoes. The disease, as a rule, seems powerless to hurt or destroy healthy Potatoes until their vital power, or growing force, is lowered by semi-maturity. I have had abundant proof of this during the season. Late varieties, growing side by side with early ones, escaped until the disease stage was reached. The earlier of the later sorts caught the disease before the change in the weather, and are much injured. Some of the later ones still continued healthy till the advent of this month's fine weather. That has pulled them through with little or no disease, and if disaulmed or lifted at once many of the later crops will be found sound; not, however, because the varieties are disease-resisting, but owing to their not having reached the disease stage while the weather was favourable to its development. It is highly probable that the heavy thunderstorms of the last few days will cause a fresh outbreak of the disease among the late crops. Have you no correspondents in Ireland to inform us about the yield and the soundness of the giant-topped Champions and *Magnum Bonum*s, so liberally distributed among the distressed farmers last spring? *D. T. Fish.*

***Salvia natans*.**—Great care must be taken now by those that have this beautiful aquatic in saving it through the winter, which can easily be done in the following method. Fill a 12 or 14-inch pan half-full of pure loam, and then fill up with water, put as many plants into the pan as cover the water, and stand in a cool house. The plants are almost sure to go off during the winter, but the spores will be shed in the loam, and if placed in a warm house in the spring they will germinate freely. A great many people lost their plants last season by throwing the loam out as soon as all the plants had disappeared, which was a great mistake. The plants died, it is true, but the spores were left in the mud. The *Azolla* can be saved in the same way. *A. Moore, Kew, Sept. 13.*

Southwood Hardy Flower List : Sept. 14 :—

<i>Aplopappus spinulosa</i>	<i>Gentiana saponaria</i>
<i>Asteriscus maritimus</i>	<i>Harpallium rigidum</i>
<i>Arbithea Parmica fl.-pl.</i>	<i>Helenium grandiflorum</i>
<i>Ethionema cordifolium</i>	<i>Heianthus floribundus</i>
<i>Ajuza alpina</i>	<i>Hypericum reptans</i>
<i>Asclepias tuberosa</i>	<i>Inula ensifolia</i>
<i>Aster Amellus</i>	<i>Leucanthemum arcticum</i>
„ <i>bessarabicus</i>	<i>Lilium tigrinum</i> vars.
„ <i>cassirabicus</i>	„ <i>Kreiteri</i>
„ <i>italicus</i>	<i>Linaria alpina</i>
„ <i>coccineus</i>	„ <i>pilosus</i>
„ <i>discolor</i>	<i>Linum tauricum</i>
„ <i>dumosus</i>	„ <i>viscosum</i>
„ <i>Chapmanni</i>	<i>Lippa nodosa</i>
„ <i>Shortii</i>	<i>Lepigonum rupestre</i>
„ <i>Trachelium</i>	<i>Mazus Pumilio</i>
„ <i>spectabilis</i>	<i>Nierembergia rivularis</i>
„ <i>longifolia rosea</i>	<i>Oenothera riparia</i>
<i>Bellium minutum</i>	„ <i>taraxacifolia</i>
<i>Bulbocodium tigrinum</i>	„ <i>speciosa</i>
<i>Calandrinia umbellata</i>	„ <i>macrocampa</i>
<i>Colchicum autumnale</i> vars.	<i>Origanum pulchellum</i>
<i>Campanula garganica</i>	<i>Plumbago Larpenze</i>
„ <i>hirsuta alba</i>	<i>Polysium capitatum</i>
„ <i>isophylla</i>	<i>Pterocarpus parassicus</i>
<i>Cedronella cana</i>	<i>Rhexia virginica</i>
<i>Comelyna celestis</i>	<i>Rudbeckia Neumannii</i>
<i>Centaurea macrocephala</i>	„ <i>purpurea</i>
„ <i>ruticaria</i>	„ <i>trifolia</i>
„ <i>atropurpurea</i>	<i>Salvia taraxacifolia</i>
<i>Convolvulus mauritanicus</i>	„ <i>Grahami</i>
<i>Coronilla iberica</i>	<i>Scabiosa graminifolia</i>
<i>Dahlia gracilis perfecta</i>	<i>Saponaria caucasica pl.</i>
<i>Dianthus crenatus</i>	<i>Sedum Eversii</i>
<i>Dracopcephalum Ruschy-</i>	<i>Silene Schafta</i>
<i>anum</i>	„ <i>Hookeri</i>
<i>Epilobium obcordatum</i>	<i>Spigelia marilandica</i>
<i>Eupatorium purpureum</i>	<i>Stokesia carynea</i>
<i>Erigeron bellidifolius</i>	<i>Senecio pulcher</i>
„ <i>glauca</i>	<i>Stachys cirsica</i>
<i>Eriogonum racemosum</i>	„ <i>coccinea</i>
<i>Erodium Reichardii</i>	<i>Statice duruscula</i>
„ <i>hymenodes</i>	„ <i>virgata</i>
„ <i>romanum</i>	„ <i>caspia</i>
<i>Erpeton reniforme</i>	„ <i>minuta</i>
<i>Eryngium maritimum</i>	<i>Tulbaghia violacea</i>
„ <i>glomeratum</i>	<i>Trachelium caeruleum</i>
<i>Francia appendiculata</i>	<i>Urospermum Dalechampi</i>
<i>Gypsophila Gmelini</i>	<i>Veronica noveboracensis</i>
„ <i>paniculata</i>	

T. D. H.

Early Forcing.—Now that there is a change in the weather, which is likely to continue, as far as one can judge from present appearances, it may be well to point out the effect that the change is likely to produce in shrubs intended for early forcing. We have had alternate spells of wet and dry weather ever since the frost broke up last spring, each change coming hardly a moment too soon to save us from disaster in some shape or other. Latterly we have

had a good spell of beautiful autumn weather, and flowering shrubs, such as *Rhododendrons*, *Kalmias*, *Andromedas*, &c., have set their buds well; should, however, the wet continue these plants will start into second growth. In order to reap the full benefit that the past fine weather has exercised upon the plants, in causing them to ripen their wood and set their buds, they should be lifted and potted before they are excited into fresh growth, which would, of course, destroy all chance of every shoot so starting flowering, as it otherwise will do. They should have a north situation for a time after being lifted, and, if possible, be protected from heavy rains. *W. Hinds.*

***Rosa rugosa* and its Varieties** (see fig. 72, p. 373).—Agreeing with Mr. Gray's remarks (p. 343), I must say these plants are too little known, otherwise they would be more largely grown; and possessing three very distinct characteristic qualities, viz., beauty in flower, in foliage, and in fruit, they should be recommended to all true lovers of gardening. They also make good single specimens on the lawn, on the tops of mounds and like places. The fruit when ripe is delicious, and I believe largely used as a preserve in its native habitat. *J.*

Turnips, their Introduction into Wales.—Reference to this subject has recently been made in the pages of the *Archæologia Cambrensis*, and a writer in the last number says that Turnips were first introduced into Anglesey in 1765, by Mr. Williams, of Llanidan; in the same year by the Rev. Mr. Newcombe into Denbighshire; and twenty-four years afterwards by Mr. Bell Lloyd into East Merionethshire; and by Sir R. W. Vaughan into the western part of that county. The date of introduction into Montgomeryshire was 1760. At one time a very great prejudice is stated to have been felt by Welsh farmers against Turnips. A Cambrian distich says—

"Anglesey yellow Turnip seed,—farmers know,
Sow them early,—they'll grow."

It is not clear whether the inspired bard, who composed these touching (though simple) lines, was possessed of the once popular prejudice or not; but poets and minstrels are allowed to be a little vague in the expression of their views of things, *W. G. S.*

Sir Charles Napier Strawberry.—We have to-day (Sept. 15) gathered a fine dish of the above Strawberry; they are a sight that would astonish most people at this season of the year, four of the fruits weighing 3 oz. The plants were forced last spring, and planted out early in July, and promise several dishes yet if the weather is favourable. Has this variety been recorded as an autumn fruiter before? I prefer it for that purpose to *Viscontesse Héricart de Thury*, the fruit being much larger, and of better appearance. *W. H. Divers, Burghley.*

***Senecio pulcher*.**—Respecting the remarks of the Rev. C. Wolley Dod on this plant (see p. 342), I may mention that some plants of these which were cut completely down by last winter's frost are now in flower in Mr. Ware's nursery at Tottenham. Great assistance can be afforded this plant by continually stirring the surface around the crowns and by an occasional watering with liquid-manure. In some places it suffers much from the attacks of blackfly, which may be remedied by syringing with weak tobacco-water. It is without doubt one of the best autumn-flowering plants, and well worth the trouble it costs. *J.*

Culture of *Peristeria elata*, or Dove Plant (see p. 342).—I have always found this Orchid succeed best under very liberal cultivation; the compost I would recommend is two-thirds fibry peat, one-third sphagnum, and a few pieces of charcoal; temperature 60° to 70° during the resting period, 70° to 90° in the growing season. A great point is to give it abundance of water (provided it can get away freely) when the bulb gets the size of a hen's egg till it has completed its growth, and a dose of good liquid-manure from the farmyard while it is growing fast. I like each flowering bulb to have an 11-inch pot. Thus treated it will throw spikes of its beautiful flowers from 3 to 4 feet high with from thirty to forty flowers on, which last a long time, and sure to be the admiration of all who see them. *W. H. Divers, Burghley.*

New Grapes at the Royal Caledonian.—Among the newer Grapes shown at Edinburgh, none seemed to be more promising than Mrs. Pearson. It is a roundish-ovate Grape, finishing off of a good amber colour, makes up a handsome bunch, and the flavour is considerably better than Golden Queen; it looks meantime as if it had a future before it. Golden Queen, from the same raiser, produces berries more of an ovate form, is scarcely so pleasant to the eye, and certainly not to the palate, as its notable relative; notwithstanding it is a good show Grape. Both these were in the collection of Mr. Johnstone, and they had many admirers. Alnwick Seedling looks like a

novelty that will win its way. It has fine hammered berries of good size, and although it does not look like a large bunching sort its distinct character will make it a telling Grape in a large collection. It is singular from having a furrowed appearance right round its centre. The Duke, as shown by Mr. Thomson, is undoubtedly a captivating Grape; no other exhibitor, not even Mr. McIndoe, who grows both it and Golden Champion well, can touch the raiser for either size or symmetry of bunch and berry: it, too, is invaluable for a large collection. *F. A.*

Reports of Societies.

Royal Horticultural: Sept. 14.

FLORAL COMMITTEE.—J. McIntosh, Esq., in the chair. A First-class Certificate was awarded to-day to the most distinct and finest Coleus that has been shown this season—a variety named Mrs. W. M. Shirreff, raised and exhibited by Mr. King, gr. to G. Simpson, Esq., Wray Park, Reigate, with very smooth leaves, of a bright maroon body colour, inclosing a well-defined elongated, triangular patch of lustrous crimson, and the teeth bright green. It appears to be a strong grower, and has a neat branching habit. First-class Certificates were also awarded to Messrs. Keynes & Co., Salisbury, for Dahlias W. A. Williams (as a decorative flower), the very fine scarlet flower first shown at the previous meeting; and for another, but smaller scarlet flower, named Joseph Green, which we did not consider worth the honour paid to it. Messrs. Rawlings Bros., Romford, also received First-class Certificates for Dahlias Mr. Harris and Frank Rawlings, the former a fine dark crimson-scarlet, a pretty bloom, rich in colour, the latter a fine rich claret-purple. Messrs. Keynes & Co. also staged about a hundred fine blooms of show and fancy varieties, which suffered somewhat, however, by comparison with a grand collection of larger blooms staged by Mr. Cannell, who on this occasion may be said to have established his reputation as a Dahlia grower. The Swanley collection also included a considerable number of blooms of pretty pompon varieties, besides a few bunches of single flowers, and a dozen blooms of the fine Dahlia Juarezii. A Cultural Commendation was awarded to the exhibitor, and a similar compliment was paid to Mr. Roberts, gr. to the Baroness Rothschild, of Gunnersbury, for a well-grown and admirably flowered batch of dwarf Scabious in pots, exhibited to show what useful plants they are for indoor work during the autumn months. Votes of thanks were accorded to the Hon. and Rev. J. T. Boscawen, Lamorran, Probus, for cut blooms of Bougainvillea glabra, grown in the open air; to Mr. Boller for a collection of succulent plants; and to Mr. Eckford, gr. to Dr. Sankey, Sandywell Park, Cheltenham, for a small group of seedling Coleus. Mr. Ebbage, gr. to J. S. Bockett, Esq., Stamford Hill, exhibited the pretty Zygopetalum rostratum in flower; and Messrs. Chantier, of Montefontaine, sent a boldly variegated and vigorously grown plant of Croton Baron Franck Sellière, a robust variety with long white variegated leaves, which gained a First-class Certificate.

Messrs. C. Lee & Sons showed, for comparison, plants of the true Abies amabilis, from Douglas' own importation. The plants have much of the character of A. Nordmanniana, but have shorter leaves, which, moreover, are very fragrant. Abies magnifica, with upturned somewhat four-sided leaves, was also shown, together with the plant known as lasiocarpa in our gardens, and young plants of concolor and Parsonsii, on which we shall have more to say at another time. Messrs. Lee also showed a fine collection of cut sprays of various deciduous trees, neatly staged in bottles plunged in moss. Among the more noteworthy of this fine collection we note the following Oaks:—Q. pannosa, with felted down on the under surface of the leaves; Q. nobilis, with fine bold thick Laurel-like leaves; Q. coccinea and rubra, so beautiful in autumn; Q. nigra, [the Black Jack of American forests; Q. Cerris variegata, a variegated form of the Turkey Oak, very beautiful; the weeping form of the evergreen Oak, Q. concordia, which keeps its place as a golden-leaved variety; Q. Hartwissiana, Q. Louetii, with bold, sinuate, leathery leaves; Q. Daimio, with still bolder obovate, oblong leaves, downy on the under surface (unfortunately this is not quite hardy); Q. Phellos, the Willow Oak, one of the best; Q. serata, with leaves like those of the Sweet Chestnut; Q. heterophylla, a great curiosity, with linear leaves of various sizes and degrees of toothing; Q. monticolor, with noble broad leathery leaves, only slightly sinuated; Q. filicifolia, with very finely cut leaves, justifying the name given to it. Of Planes two only were shown as being the hardiest, viz., Platanus orientalis, true, and P. californica—the latter with leaves of the shape of those of P. acerifolia, but much larger. Among the Elms the bronzy-yellow U. Rosseelsii is most remarkable. The variegated forms of N. campestris and montana are also very striking.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. Many of our readers will remember that the 1st prize for the best Melon shown at the Society's Great Summer Show on June 8th was won by Mr. Crump, gr. to the Duke of Marlborough, with a luscious, oval-shaped, scarlet-fleshed fruit, named Blenheim Orange. Several examples of the same variety, ripened on plants, raised from the seeds contained in the first-mentioned fruit, were shown to-day by Mr. Crump, and a First-class Certificate was awarded. It is the result of a cross between Read's Scarlet-flesh and Hero of Bath, and is stated to set freely and continuously and to ripen its fruit in a comparatively short space of time. Heavily laden branches of the Crittenden Cluster or Farleigh Prolific Damson were shown by Messrs. Geo. Bunyard & Co., of Maidstone; and Mr. Harrison Weir, of Weirleigh, Breckley, Kent, exhibited several fruits of the Diamond Plum, to illustrate the effect of stock upon scion. The Diamond is an oval-shaped Plum, but a tree worked on the Sloe produced fruits which are nearly round. Mr. C. J. Salter, gr. to J. Southgate, Esq., Selborne, Streatham, showed a smooth Cucumber named Selborne Rival, of the Telegraph type, and stated to be a cross between Marquis of Lorne and Tender and True, but not nearly so fine a variety as the latter. Mr. Roberts, Gunnersbury, showed a large heavily-ribbed, scarlet-fleshed Melon, grown in a cold frame, such as are common enough in France, but no match in flavour for our own varieties. Guernsey Half-long Parsnips, the roots of which are like white Turnips, but with long thin tap-roots, came from Messrs. Vilmorin & Co., of Paris; and from Chiswick came examples of the red flat Egyptian Turnip-rooted Beet, and a pretty little red Russian Apple named Mala Koon. A seedling white kidney Potato, from Paterson's Victoria, was shown by Mr. Edwards, gr., Acton Burnell, Shrewsbury; and Messrs. Stuart, Mein & Allen, of Kelso, sent a large collection of vegetables, mostly of very fair quality.

Scottish Horticultural Association.—The ordinary monthly meeting of this Association was held in 5, St. Andrew Square, Edinburgh, on Tuesday, the 7th inst., the President, Mr. Dunn, Dalkeith Park Gardens, in the chair.

After the nomination of new members, Mr. C. S. France, Penicuik House, read a paper, the subject being "The Planting and Distribution of Trees with a View to Landscape Effect." At the outset he stated the general principles that should be borne in mind by the planter in covering hillsides and flat ground with trees. He gave an exhaustive dissertation on what constituted taste, and quoted from Allison the historian, and other authors on the subject. Allison says that "we can never ascertain what beauty is until we know the state of mind that produces it." The feelings that actuate the mind are love, pity, fear, and veneration; all these suggest some simple emotion of the mind. In forming plantations the planter should be guided by certain rules, viz., irregularity, system, picturesque effect, breadth of light and shade, simplicity, and variety. The other considerations to be kept in view are, the general appearance of the ground to be planted, and the object to be attained. In hilly country the prominent points should be planted with trees, and the view should be made to appear much larger than what the eye can ascertain. Sheltered places should also be clothed in tree verdure. Mr. France then instanced two estates which he had lately visited; on one the owner had applied the principles he had now laid down in planting his domain; while the owner of the other had objectionable straight lines running from east to west over his estate, and the whole appearance of which presented a contrast decidedly less pleasing than the former estate. The selection and distribution of trees was also a very important matter in planting; the varied foliage, forms of growth, a just knowledge of colour, different colours at different seasons, the proper mixture of deciduous and evergreen trees, and studying the beautiful autumnal tints, were important points, and should be attended to by all who desired to obtain the most beautiful landscape with the innumerable materials at command.

Mr. Charles Warwick, St. Ann's, Dublin, sent a paper to the meeting; the subject of it was "Exotic and Hardy Ferns," and in it he related his own practical experience in their cultivation. He said that Ferns, though so common a class of plants, and beloved by all, whether seen growing in a plant-stove mixed with brilliantly covered stove-flowering plants side by side with the graceful Dracena and stately Palm, or scattered over a fernery—some suspended in baskets, others peeping out from among stones, virgin cork, and similar rustic materials, their arrangement imparting to them such a natural appearance that one is almost carried away with the idea that he is suddenly transported to a warmer clime, and is looking upon a scene in the native home of these beautiful plants. In our woods and on our rockeries we have them again, not quite so beautiful at first sight, but quite as interesting—perhaps more so if their likes and dislikes are studied and their wants supplied. Ferns planted out look very pretty when the plants are well arranged, but many of the choicer sorts are apt to be lost sight of and overgrown by their stronger brethren. In regard to potting, the entire stock ought to be gone over about the first week in March. Some will need shifting into larger pots; many may be reduced and put back into the same sized pots again. The free-growing Adiantums should be cut

up and started fresh. For all free-growing Ferns use a good loam, chopped up with a spade and put through a 4-inch sieve. Only the fibry lumps should be used, with a good sprinkling of sand, and for some kinds the addition of a little bone-meal. For those kinds that are of slow growth and do not require shifting often a mixture of loam and peat, with charcoal and sand added, will suit best. The peat lasts longer than the loam, and does not run together so soon. Mr. Warwick then described the principal exotic and hardy Ferns, giving cultural hints regarding each.

Mr. Michael Cuthbertson, Rothesay, received a Certificate for a new seedling Snowflake Candytuft, the flower of which was 6 inches long, and 4 inches in circumference. He also exhibited two new seedling Pansies; one was a dark self, named David Malcolm. Mr. Wm. Dow, Rosely, Arbroath, exhibited four new seedling Coleus, of some merit. Mr. L. Dow, Saughton Hall, exhibited a dark seedling Tropaeolum. Mr. Arch. Fowler, Castle Kennedy, exhibited two seedling Ageratums, named President and Blue Prince, the latter had a large fine blue truss. Mr. David Inglis, Howick, exhibited flowers of a new seedling scarlet Tropaeolum, a cross between King of Tom Thumbs and climbing Bothwelliana. Mr. A. Young, Thymouth Castle Gardens, exhibited a seedling black Grape, with berry of a good size; Dr. Paterson, Bridge of Allan, a leaf of Saracenia flava full of insects in a state of decomposition; also flowers of a seedling Lapageria rosea, and Zinnia elegans flowers. Mr. Geo. Robertson, Mordington, sent a collection of flowers of hardy herbaceous plants. Messrs. Thos. Methven & Sons exhibited flowers of Dahlia glabra and Carnation blooms. *A. Milne, Secretary, Sept. 14.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, SEPT. 15, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Mean of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Dew Point.	Degree of Humidity.		
Sept. 9.	In.	In.	In.	In.	In.	In.	In.	In.	Direction.	In.
9	29.68	-0.23	67.0	53.2	13.8	59.0	66.5	82	S.E.	0.01
10	29.57	-0.33	80.9	52.0	28.9	64.6	66.5	83	S.E.	0.00
11	29.46	-0.44	70.6	53.5	17.1	61.5	66.5	91	S.S.W.	1.13
12	29.48	-0.41	69.1	51.0	18.1	59.0	66.5	83	S.S.W.	0.53
13	29.56	-0.35	65.9	49.5	16.4	56.4	66.5	83	S.W.	0.46
14	29.25	-0.63	60.6	46.2	14.4	53.6	66.5	96	S.S.W.	0.92
15	29.13	-0.74	60.7	49.7	11.0	53.6	66.5	89	WSW	0.29
Mean	29.45	-0.44	67.8	50.7	17.1	58.4	66.5	87	variable	0.34

Sept. 9.—Fine morning, Dull rest of day. Frequent drops of rain.

- 10.—A very fine hot day. Clear till evening, then cloudy.
- 11.—Fine, though cloudy till afternoon. Steady rain began at 4 P.M. Very heavy rain at night.
- 12.—Fine day, after the rain which ceased about 4 A.M. Heavy rain began to fall at midnight.
- 13.—A fine day, cloudy at times. Cloudless after 6 P.M. Thunderstorm, with heavy rain and hail at 1.15 P.M., 0.125 inch fell in four minutes. Heavy rain also fell in early morning.
- 14.—Overcast with heavy rain till 3 P.M., then fine and bright till 4.30 P.M. Dull after. Very heavy rain fell after 7.30 P.M. Cool. Windy.
- 15.—Generally dull and cloudy, with frequent rain till evening. Fine at intervals. Windy. Cool.

LONDON: Barometer.—During the week ending Saturday, September 11, in the vicinity of London, the reading of the barometer at the level of the sea increased from 30.02 inches at the beginning of the week to 30.17 inches by the morning of the 6th, decreased to 30.02 inches by the morning of the 7th, increased to 30.08 inches by the evening of the same day, and decreased to 29.54 inches by the end of the week. The mean reading for the week at sea level was 29.93 inches, being 0.20 inch below that of the preceding week, and 0.16 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 81° on the 10th, to 67° on the 9th; the mean value for the week was 72½°. The lowest temperatures of the air observed by night varied from 47½° on the 8th to 63° on the 5th; the mean for the week was 53½°. The mean daily range of temperature in the week was 19½°, the greatest range in the day being 29° on the 10th, and the least 14° on the 5th and 9th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—5th, 68°.5, +9°.9, 6th, 61°.8, +3°.4, 7th, 60°.1, +1°.6, 8th, 57°.1, -1°.3, 9th, 59°.0, -9°.9,

10th, 64°.6, +6°.6, 11th, 61°.5, +3°.7. The mean temperature of the air for the week was 61°.8, being 3°.3 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 151° on the 10th; 138½° on the 5th, and 131° on the 6th; on the 9th the reading did not rise above 80°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 37½° on the 8th, 45° on the 6th, and 45½° on the 10th; the mean of the seven lowest readings was 48½°.

Wind.—The direction of the wind was N.E., S.E., and S.W., and its strength moderately strong. The weather during the week was generally fine and warm, but the sky partially cloudy. Exceedingly heavy rain fell on Saturday the 11th inst., the amount measured at midnight was 1.13 inch, nearly all of which fell after 3 p.m.

Rain.—Rain fell on four days during the week; the amount measured was 1.28 inch, 1.13 inch of which fell on the 11th.

ENGLAND: Temperature.—During the week ending Saturday, Sept. 11, the highest temperatures of the air observed by day were above 80° at London, Cambridge, Wolverhampton, Nottingham, Bradford, Leeds, and Sunderland, and below 72° at Truro and Bristol; the mean from all stations was 78°. The lowest temperatures of the air observed by night were below 44° at Truro, Leicester, Wolverhampton, Nottingham, and Hull, and above 51° at Brighton and Bradford; the mean value from all places was 46°. The extreme range of temperature in the week was above 41° at Wolverhampton and Nottingham, and below 27° at Brighton, Bristol, and Norwich; the mean range of temperature from all stations was 32°.

The mean of the seven high day temperatures was above 72° at London, Cambridge, Nottingham, Leeds, and Sunderland; and below 68° at Plymouth and Bristol; the mean from all places was 70½°. The mean of the seven low night temperatures was below 53° at Leicester, Cambridge, Wolverhampton, and Hull; and above 56° at Plymouth and Norwich; the mean from all stations was 54°. The mean daily range of temperature in the week was above 21° at Cambridge and Nottingham, and below 14° at Truro, Plymouth, and Norwich; the mean daily range from all places was 16½°.

The mean temperature of the air for the week from all stations was 61°, being 4½° above the value for the corresponding week in 1879. The mean temperature of the air for the week was above 62° at Cambridge, Norwich, Leeds, and Sunderland; and below 60° at Truro, Bristol, Leicester, Wolverhampton and Hull.

Rain.—The falls of rain were variable. The total falls in the week were the heaviest at Hull, 1.54 inch, Brighton 1.53 inch, Blackheath (London) 1.28 inch, Cambridge 1.25 inch, and Plymouth 1.05 inch; and the least at Norwich, 0.01 inch, and Nottingham, 0.05 inch. On Saturday the 11th the fall of rain was very heavy at some places, at London 1.13 inch was measured, at Brighton 1.16 inch, at Cambridge 1.25 inch, and at Hull 1.42 inch. The average fall over the country for the week was 0.78 inch.

The weather during the week was generally fine, bright, and warm, but the sky was cloudy at times.

SCOTLAND: Temperature.—During the week ending Saturday, September 11, the highest temperatures of the air observed by day varied from 78½° at Greenock to 69½° at Leith; the mean value from all places was 74½°. The lowest temperatures of the air observed by night varied from 33° at Paisley and 39° at Perth, to 46½° at Greenock; the general mean from all stations was 41½°. The mean range of temperature in the week from all stations was 33°.

The mean temperature of the air for the week from all stations was 57½°, being 2½° higher than the value for the corresponding week in 1879. The mean temperature was above 58° at Dundee and Greenock, and below 53° at Paisley.

Rain.—The heaviest fall of rain in the week was at Perth, 2.71 inches; at Aberdeen 0.95 inch was measured; while at Leith 0.33 inch was recorded; the average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 67½°, the lowest 43°, the extreme range 24½°, the mean 56½°, and the fall of rain 0.34 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

ADIANTUM PEDATUM: *Constant Reader.* This is a North American Fern, and therefore quite safe in a cold frame. You would not injure it by repotting, if done carefully. The finest examples we ever saw of this were growing at the foot of huge blocks of sandstone in light vegetable soil.

ANTHRACITE: *T. C.* Thank you, please do so. Anthracite is used in some of our large nursery establishments.

BEGONIAS: *T. Sibbald.* Your Begonias are far behind

the age, so far as the individual flowers go. The double one is of a good colour, deep crimson, and appears distinct in character; but it is small, and its merit would depend on the habit of the plant. The same remark applies to the others.

BOUVARDIAS FOR BOUQUETS: *A. Z. A.* In finding fault with my selection of Bouvardias, "A. Z. A." must take into account the fact that they are grown for other purposes besides bouquets, albeit the varieties named by me at p. 302 are as well adapted for that purpose as the sorts named by "A. Z. A." I have again looked over our collection, and cannot come to any other conclusion but that B. Vreelandii is the best and most useful of all Bouvardias; it is also the best for cutting for small bouquets—and how freely it flowers. I was curious enough to count the number of trusses of flowers, all fully open but two or three, on one plant in a 6-inch pot. There were thirty trusses, and on one truss thirty-six flowers. Some of the other trusses had thirty. They would average twenty-four flowers to a truss. B. elegans will displace Hogarth, as it has richer coloured flowers, quite as freely produced. B. umbellata alba is the next best white to Vreelandii; next to it I would place B. jasminiflora, and candidissima is also worth growing in a large collection. B. Reine des Roses is quite distinct in colour from Maiden's Blush, but not to be named on the same page with it as a useful decorative plant or for cutting from. B. leiantha should be grown in every collection, its rich deep scarlet flowers and the neat habit of the plant mark it out as a distinct species from the others. No garden should be without a collection of such easily grown plants as Bouvardias. From May until the present time they merely want the shelter of cold frames, and during the heat of summer are as well to be plunged out-of-doors. *J. Douglas.*

CAPER SPURGE: *J. L.* The plant you send is Euphorbia Lathyris. We recommend you not to use the young seed-vessels as Capers.

CATTLE POISONING: *W. B.* The plants sent are Heracleum Sphondylium and Angelica silvestris. We do not believe either of these are poisonous to cattle, but have no personal experience in the matter.

DRACENA: *A. D.* We suspect that the appearance depends on some parasitic fungus in too early a state for determination. The concentric lines on the upper surface, which are covered by the cuticle, either arise from a peculiar disposition of the chlorophyll or from an infant fungus. It would be well to see leaves later in the season. *M. J. B.*

DUTCH BULBS: *W. Abrey.* There can be no doubt that the less they are exposed to the atmosphere in the interval between harvesting and replanting the better. A dark cool dry store-room would be a good place in which to place them, and as they are sent out enclosed in paper-bags they would not suffer any deterioration from being kept for a week or two if necessary under such conditions. We should, however, prefer to plant them as soon as possible after receiving them.

ERIOSTEMON: *Constant Reader.* All you can do is to place it in the greenhouse, giving it a cool but not draughty position, and let it come on as it will. You cannot alter it now that the buds are formed.

ERRATA.—At p. 344, for "Marshalton," read "Manhattan," and for "Killaher," "Killakee."—Encryphia (p. 336) is placed in Rosaceae, not in Saxifragaceae, as we stated in error. "Millions" is a figure of speech for which our correspondent must take the responsibility.

FIR TREE OIL.—We hear of serious effects having been produced on the hands of some gardeners who have used this. It is as well, therefore, to caution gardeners, lest they inflict on themselves the injury they seek to impose on the insects.

GOLDEN SCOTCH FIR: *W. M.* We have seen this before. You might secure it by grafting. Some of the seedlings would probably come true, but not many.

GRAPES NOT COLOURING: *Constant Reader.* The heavy crop may be the reason of the Grapes not colouring; or if the house has been kept at a temperature suitable to supply plants for a conservatory and for bedding, there has probably not been heat enough for such varieties as the Black Alicante. Mrs. Pince's Muscat often fails to colour well.

INDIAN PLANTS (see Enquiry, p. 819, vol. xiii).—Your correspondent's (Henry Stevens') query, at p. 819, June 30, has just caught my eye. The botanic names of the seeds sent from Poona are:—1, Red Barungee (Clerodendron infortunatum); 2, Soapnut (Sapindus marginatus); 3, Soodmoodra-Shok (Argyrea speciosa); 4, Gool-mohr (Poinciana pulcherrima). *H. C.*

INSECTS: *Admiral G.* The slice of Fir wood is coated on its outside with the glossy and very delicate web apparently spun by a colony of social caterpillars, most probably those of the Lackey Moth (Bombyx neustria). *I. O. W.*—*R. W.* Your lawn is being destroyed by the larvæ of the common Cockchafer. Water well with lime and gas-tar water, and encourage the starlings, which will quickly clear off the grubs. *I. O. W.*

INTERMEDIATE STOCKS: *P. G.* It would be best to pot the plants singly in 3-inch pots now, and as soon as these are filled with roots, pot them into 5-inch and 6-inch pots to flower. It is not necessary to put them in a heated house; they can be wintered in cold frames.

LILIUUM SPECIOSUM: *W. F. Boff.* A very good form of L. speciosum rubrum, which varies considerably, pro-

bably from being raised from seeds. You will see it lacks the definite white margin of the those sent last week.

MATHIOLA INCORNIS: *Constant Reader.* The plant so called is an annual, with rather insignificant purplish fragrant flowers. It is not at all like the subshrubby M. tristis, which has brown flowers.

NAMES OF FRUIT: *G. G. 1,* Prince Englebert; 25 Gisborne Early; 3, Jefferson.

NAMES OF PLANTS: *N. C. B.* Arauja, or Physianthu, albens; not native in the district you mention.—*vey Bank.* The wretched scraps you send probably belong to 1, Sisymbrium Irio; and, 2, the variegated leaves to Acer Negundo variegatum; but if you could see the state in which they reached us, you would not wonder if we feel inclined to consign them, with a large number of similar scraps, forthwith to the waste-paper basket.—*T. B. Foster.* Nos. 1 and 2, Polystichum aculeatum; 3, 4, and 5, forms of Polystichum angulare. We have not the book you mention at hand to give you the reference, but you will find it by the Index.—*Penzance.* Fragaria indica.—*T. L. C.* Grobya Amherstiae.—*Thos. Spencer.* Miltonia Clowesii.—*S. M. & A.* Linosyris vulgaris.—*C. E. F.* Mentha rotundifolia, Hieraceum gothicum, Helianthemum vulgare, Dianthus monspessulanus, and Prunella grandiflora.—*R. P. 1,* Helenium autumnale; 2, Harpalium rigidum; 3, a Solidago—probably canadensis; 5 appears to be Verbascum nigrum, but you send on leaf; 6, Euphorbia Lathyris; 4, next week.—*F. Prince.* It appears to be Fraxinus americana, but the specimens are very imperfect.—*S., Bournemouth.* Grevillea robusta.—*M. 7.* Tropaeolum speciosum. We wish it would grow as freely with us.—*J. K. 1,* Davallia tenuifolia; 2, Adiantum Cupillius Veneris; 3, Pothos argyrea.—*R. Porter.* Abelia uniflora.—*C. H. G.* Abies or Picea Morinda. The pods are those of the Judas-tree (Cercis siliquastrum).—*J. T. B.* Corynocarpus laevigatus (New Zealand), and Abutilon vitifolium (Chili).

PEACH: *Giuseppe Sada.* The fruit arrived in such a condition that it is impossible to give any opinion concerning it.

SAPONARIA CAUCASICA: *H. M. E.* The plant which bears this name in gardens is a double form of Saponaria officinalis, of a deeper colour than the ordinary double variety, and is a very good hardy herbaceous perennial of the free-growing type. Yours appears to be the right plant. It is certainly neither Silene caucasica nor Lychnis dioica.

WEEDS ON WALKS: *W. B.* Salt scattered over the surface, or a strong solution of salt applied hot, will kill them; but you must take care not to injure the edgings.

CATALOGUES RECEIVED:—Robert Mack & Son, late John Harrison (Darlington), Catalogue of Roses.—Richard H. Müller (Striefen, near Dresden), Priced List of Seeds and Plants, and Cyclamen.—Wood & Ingram (Huntingdon), Catalogue of Bulbs, Carnations, Strawberries, &c.—S. Finney & Co. (Newcastle), Catalogue of Dutch Bulbs.—Dick Radcliffe & Co. (129, High Holborn, W.C.), Catalogue of Bulbs.—Young, Oakenhead & Co. (Cork), Catalogue of Bulbs, &c.—James Yates (Stockport), Catalogue of Bulbs.—H. Thornton & Co. (late Dancer (Fulham), Catalogue of Bulbs.—Black & Stedman (Malton), Catalogue of Bulbs.—Kent & Brydon (Darlington), Catalogue of Bulbs.—Polydore Vervaeke (Porte St. Lievin, Ghent), Catalogue of Palms, Ferns, &c.

COMMUNICATIONS RECEIVED.—H. W. T.—J. M.—Ed. André B. D.—D. B.—J. D. H.—A. C. J.—A. McK.—S. H.—P. M.—W. B.—I. O. W.—J. A. H.—W. N. (your request shall be attended to. We fancy we have seen it before, but will investigate).—A. D.—T. C.—W. S.—G. C.—H. E.—F. N.—R. D.—W. Brown.—C. L.—W. E.—A. H. S.—J. G.—G. D.

Markets.

COVENT GARDEN, September 16.

Our market has been quiet, there being little or no alteration in prices this week. Plums are shorter, and more readily cleared, while Apples, with a better supply, are unaltered. The first consignment of American Apples has reached us in good condition, prices realised being fair. Kent Cobs and Filberts short. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	.. 2 0-3 0	Melons, each	.. 1 0-2 0
Cobs, per lb.	.. 1 6-1 9	Peaches, per doz.	.. 4 0-10 0
Filberts, per lb.	.. 1 6-..	Pears, per dozen	.. 1 6-2 6
Grapes, per lb.	.. 0 6-4 0	Pine-apples, per lb.	.. 1 6-2 0
Lemons, per 100	.. 6 0-10 0	Plums, ½-sieve	.. 2 0-4 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	per doz. .. 4 0-6 0	Horse Radish, p. bun.	4 0-..
Aubergines, per doz.	3 0-..	Lettuces, Cabbage,	per doz. .. 0 6-1 6
Beans, French, p. lb.	0 6-..	Mint, green, bunch.	0 4-..
Beet, per doz.	.. 1 6-2 6	Mushrooms, p. basket.	1 6-2 0
Cabbages, per doz.	.. 1 0-2 0	Onions, per bushel.	5 0-..
Carrots, new, bunch.	4 0-6 0	— Spring, per bun.	0 6-..
Cauliflowers, Eng-	lish, each .. 0 3-0 6	Parsley, per bunch.	0 4-..
Celery, per bundle	.. 1 6-2 0	Peas, English, per qt.	1 6-..
Chilis, per 100	.. 3 0-..	Radishes, per bun.	0 2-..
Cucumbers, per doz.	6 0-9 0	Small salad, pun.	0 4-..
Endive, per 2 doz.	.. 1 6-3 0	Spinach, per bushel	2 6-..
Garlic, per lb.	.. 2 0-..	Tomatoes, per lb.	.. 0 0-1 0
Herbs, per bunch	.. 2 0-4 0	Turnips, new, bunch.	0 4-..
		Vegt. Marrows, doz.	2 0-..

POTATOS:—Kent Regents, 80s. to 105s.; Champions, 8 s. to 95s.; Early Rose 60s. to 80s.

Prices for cut flowers, and plants in pots, remain about the same as last week:—

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Asters, per dozen .. 3 0-6 0	Foliage Plants, various each .. 2 0-10 6
Balsams, per dozen .. 3 0-6 0	Fuchsias, per dozen 3 0-9 0
Begonias, per doz. .. 4 0-12 0	Lilium auratum, doz. 18 0-48 0
Bouvardias, per doz. 12 0-24 0	— various, per doz. 9 0-18 0
Chrysanth., per doz. 6 0-12 0	Mignonette, per doz. 4 0-6 0
Cockscombs, p. doz. 3 0-6 0	Myrtles, per doz. .. 6 0-12 0
Coleus, per dozen .. 3 0-9 0	Palms in var., each 2 0-21 0
Cyperus, per dozen 4 0-9 0	Pelargoniums, dozen 9 0-24 0
Dracena terminalis 30 0-60 0	— Ivy-leaved, doz. 4 0-8 0
— viridis, per doz. 12 0-24 0	— Tricolor 4 0-12 0
Euonymus, various, per dozen .. 6 0-18 0	— scarlet, per doz. 2 0-6 0
Ferns, in variety, per dozen .. 4 0-18 0	Rhodanth, per doz. 6 0-9 0
Ficus elastica, each 1 6-7 6	Solanums, per dozen 6 0-18 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Abutilon, 12 blooms .. 3 0-6 0	Mignonette, 12 bun. 2 0-6 0
Asters, 12 bunches .. 3 0-6 0	Pelargoniums, 12 sprays .. 0 6-1 0
Bouvardias, per bun. 1 0-4 0	— zonal, 12 sprays 0 3-0 6
Calceolaria, p. bunch 0 9-1 0	Phlox, 12 bunches .. 6 0-12 0
Carnations, 12 bun. 3 0-9 0	Primula, double, per bunch .. 1 0-1 6
Eucharis, per doz. .. 3 0-6 0	Roses (indoor), doz. 1 0-6 0
Feverfew, 12 bun. .. 4 0-6 0	— outdoor, 12 bun. 3 0-9 0
Forget-me-not, 12 bunches .. 3 0-9 0	Stephanotis, 12 spr. 3 0-6 0
Gardenias, 12 blms. 3 0-6 0	Tropeolum, 12 bun. 1 0-3 0
Gladioli, 12 spikes .. 1 0-3 0	Tuberose, per dozen 1 0-2 0
Heliotropes, 12 sp. .. 0 6-1 0	

SEEDS.

LONDON: Sept. 15.—The market to-day was thinly attended, with but little business passing. Clover and Trefoil seeds are still neglected. Trifolium continues in active request at further enhanced currencies: the demand has now quite outstripped the supply. Winter Vetches meet with increasing favour: the recent general and heavy rains have much damaged those Tares which have not yet been secured, and have, at the same time, considerably augmented the consumptive inquiry; from these two causes quotations to-day show a strong upward movement, and the few good-conditioned parcels already marketed are held for a substantial advance. Seed Rye sells freely at full rates. There is no change in either winter Barley or Oats. Rape seed keeps firm. The new white Mustard exhibits splendid quality. Italian Ryegrass is dearer. No fresh feature is apparent as regards bird seeds. Haricots and Lentils keep steady. John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.

CORN.

At Mark Lane on Monday the supply of new home-grown Wheat on sale was moderate, trade quiet, and prices without quotable change from Monday's night. Barley, both malting and grinding, met with a slow sale at about former rates. The best malting produce realised 36s. to 38s. per quarter. The malt trade was dull at drooping prices. Oats were dull, at a decline of 3d. to 6d. per quarter on the week. For Indian Corn prices were unchanged. Prices of Beans and Peas had a downward tendency. Flour sold slowly at fully the recent decline. —On Wednesday very little trade was done in Wheat, and this at the rates of Monday. Barley was without material change; malt was neglected; Oats were dull at the reduction of Monday. Maize was difficult to move, and prices were not very well maintained. Beans and Peas were steady.—Average prices of corn for the week ending Sept. 11:—Wheat, 42s. 2d.; Barley, 35s. 1d.; Oats, 21s. 8d. For the corresponding period last year:—Wheat, 47s. 11d.; Barley, 36s. 8d.; Oats, 25s. 7d.

CATTLE.

At the Metropolitan Market on Monday trade was dull for all but choice quality beasts, and it was difficult to clear the other kinds. For sheep trade on the whole was not so good as last week, yet there was scarcely a quotable difference in best descriptions. Calves were rather dearer. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 6s.; sheep, 5s. to 5s. 8d., and 6s. 4d. to 7s.; lambs, 6s. 8d. to 7s. 8d.; pigs, 4s. to 5s.—On Thursday the cattle trade was dull in tone. Supplies were about the average for a Thursday. Both beasts and sheep moved off very slowly at about Monday's prices.

HAY.

Tuesday's Whitechapel Market report states that there was a large supply of hay and straw, and the trade was dull, on easier terms.—Prime Clover, 100s. to 137s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 105s.; inferior, 30s. to 70s.; and straw, 30s. to 42s. per load of thirty-six trusses.—On Thursday there was a moderate supply of fodder on sale. The trade was slack, but straw was scarce, and prices were lower for Clover, as follows:—Prime Clover, 100s. to 134s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 106s.; inferior, 30s. to 70s.; and straw, 30s. to 43s. per load.—Cumberland Market quotations:—Superior meadow hay, 100s. to 112s.; inferior, 45s. to 88s.; superior Clover, 132s. to 140s.; inferior, 90s. to 110s.; and straw, 36s. to 40s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that these markets are amply supplied, and the trade is in a depressed condition. The following are the prices current:—Kent Regents, 90s. to 110s.; Essex, ditto, 70s. to 90s.; Scotch, ditto, 80s. to 100s.; Jersey kidneys, 110s. to 120s.; Champions, 70s. per ton.—Last week's imports were only 1800 bags from Hamburg, and 27 tons from Cherbourg.

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We have much pleasure in announcing that our large consignments of choice

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EARLY WHITE ROMAN HYACINTHS.

Fine strong bulbs for forcing, 20s. per 100; 2s. 9d. per doz.

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NORWICH.

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FORCING AND EARLY FLOWERING.

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Early DOUBLE ROMAN NARCISSUS,
Early DUC VAN THOL TULIPS,
SNOWDROPS, SINGLE and DOUBLE.

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PALMS, FERNS, FICUS, AMARYLLIS,
SPIRÆAS, &c.,

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LEONARD ROOZEN AND SONS' superior strain of the above may be had in strong tubers, per 100, 1000, and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate, The Album Van Eeden, spring, 1880.)
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Autumn, Winter, and Spring Flowering Plants.
F. AND A. SMITH offer well-grown stocky examples of the following, well set for bloom:—
1,000 Acacia armata, 1,000 Epiphyllum truncatum
5,000 Azalea indica, 20,000 Ericas, various
4,000 Bouvardias, 5,000 Epacris
5,000 Camellias, 10,000 Pelargoniums
11,000 Cinerarias, 5,000 Primula chinensis
4,000 Cytisus, 5,000 Solanums, in berry
5,000 Chrysanthemums, 10,000 Zonals, various
Also large stocks of DEUTZIA, CALADIUMS, TREE CARNATIONS, CLEMATIS, CROTONS, CYCLAMEN, DAPHNE, DRACÆNAS, FERNS, FICUS, GLOXINIA, BEGONIAS, SPIRÆAS, PALMS, PENTSTEMONS, PHLOXES, PYRETHRUMS.

The above are mostly in 4½-inch pots, strong, and well-established. The Pelargoniums and Zonals are chiefly early sorts, prepared for forcing. The Cinerarias are also very strong, and will be in bloom in November.

VINES in pots, for planting and fruiting, &c.
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40s. per 1000. 4s. 6d. per 100.
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BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 25s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

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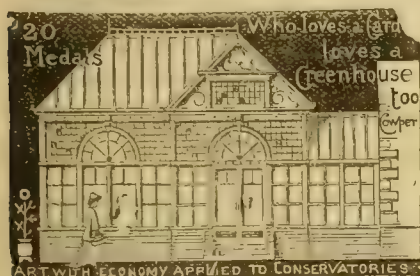
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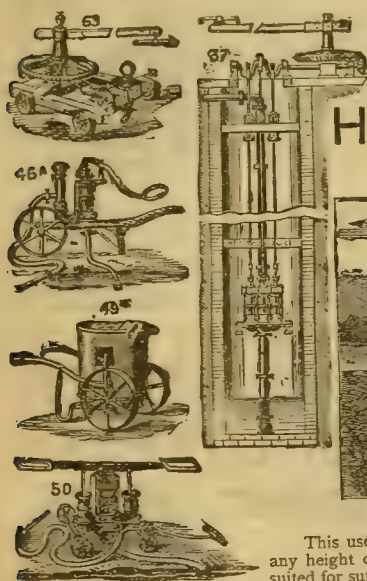
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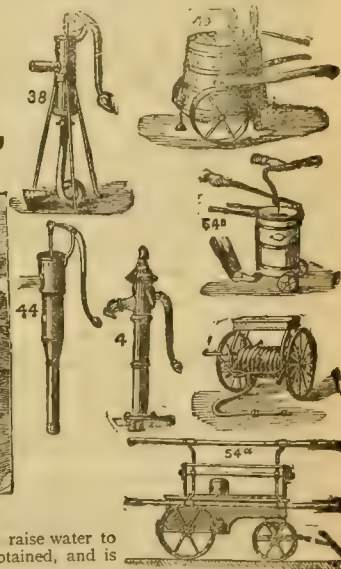


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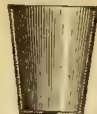
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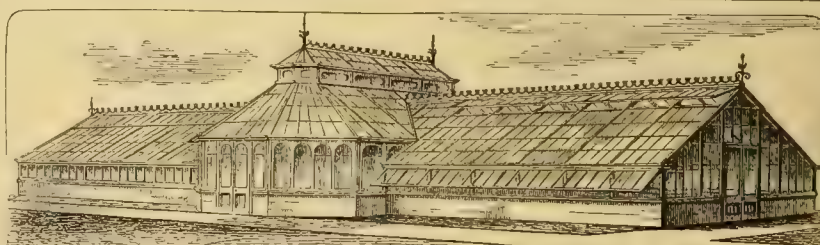
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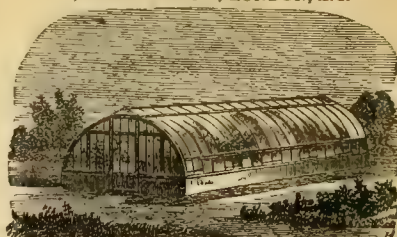


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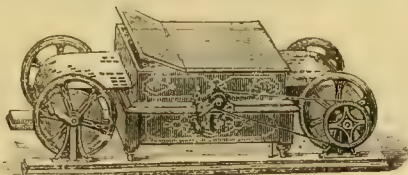


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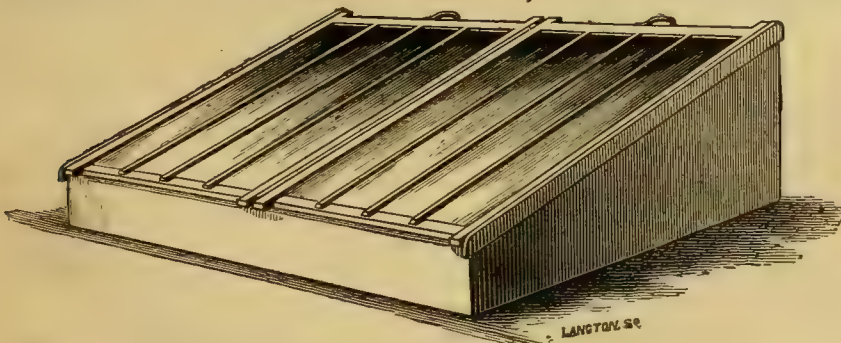
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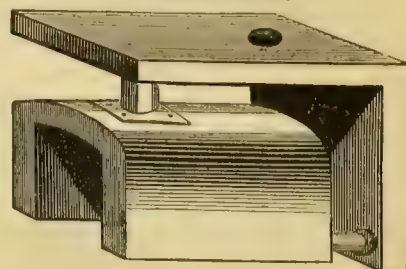
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24 "	24 "	42 "	850	14	0	0
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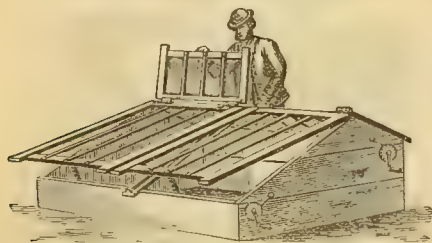
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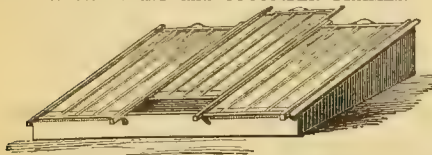
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THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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NOTICE.—Will shortly be published with the "Gardeners' Chronicle," a Double-page Plate of the Poet's NARCISSUS. Full particulars will be duly announced.

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CRANSTON'S NURSERIES, HERE-FORD. (Established 1785.) Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

Gardenias.

MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug. Royal Nurseries, Ascot, Berks.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this." Two Cuttings, post-free, for 1s. 2d. One Plant, post-free, 1s. 6d. The Home for Flowers, Swanley, Kent.

Deutzia gracilis.

WILLIAM FLETCHER has a fine stock of the above to offer. Fine bushy plants, with from 10 to 20 branches, price 21s. per 100, £10 per 1000. Ottershaw Nurseries, Chertsey.

To the Trade only.

E. H. KRELAGE and SON, NURSERYMEN, SROESMEL and FLORISTS, Haarlem, Holland. The Wholesale CATALOGUE (No. 347A) of Dutch Flower Roots, and Miscellaneous Bulbous and Tuberous-rooted Plants, for 1880-81, is now ready, and may be had free on pre-paid application, by Nurserymen, Florists and Seedsmen.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—J. E. ALDERSON, Bell Farm, Hersham, near Walton-on-Thames, Surrey.

Pansies and Violas.

HEATH and SON beg to offer PANSIES in best named varieties, 20s. per 100. VIOLAS, do., 12s. per 100. Florists, Cheltenham.

CHRYSANTHEMUMS.—Early Flowering Section.—Splendid bushy stuff, in 48's, in bloom or in bud, all colours, by the dozen, 100, or 1000. Price moderate. Best early white for cutting, Snowflake, 24s. per dozen. WATSON and SONS, Marlborough Nursery, 57, Halford Street, Islington, N.

STRAWBERRIES. Strong Roots for Fruiting next year, 4s. per 100. Descriptive LIST on application. RICHARD SMITH and CO., Nurserymen, Worcester.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once. CATALOGUE post-free. Special Prices for large quantities. H. CANNELL, Swanley.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s. W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

Strawberries.

CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice. The Royal Nurseries, Slough.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

SALES BY AUCTION.

Hyalinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY, during September, at half-past 12 o'clock precisely each day, consignments of **DUTCH BULBS** arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the morning of Sale, and Catalogues had.

Odontoglossum Alexandræ.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 30, at half-past 12 o'clock precisely, about 1000 **ODONTOGLOSSUM ALEXANDRÆ**, collected in the best locality, and consisting of the finest varieties.

May be viewed the morning of Sale, and Catalogues had.

Cattleya Mossiæ.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 30, at half-past 12 o'clock precisely, a fine importation of the ever-varying varieties of this splendid **CATTELYA**; its magnificent flowers, together with its easy culture, render it one of the very best of the genus.

May be viewed the morning of Sale, and Catalogues had.

Imported and Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, NEXT, September 30, at half-past 12 o'clock precisely, about 150 Lots of good **ESTABLISHED ORCHIDS**, in fine health. Also several importations received direct.

May be viewed the morning of Sale, and Catalogues had.

Anthurium Andreanum.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 30, at half-past 12 o'clock precisely, the unsold portion of this grand introduction. The pieces are extra fine.

May be viewed the morning of Sale, and Catalogues had.

Cattleya Luddemanniana.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 30, at half-past 12 o'clock precisely, some good imported plants of the scarce and extremely beautiful **CATTELYA LUDEMANNIANA** (speciosissima), and an importation of some very fine plants of **BROUGHTONIA SANGUINEA**.

On view the morning of Sale, and Catalogues had.

Every Monday.

SALES OF DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, on MONDAY NEXT, and every following Monday, at half-past 11 o'clock precisely, extensive consignments of first-class **HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS** from Holland, in lots to suit all buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Belsize Court, Hampstead Heath STATION.

CLEARANCE SALE of the whole of the **STOVE and GREENHOUSE PLANTS**, large Double White Camellias and Azalea indica, Greenhouse Ferns, a few lots of Orchids, 1000 Strawberry Plants in pots, Iron Garden ROLLER, LAWN MOWER, several LIGHTS, TOOLS, and numerous other effects.

MESSRS. PROTHEROE AND MORRIS will SELL the above, on the Premises, on TUESDAY next, September 28, at 1 o'clock punctually, by order of Mrs. J. Stallard, the Estate having been disposed of. On view day prior to Sale. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

The Westbourne Nursery, Harrow Road, W. UNRESERVED SALE of SURPLUS STOCK of WINTER and SPRING BLOOMING PLANTS.

MESSRS. PROTHEROE AND MORRIS will SELL, by order of Messrs. Woodroffe & Son, on the Premises as above, on WEDNESDAY, September 29, several thousands of **STOVE and GREENHOUSE PLANTS**, including 1500 Aloysias, 2000 good bushy Genistas, 1500 Hydrangeas, 2000 strong Poinsettias, 1000 Double Primulas, 1500 well-berried Solanums, 2000 early and late flowering Chrysanthemums, 1000 Dourvards Hogarthii and jasminoides, Dracænas, Pandanus, Palms, and other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C.; and Leytonstone, E.

Imported Orchids from Mexico, consigned Direct for Unreserved Sale.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on FRIDAY NEXT, October 1, an importation of 200 fine masses of **LELIA MAJALIS**; also **EPIPHENDRUM VITELLINUM MAJUS** and **NEMORALE MAJUS**, received direct from Mexico, in splendid condition, and freely breaking into growth. At the same time will be sold an importation of **PHALANOPSIS** and sixty established **ANACTOCHILUS PETOLA**, **DAWSONIANUS**, and others.

On view morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Friday Next.

CONSIGNMENT from Ghent of 600 **CAMELLIAS**, and 600 **AZALEA INDICA**, well set with bloom-buds; 200 **AZALEA MOLLISS**, 200 fine healthy plants of **FICUS ELASTICA**, **AZALEA ROBUSTA** (new), **PALMS**, **DRACÆNAS**, &c.; together with a consignment of first-class **HYACINTHS, TULIPS, CROCUS, NARCISSUS**, and other **BULBS** from Holland.

MESSRS. PROTHEROE AND MORRIS will SELL the above at the Auction Mart, Tokenhouse Yard, E.C., on FRIDAY NEXT, October 1, at half-past 11 o'clock precisely, without reserve.

On view morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Tooting, S.W.

IMPORTANT SALE of **STOVE and GREENHOUSE PLANTS, ORCHIDS, PALMS, FERNS, &c.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION on the Premises, the Exotic Nursery, Tooting, S.W., on THURSDAY, September 30, at 1 o'clock precisely, by order of Mr. R. Parker, a quantity of extra stock of **STOVE and GREENHOUSE PLANTS** in healthy and thriving condition; choice **ORCHIDS** in variety, Exotic **FERNS**, selected **PALMS**, English-grown **AZALEAS** and **CAMELLIAS**, Greenhouse **RHODODENDRONS**, **HARDY CLIMBERS**, and other stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E. N.B. The first portion of the above Estate, comprising 40 Lots of Freehold Building Land, will be offered at the Castle Inn, Tooting, on September 30, at half-past 6 o'clock in the evening.

Lea Bridge Nurseries, Leyton, E.

TENTH ANNUAL TRADE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to **SELL by AUCTION**, on the Premises as above, on TUESDAY, October 5, at 11 o'clock precisely, 20,000 winter-blooming **HEATHS**, remarkably well grown, and including 8000 **HYEMALIS**, and large quantities of **Wilmoriana**, **gracilis**, and many other varieties; 1500 unusually fine **CYCLAMEN PERSICUM**, 1000 **GENISTA FRAGRANS**, a quantity of well-grown **Tea-scented** and **Noisette** **ROSES** in pots, **LAPAGKIA ALEA** and **ROSEA**, 1500 **Azaleas**, full of bloom-buds; 1000 **CHRYSAETHUMS**, 300 **Marshall** **Niel** **ROSES** in pots, from 12 to 10 feet; several hundreds of fine strong plants **AMPELOPSIS VEITCHII**, and other stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

MR. MALCOLM SEARLE will SELL by AUCTION, Without Reserve, at Messrs. Mack & Co.'s Market Gardens, Rotherhithe New Road, S.E., on TUESDAY, September 28, at 10 o'clock, 1½ Acre of valuable **SEAKALE**, 9 Acres of prime **CELERY**, **HORSE-RADISH**, **RHUBARB**, **COLEWORTS**, **MANGEL WURZEL**; 200 excellent 3-light Forcing Boxes, Hand Lights, Implements, Baskets, Trade Outbuildings, Waggonette, Phaeton, Cab, Trolleys, Waggon, Vans, Carts, grand English Cart Horses, Nag Mare, and pure bred Mastiff.

Catalogues of Mr. MALCOLM SEARLE, Farm and Market Garden Valuer, 2, Bond Court, Walbrook, City, E.C.

Rawcliffe Lodge, Langside, near Glasgow.

SALE of the whole **COLLECTION** of **RARE and VALUABLE PLANTS**, including a magnificent assortment of **ORCHIDS**, selected with the greatest care and discretion by the late A. B. Stewart, Esq., of Rawcliffe Lodge and Ascog Hall, during the last ten years, whose abilities and taste as a horticulturist were so well known and appreciated throughout Britain.

MESSRS. HUTCHINSON AND DIXON have been favoured with instructions to offer the above, without reserve, on the Premises, Rawcliffe Lodge, on WEDNESDAY, October 6, and following days, commencing each day at 11 o'clock, A.M.; and they are confident that such a Collection, for variety and rarity, combined with a perfect state of cultivation, has never before been offered for public competition in this country.

Amongst the **ORCHIDS**, which occupy three large houses, will be found a number of the most valuable specimens, such as *Aerides affine superbum*, *Vanda tricolor*, *Daikeith var.* (in flower); *Vanda Lowii* (the finest plant in the country), several large *Vanda suavis*, large number of *Phalenopsis* in perfect order, not grown in sweltering heat; *Anactochilus*, such as has not been seen in this country for many years; *Angræcums*, *Calanthes* in quantity; *Cattleya exoniensis*, a large specimen of the finest variety; true *Cattleya labiata*, large specimen; and many other rare kinds; six specimen *Cyclopogon cristata*, the largest and best Collection of *Cypripediums* that has yet been sold by auction, over thirty varieties, many specimen size; and a number of very rare *Dendrobiums*, *Lælias*, *Oncidiums*, and *Odontoglossums* in quantity, especially *Odontoglossum Alexandræ* of the very finest varieties. Amongst *Pitcher-plants*, the rare *Nepenthes sanguinea*, with pitchers holding more than a pint of water—a magnificent specimen; *Nepenthes Veitchii*—an extra large specimen; *N. Rafflesiana*—very fine pitchers, holding a pint of water. Unequalled specimens of *Azaleas* and *Heaths*. Amongst *Heaths*, three large Specimen *Marockiana*, the finest *Erica Turnbullii* to be found, *emula*, *ventricosus*, &c., equally good. *Azalea Duchesse de Nassau*, *Criterion*, &c., extraordinary plants. Amongst *Foliage Plants*, many rare specimens in *Palms*, &c., such as *Phoenix rupicola*, *Cocos Weddelliana*, *Crotons*, *Stove Flowering Plants*, Greenhouse *Flowering Plants*, in quantity; *Camellias*, *Nerines*, many fine *Ferns*, *Todeas*, &c.

The Collection being so well known to all the principal Exhibitions during the last nine years, it is unnecessary to particularise further the many numerous and rare specimens, which will be fully described by Catalogue in course of preparation.

The plants can be seen by those who are known to Mr. Todd, Gardener; or by application to the Auctioneers, who will grant cards of admission by applying at the "Mart," West Nile Street, Glasgow.

The late Mr. John Verschaffelt.

THE NURSERY at LEDEBERG,

near Ghent, lately conducted by

MR. JEAN NUYTENS VERSCHAFFELT,

IS FOR SALE,

ON ADVANTAGEOUS TERMS,

And with Special Facilities for Payment to a Suitable Purchaser.

Apply to

MADAME NUYTENS VERSCHAFFELT,

CHAUSSÉE DE BRUXELLES, 134,

LEDEBERG LEZ GAND, BELGIUM.

WANTED TO RENT, in or near London, for a term of years to be agreed upon, a quantity of **GLASS**. It must be well Heated with Hot Water, and adapted to Grow Plants for the Market. No stock required. Address with full particulars, X. Y. Z., 12, Fairthorne Terrace, Passmore Bridge Farnham, Hants.

Nairn Nurseries.

FOR SALE, the REMAINDER of LEASE

(Fifteen Years), where a Successful Business has been carried on by MACARTHUR BROTHERS, Seedsmen. Nairn comprising Greenhouse and Frames, Seedling Forest and other Trees, Rose and other Bushes, Vegetables and Strawberries, Flowers, &c., Garden Implements and Piggeries. Yearly rent, £10. The Ground, which extends to about 1½ Acre, is well sheltered, conveniently situated, and admirably adapted for the purpose. The **SEED SHOP**, in High Street, can be Let along with the Nurseries. The above forms a first-class opening for an enterprising man. About 150,000 2-yr. Fir Seedlings of the above stock can be sold in a separate lot.

For further particulars apply to ALEX. GORDON, Commission Agent, Nairn.

To Gardeners and Others.

MARKET GARDEN, near MALVERN.

TO BE LET, a good **COTTAGE** and **OUTBUILDINGS**, with productive Garden and Meadow—each 3 acres—and Watercess Beds. To an energetic man this affords a rare chance of combining a Vegetable, Dairy, or Poultry Trade, with a Laundry, Garden Contracts, and Firewood supply. Rent £40. Address, J. C. G., Mill Bank House, near Malvern.

Singularly Advantageous Opening to Gentlemen FARMERS or HORTICULTURISTS.

TO BE LET, for a term (in consequence of the recent death of the Proprietor) **AN UNIQUE ESTATE** (with railway access to Birmingham and the North), consisting of about 240 Acres, all scientifically drained and roaded, and of which 150 Acres have been planted with thousands of the choicest Pear, Apple, and Plum Trees, chiefly the earliest and latest keeping dessert species, the intermediate spaces with innumerable Gooseberry and Currant Trees. The remaining 90 Acres were intended by the proprietor to be used as Nursery Ground, and particularly for the raising of Filbert and other Fruit Trees for sale (a most lucrative business), and for the production of general Garden produce, as well as Straw and Roots for the horses employed, &c.; but it may be used as ordinary Farm Land, if the taker prefers, and up to 350 Acres of sound and good Farm Land adjoining (if wished) added thereto in the same lease. Labourers' Cottages, Sheds for packing and storing Fruit, a Manager's Residence, Farm Buildings, Barns and Yards, are already arranged, and either an ordinary Farm-house, or a Residence, suitable for a magistrate or county gentleman (who desires to unite pleasure and profitable occupation) will be included in the Lease. The air is most salubrious, the scenery charming, the roads excellent. For many years a connection with Birmingham, Manchester, Leeds, and Liverpool, for the sale of the produce, has been opened up, and will be handed over without payment to the Lessee. It is not, therefore, too much to assert that, with energy and sufficient superintendence, a rapid fortune may be confidently hoped for.

Address, for further particulars, to Messrs. NEW, PRANCE, AND GARRARD, Solicitors, Evesham.

Fruiting Trees of

APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds.

Priced LIST on application to

J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

New Carnations and Picotees.

E. S. DODWELL begs to announce he is now prepared to send out a Selection from his fine Seedlings, and will be glad to furnish full particulars on pre-paid application.

11, Chatham Terrace, Larkhall Rise, Clapham, London, S.W.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

"Golden, many thousands, 3, 4, 5 to 10 feet high.

"Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

"laurifolia, *myrtifolia*, *Scottica*, *Hodgen's*, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

"Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

"Golden Queen, 4, 5, 6 to 10 feet high.

"Siver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

ARGENTEA, 4 and 5 feet.

LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER-AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

Now Ready for Present Planting.
GOOD AUTUMN SOWN CABBAGE AND OTHER PLANTS, ROOTS, &c.

F. GEE'S superior Bedfordshire grown Plants, &c., grown from his far-famed selected stocks, can again be supplied in any quantities, as follows, for cash:—
CABBAGE, Early Enfield, York, Nonpareil, Ransham, Imperial, Thousand-Head, and large Drumhead, all at 1s. per 1000; fine Red, ditto, 4s.; SAVOY and BRUSSELS SPROUTS, ditto, 4s.; LETTUCE, Hardy Hammersmith Brown Cos, and Tom Thumb, ditto, 5s. The true PRICKLY COMFREY, Caucasian or Russian variety. Now is a good time to plant this extraordinary permanent Forage Plant, to come in next season. It is eaten by all kinds of stock, fed upon which they enjoy good health and thrive surprisingly. May be grown upon 100 tons per acre. Good plants or sets, 2s. 6d. per 100, 20s. per 1000. SEAKALE, ASPARAGUS, and RHUBARB ROOTS, also HERB ROOTS, DAISIES, WALLFLOWERS, and other early spring-garden flowering Plants, &c., in any quantities, cheap and good. Large buyers treated with on the most liberal and advantageous terms.

LISTS may be had on application to
FREDK. GEE, Seed and Plant Grower, &c., Biggleswade Bedfordshire.

ROSE BRIERS, or **STOCKS** for **STANDARD ROSES**. Orders booked at 10s. per 100, for delivery in November.

J. GEO. HILL (late Scott), The Royal Nurseries, Merriott, Somerset.

CABBAGE PLANTS.—Very fine stocks of Enfield Market and Rainham. Apply to
Mr. T. DAVIES, Tangley, near Guildford.

TO BE SOLD, cheap, a lot of fine, very large **CAMELLIAS**, well set with bloom-buds; Specimen **STOVE** and **GREENHOUSE PLANTS**. To be seen by appointment only. Letters to be addressed to
G. S. H., Mr. John Clifton, Acton, Middlesex.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their **CATALOGUE OF FERNS** for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST OF FERNS," free on application.

Bulbs, Orchids, &c.
THE NEW PLANT AND BULB COMPANY beg to announce that their New Autumn CATALOGUE of **BULBS OF ALL KINDS, ORCHIDS, &c.**, has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

To the Trade.
FINE NEW ENGLISH SOWING RAPE SEED and **WHITE MUSTARD**.

H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application.
Seed Growing Establishment, Wisbech.

Seedling Apple, "Beauty of Barnack."
AND J. BROWN, NURSERYMEN, &c., Stamford, have great pleasure in offering for the first time this valuable and beautiful **DESSERT or KITCHEN APPLE**. The fruit is a very handsome and conical shape; ready for use from February to April; it is a heavy bearer. We have known the tree for several years, and it has scarcely ever failed to produce a crop; this season, when other sorts are a failure, Beauty of Barnack bears an abundance of good sound fruit. Dr. Hogg reports, "Your Seedling Apple is very handsome, fine shape, and very good."
Retail Price:—Maidens, 4s. each; 2-yr. untrimmed, 5s. each; pyramids, 7s. 6d. each.
Trade price on application.

CH. VUYLSTEKE,
NURSEYMAN,
LOOCHRISTI, near GHENT, BELGIUM,
Begs to call attention to his exquisite
STOCK OF PLANTS,
Offered at Extra Low Prices,
VIZ:—

AZALEA INDICA, AZALEA MOLLIS, CAMELLIAS, HARDY GHENT AZALEAS, KALMIA LATIFOLIA, PALMS, FERNS, FICUS, AMARYLLIS, SPIRÆAS, &c.,

As detailed in his **CATALOGUE**, which may be had gratis of

Messrs. R. SILBERRAD AND SON,
25, Savage Gardens, Crutched Friars, London, E.C.

Notice.
TO INTENDING PLANTERS.
On account of the approaching expiration of the Lease of a portion of "The Fulham Nurseries,"

OSBORN AND SONS are prepared to offer, at exceptionally low prices (as the ground must be cleared), a quantity of Ornamental Evergreen and Deciduous TREES and SHRUBS, also Large Specimen Plants of RHODODENDRONS and Hardy American AZALEAS.
The Fulham Nurseries, London, S.W.

G. BRAID'S NEW PELARGONIUMS.—
G. B. has much pleasure in stating that he is now sending out the following:—
DECORATOR, First-class Certificate, Royal Horticultural Society, white, purple spot, 7s. 6d.
DEFIANCE, First-class Certificate, Royal Horticultural Society, brilliant scarlet, maroon spot, free and good form, 10s. 6d.
ZULU BELLE, First-class Certificate, Royal Horticultural Society, pure white, dark maroon spot, quite a novelty, 10s. 6d.
J. BRAID, crimson, maroon spot, dwarf and free, one of the best, 5s.
CRITERION, after Rob Roy, flowers twice the size, 5s.
VIVID, dazzling crimson, quite a new colour, 5s.
The usual discount to the Trade.
G. BRAID, Nurseryman, Winchmore Hill, N.

TEA ROSES, £3 PER 100.
Extra strong, on own roots, in 4½-in. pots.
GLOIRE DE DIJON, ISABELLA SPRUNT, &c.
No charge for packing. Sample dozen, 8s.
MAIRIS AND CO., Weston-in-Gordano, Bristol.

RICHARD SMITH & CO.
WORCESTER

TWO HUNDRED THOUSAND HERBACEOUS AND ALPINE PLANTS, for Borders, Rockwork, &c. See Descriptive LIST, giving colour, height, time of flowering &c., free by post for one penny stamp.
R. S. & Co.'s selection of 100 good showy varieties, for 25s.
RICHARD SMITH AND CO., Nurserymen, Worcester.

STRAWBERRIES IN POTS.
Crop at once.
Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 15s. per 100; in small pots, 22s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST
H. CANNELL, Swanley, Kent.

To the Trade.
OSBORN AND SONS are now booking Orders for Forcing Roots of SEAKALE, of which they possess this season a very fine stock. Price on application. Early Orders solicited.
The Fulham Nurseries, London, S.W.

STRAWBERRIES.
The best sorts for Forcing.
V. H. DE THURY. } Strong plants, all well rooted, in small pots, prepared for PRESIDENT. } forcing, 10s. per 100.
Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1000. Package free. Extra plants for carriage. Cash from unknown correspondents.
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SURPLUS STOCK.
1 Large ADIANTUM FARLEEVENSE FERN in 14-in. pot.
2 Large ADIANTUM CUNEATUM, in 14-inch pots.
12 Dozen ADIANTUM CUNEATUM, in 48-pots, good stuff.
12 DRACENA AUSTRALIS, 4 feet high.
12 Choice CALADIUMS, in six varieties.
4 Standard AZALEAS, 2 feet 6 inches in height, 3 to 4 feet in circumference, well budded.
6 Good CAMELLIAS, 3 to 4 feet, well budded.
1 YUCCA ALOEFOLIA VARIEGATA, 10-inch pots.
Also a quantity of SEEDLINGS, which will be sold cheap. The measurements are from top of pots. Price and particulars of T. FLETCHER AND SON, Florists, &c., Chesterfield.

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Tottenham Nurseries,
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The New Wholesale Trade CATALOGUE of Fruit Trees, Conifers, Hardy Perennials, Alpine Plants, &c., gratis on application.

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LEONARD ROOZEN AND SONS' superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)
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POPLAR, Black Italian, 7 to 8 ft., 20s.; 8 to 10 ft., 30s. per 100.
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And a large number of DECIDUOUS, ORNAMENTAL FLOWERING TREES and SHRUBS, CONIFERS, and AMERICAN PLANTS, at very low prices. All are well grown with very fibrous roots. Samples can be had before purchasing.
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MESSRS. JAMES VEITCH & SONS

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The flowers are produced in large trusses, and are remarkable for their size and rich colouring; they are globular, nearly 2 inches in diameter, and of a bright violet-purple.

The plant received the award of a First-class Certificate from the Royal Horticultural Society, March 23, and a Certificate of Merit from the Royal Botanic Society, March 24, of the present year.

It is figured in the *Floral Magazine* for July, with the Editorial remark that "Those who grow this fine variety will find that it will not disappoint their expectation—it is such a marked advance on all other Cinerarias of its class."

Price, 10s. 6d. each.

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DUTCH FLOWER ROOTS.

PAUL & SON,

The Old Nurseries,

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Departure Platform, Liverpool Street Station,
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And other Bulbs of Extra Selected Quality.

These Bulbs have been personally selected by the Advertiser, in Holland, this season, and the stock is believed to be unsurpassed by those of any house in the kingdom. The prices are very moderate.

PAUL AND SON'S CHESHUNT COLLECTION of BULBS for INDOOR CULTURE, 10s. 6d., 21s., and 42s.

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OUR GUINEA BOX

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- 25 Hyacinths, choice mixed
- 200 Crocus, in variety
- 12 Tulips, Rex Rubrum
- 12 " La Reine
- 12 " Double, mixed
- 12 " Single, mixed
- 12 " Parrot, mixed
- 25 Anemones, double, mixed
- 12 " scarlet
- 12 " Single, mixed
- 12 Polyanthus Narcissus, mixed
- 12 Double White Narcissus
- 12 Pheasant-eyed Narcissus
- 6 Campanelle Jonquils
- 25 Ranunculi, Scarlet Turban
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- 6 Tritelia uniflora
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559 Roots in all.

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DANIELS BROS.,

The Royal Norfolk Seed Establishment, Norwich.

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FLOWERING PLANTS.

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Offer well-grown stocky examples of the following, well set for bloom:—

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| 1,000 Acacia armata | 1,000 Epiphyllum truncatum |
| 5,000 Azalea indica | 20,000 Ericas, various |
| 4,000 Bouvardias | 5,000 Epacris |
| 5,000 Camellias | 10,000 Pelargoniums |
| 11,000 Cinerarias | 5,000 Primula chinensis |
| 4,000 Cytisus | 5,000 Solanums, in berry |
| 5,000 Chrysanthemums | 10,000 Zonals, various |

Also large stocks of DEUTZIA, CALADIUMS, TREE CANNATIONS, CLEMATIS, CROTONS, CYCLAMEN, DAPHNE, DRACENAS, FERNS, FICUS, GLOXINIA, BEGONIAS, SPIRÆAS, PALMS, PENTSTEMONS, PHLOXES, PYRETHRUMS.

The above are mostly in 4½-inch pots, strong, and well-established. The Pelargoniums and Zonals are chiefly early sorts, prepared for forcing. The Cinerarias are also very strong, and will be in bloom in November.

VINES in pots, for planting and fruiting, &c.

30,000 PELARGONIUMS, in 2½ and 3-inch pots, for potting on for spring flowering, in all the best decorative varieties.

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PLANTS FOR GAME COVERTS,

ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.

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Also other BULBOUS ROOTS, in fine condition.

ALSO FOR EARLY FORCING,

ROMAN HYACINTH, Paper White and Double Roman NARCISS.

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On account of the approaching expiration of the Lease of a portion of "The Fulham Nurseries,"

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ARE PREPARED TO OFFER,

AT EXCEPTIONALLY LOW PRICES

(AS THE GROUND MUST BE CLEARED), A QUANTITY OF

ORNAMENTAL EVERGREEN and DECIDUOUS TREES and SHRUBS,

ALSO LARGE SPECIMEN PLANTS OF

RHODODENDRONS and Hardy American AZALEAS.

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Is now Ready, and may be had Gratis and
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TWENTY CHOICE HYACINTHS,
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BEAUTIFUL FLOWERS
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For 1880,
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The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

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CHOICE EXHIBITION
HYACINTHS.



"The Hyacinths which I had from you last year were excellent."—Mr. James McIntyre,
Gardener to the Right Hon. Viscount Valentia, Bletchington Park.

"The Bulbs I had from you are now in splendid flower."—Mrs. Morris, The Priory, Wrexham.

We have again this season personally inspected the Bulb
Farms of Holland, and have also made careful trials of the
finest varieties of Hyacinths in our own grounds. The varieties
included in the following Collections cannot be equalled.

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FOR
POTS and GLASSES.

100 in 100 very choice sorts	£4 4 0
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25 Splendid Hyacinths for Exhibition	£2 2 0
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"If the Bulbs only turn out as well as those that you sent me
last year, I shall be more than satisfied."—W. E. LUSCOMBE,
Esq., Holly House, North Collingham.

"The Bulbs arrived safely, and I never saw a better lot for
the money."—Mr. T. MILLER, Gardener to H. F. Beaumont,
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"I have some very fine spikes of Hyacinths from the Bulbs
obtained from you last autumn."—Mr. S. BOASE, Westfield
Place, Dundee.

For Prices and full Particulars see

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SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.



THE
Gardeners' Chronicle.

SATURDAY, SEPTEMBER 25, 1880.

CORBY CASTLE.

THIS seat of Mr. Philip Howard is a good
square house of the present century,
standing on the site of the ancient castle of the
founder of the family. The Howards of Corby,
descended in a direct line from Edward I., and
entitled to quarter the Plantagenet arms, are a
branch of the house of Norfolk. Lord William
Howard, "Belted Will," second son of Thomas,
fourth Duke of Norfolk, married Elizabeth,
sister of Lord Dacre, of Gilsland, by whom the
famous guardian of the peace in the north of
England acquired Naworth and Gilsland,
and the red bull of the Dacres as a family
emblem. Whether his family acquired a par-
ticular kind of blood, mounting in its tend-
ency, and prone to rise in honour and the
world's esteem, I cannot tell. Lord Byron
speaks of "all the blood of all the Howards,"
and we sometimes hear of "blue blood." There
is doubtless much in breed, and in here-
ditary tendencies of plants and animals. Why
does a pointer point? It is a peculiarity of his
organisation. A peculiarity in "Belted Will"
enabled him to found two distinguished families,
that of the Earls of Carlisle, derived from his
eldest son, and that of the Howards of Corby,
derived from his second son, for whom he pur-
chased the estate and castle. The site is more
ancient than the family. The Howards, as we
have seen, are the latest lords of the soil and castle.
The first of their line was son of the accomplished
Lord William, and was born in 1588, 300 years
ago almost; but there had been Lords of Corby
500 years before the Howard line commenced
there; and the highest praise I can give the Eden,
which flows before their door, is that it could
not have been very much less beautiful in the
days of the first owner than it is now. On some
sites Nature is her own artist, and this broad
and lively stream, flowing between high crags
with boulders in the midst and timber on the
banks and among the crags seeded from the
forest of Inglewood that lay between Penrith
and Carlisle, needs no artificial decoration.

Across the river from the house, on a lower
level, stood the Priory of Wetherall. Its ruins
mark the site. It was founded as early as 1086,
and there is not the slightest doubt that the
monks were much attached to the river, and
admired it with all their heart, for it supplied
them with salmon. Those who love to think on
time and its rapid lapse, on change and life and
fortune, would enjoy this fair scene from the
lawn of Corby Castle. On the left, close at
hand, is the noble timber of a rich park which
rises rapidly to a ridge which encloses the land-
scape in that direction. On the right, at a much
lower point of this unequal surface, are the ruins.
Immediately in front of you is the river scene
—foliage, with a line drawn through it for a dis-
tance of half a mile. That line is the river,
which runs straight towards you, hits the base
of the sandstone cliff on which you are

standing, and being thus diverted turns the corner and disappears. The monks had a salmon trap here 800 years ago, and there is the same thing now. It is examined several times a day when the fish are running up the river, for once in the trap they are soon drowned. Salmon weighing 25 lb. are often caught. The Lord of Corby of the reign of Henry I. gave the Priory a valuable charter—land and rights—and empowered the monks to “festify” their fish-pool, stank, or weir upon the river bank. Another lord confirmed to them their fish-garth and weir, and gave them a good stretch of the water of the Eden; the fishing of the 18 miles to Penrith would be valuable now.

Mr. Wilton, the gardener, took me down a steep path to the river bank. We met with Polyphemus on the way down, with his one eye green with vegetation. Poor old fellow! he was moulded in lead, and is most respectable as to value, but not as to cleanliness. He stands there

“bosom’d high
In Nature’s sylvan majesty.”

In the cliff below are the caves of St. Constantine, or “Wetherall’s Safeguards,” which romantic people have endeavoured to connect with the third Scottish king of that name who lived some time in the Priory, and died a monk at Melrose Abbey.

An umbrageous river-side walk leads up the stream to the weir and a mile beyond it, but we turned at the “salmon-coop,” and returned along the higher ground. In the spring our carpet would have been the Wood Sorrel and wild Hyacinth, Primroses, Daffodils, and Snowdrops. These flowers were out of bloom, but the river banks were clothed with Ferns and foliage, and the bright green Holly shines cheerfully wherever a plant of it remains. It is native to the soil here, and so are rabbits, so that dead Holly bushes with the bark eaten off are numerous.

The timber is fine, especially a Scotch Pine, measuring 11 feet round the trunk several feet above the ground, and I should think 100 feet high, a height which it rarely reaches in Scotch forests, except when drawn up by companions. The timber is said here to be as good as Memel Pine. The view from the high ground stretches far across the fertile and infertile parts of Cumberland, its rich vales and its moors, over Warwick Village to Langham Mount on the Scotch hills.

Mr. Wilton’s outdoor ferneries and his Egyptian Beet, in use for salads earlier than the common Beet, were both notable in their way in the garden, also his Purple-topped Munich Turnip, earlier by two weeks than any other sort; also a brilliant little rosy flower with red spots, growing on a narrow border near a greenhouse. To all concerned let me say, “Pray plant it.” It is the *Anomatheca cruenta*, a charming little Irid from the Cape, blossoming much and long. It is one of the most deserving of the small bulbs, yet not often met with except in the herbage of Southern Africa, to which, says Loudon, it contributed “that indescribable charm which has captivated all observers.” Speaking of gems the village of Corby is one—a small one, but choice and well set with gardens. The very smithy is a work of art, with a stone archway to the shoeing shop and Vulcan carved in stone in bas relief above. Mr. Behrens is the present occupier of Corby Castle, Mr. Philip Howard having retired, in his old age, to reside with his son. H. E.

PANCRATIUM FRAGRANS.—A well-flowered specimen of this, with six fine spikes of bloom, and a total of seventy-two flowers, was making a fine display, a few days ago, in one of the houses at Chipstead, Kent, the residence of Mr. Happinham.

New Garden Plants.

MASDEVALLIA SWERTIÆFOLIA, n. sp.*

A very curious plant, with long-stalked cuneate-oblong acute, soft, trinerved shining leaves, which reminded me immediately of those of *Swertia perennis*. The true peduncle bears one or several no doubt variously coloured flowers, which bend the bristles of their lateral sepals down on each side, thus making the figure of an archer, when the odd sepal, with a shorter tail, stands upright. The lip is unusually elegant, sagittate at the base, oblong, with a square lobe on the centre of each side, toothletted at the anterior part. The flowers are at first ochre-coloured with dark brown spots on each side of the connate sepals. The apex of the odd sepals is always purple. After a time the flower gets purple, with the exception of the rough inner sides of the lateral sepals and their tails, which last are yellowish.

I had a beautiful living plant of this variety, kindly sent me by Herr Consul Kienast-Zoll, of Lüsen, one of the most enthusiastic orchidists of our days. The same thing was gathered by my friend Lehmann, in the southern part of the western Cordilleras of New Grenada, at the height of 1200 m., July, 1879. H. G. Rehb. f.

GOODYERA MACROPHYLLA, Lowe.†

A flower-spike of this interesting plant was sent lately to Kew, by Mr. P. Neil Fraser. It is a native of Madeira, where it was first discovered by the Rev. M. Lowe, who described and figured it in his *Primitia Fainæ et Flora Maderæ*, p. 13, t. 1. This figure represents the flowers as somewhat secund, but in Mr. Fraser’s specimen they were crowded all round the spike. Mr. Lowe states that it grows on slopes in the damp Madeira woods, and is very rare. Lindley in his *Genera and Species of Orchidaceous Plants*, p. 493, describes the scape, bracts and flowers as being covered with “ferruginous down;” that is the case in the dried specimens, but in the living plant the hairs, which are somewhat glandular, are colourless; the ferruginous colour is due to the process of drying. N. E. Brown.

EPIDENDRUM MOSENI, n. sp.‡

This has the growth of *Epidendrum ellipticum*, Grah., but the short, broad leaves become quite acute and are very numerous, standing close together. The inflorescence is like that of the species just named, but the numerous flowers have broad petals with a few teeth, which is very unusual. The lip is shortly toothed, and has oval lacinia and a cuneate refuse middle lacinia with a few teeth. It appears to have unusually brilliant flowers, since Mr. Osmer stated there were four varieties of colours, one of which is vermilion coloured.

This is the “*Epidendrum cinnabarina*” (why not *cinnabarinum*?) of Mr. Stevens’ sale, No. 5697, where specimens sent by Mr. Osmer to Mr. Sander came under the hammer.

I obtained from Mr. Sander some well dried inflorescences and bottles wherein flowers had been destroyed with the infallible remedy of ammonia. I could not name them without knowing the leaves, and addressed myself to Mr. Sander for better material. *Altum silentium*—the sale was over.

Now, sorely puzzled by these flowers, I remembered having something like them in my cabinet. And thus it was. There were specimens in beautiful condition (not miserable scraps), gathered by the excellent Swedish traveller, Dr. G. Mosen, at the very same place, on January 10, 1875, in clefts of the rocks and in the dry sand of the seashore. H. G. Rehb. f.

P.S.—Mr. Sander having just sent me a plant of his *Epidendrum*, I can only assert once more its identity with the *Epidendrum* of the Swedish traveller. H. G. Rehb. f.

* *Masdevallia swertiæfolia*, n. sp.—Affinis *M. gibbosæ*, Rehb. f. Folis longe-petiolatis cuneato-oblongis acutis mollibus, pedunculo subaquilongo seu breviori, tenui, firmo, teretiusculo filiformi, uni seu plurifloro; sepalis impari prope liberam lanceolato crasso caudato; sepalis lateralibus alpe coalitis oblongo triangulari caudatis arcuatis; caudis recurvis; superficie interna asperis; carinis geminis apice callosis per discum; tepalibus dolabriformibus irregulariter pentangulis; labello oblongo-ligulato basi sagittato antice serrulato; medio utrinque lobulo subquadrato exserto minuto; callis geminis in disco; columna arcuata, utrinque pone foveam subquadrato alata. New Grenada. H. G. Rehb. f.

† *Goodyera macrophylla*, Lowe.—Plant 12—18 inches high, with 6—7 lanceolate-elliptic leaves, 5—7 inches long, 2—2½ inches broad, acute at the apex, narrowed into a petiole at the base, glabrous. Scape green, with several sheathing, membranous, acuminate, whitish-green bracts, flowering bracts smaller, the scape bracts, ovaries, and outside of the flowers are clothed with short, more or less glandular hairs. Ovaries green, turcid; flowers, four lines long, white.

‡ *Epidendrum Moseni*, n. sp.—(Schistochila carinata), tri-quinguepedale; foliis approximatis oblongo triangulari acutis, margine minutissime crenulatis; racemo densifloro; sepalis cuneato ovatis acutis; tepalibus cuneato ellipticis acutis denticulatis, labelli lacinia lateralibus ovatis denticulatis, lacinia media cuneata retusa antice denticulata, callis geminis in basi, carina interposita in medium laciniam antice effluente. H. G. Rehb. f.

CHEVENING PARK.

I WAS much interested the other day by a visit to this old country seat of the Earl of Stanhope, where old-fashioned gardening is carried out to a great extent, and with success. The estate lies from 3 to 4 miles on the western side of the Sevenoaks station, and, approaching it from this point, a most pleasing and interesting view of the surrounding country can be obtained. The Ivy-covered cottage, with its small well-filled flower-beds, show no lack of energy on the part of the occupants, while around were fields of corn and Hops, which were both represented by good crops, backed up by plantations and woods rising in the distance.

Chevening Park is approached by a long carriage drive, thickly planted on either side with trees and shrubs. The house, which is most pleasantly situated—with its massive iron fencing and gates barring the entrance, and which show at a glance that no modern hand has placed them there—is of the good old style of architecture, and covers a considerable area. The park is large and well-wooded, numerous fine Beech trees, with straight stems, forming good specimens, as also do the Walnuts, Limes, and Chestnuts with which the park abounds. These latter have taken a most curious style of growth. On viewing them from without they have the appearance of one dense impenetrable mass; but on closer inspection I found the interior devoid of anything save the many twisted stems and branches, which were grown so closely together as to become inarched. Many of the larger limbs have by their sheer weight been borne to the ground, where they have made fresh roots and started into growth with increased vigour, thus forming a complete canopy, the branches being closely set in the ground on all sides: these are situated at the side of the walk adjoining the lake on the eastern side of the house.

The lake is large, picturesque in outline, and, extending a considerable distance, presents a most pleasing view over its waters and into the woods beyond. Continuing our path round the lake we came to a rustic hut, in which were placed what at first sight appeared to me like so many grave-stones heaped one above the other, and bearing Greek inscriptions; these were taken at Port Mahon, and brought hither by the father of the present Earl, who constructed for them their present place of abode. Close by are very fine specimens of Irish Yews, apparently very old ones. A noticeable feature in the grounds here is a large maze of good design, the most direct way to the centre of which is 170 yards; the numerous blocks forming the interior are for the most part made to resemble the letter L: the paths of the groundwork are straight and with square corners.

I next turned my attention to the bedding, which consists of examples of both the ancient and the modern styles, carried out with good effect, as will be seen by the variety of plants employed in each. In the former beds, which occupy their place on the lawn immediately below the house and facing the lake, are a variety of old-fashioned herbaceous perennials, conspicuous among these being *Cimicifuga racemosa*, *Lobelia cardinalis*, *Aconitums* in variety, *Phloxes*, *Pyrethrums*, *Achillea Eupatorium*, *A. tomentosa*, and others, while good beds of *Zinnias* occupied places by themselves. Some beds devoted to herbaceous *Phloxes* looked very gay with the mixed variety of colour forming the centre, and a line of pure white forming the margin; these were struck from cuttings in May, and at the time of my visit—viz., the last week in August—were looking remarkably well, with some fine heads of bloom. Two large circular beds, which are raised some 2 feet above the lawn and sloping upwards to the centre, are edged with *Mahonia*, and filled with *Phlox Drummondii*. These beds are made to form designs of equal size, and are situate one on either side of a broad walk leading to the lake, and in one of these beds *Hydrangea paniculata grandiflora* is introduced as a permanent bedder.

The more modern style of bedding is both attractive and good, much taste having been displayed in the grouping of and arranging the beds, which have a very gay appearance. This design is at the south-west side of the house, and is laid down with a broad band of Box as an edging, the various beds being filled with numerous suitable plants, the most noticeable among these being the great variety of *Begonias*, which form a great feature, and of

which B. Vesuvius far surpasses any other both for size of flower, colour, and above all other qualities it will withstand heavy rains—a fact which we cannot attribute to many, and which makes it the more valuable, for instead of its being knocked to pieces after a storm it seems all the better for it. It was a mass of bloom. This occupied one very large convex-shaped bed, and was conspicuous before the whole. Many good forms appeared among the seedlings, some of very good standing quality, and far surpassing any of a choice named collection which occupied another bed. B. Cheloni was good, and flowering freely; B. erecta multiflora is a good habited variety, with smaller flowers. A large oval bed occupied the centre, which was planted in carpet style, with a long pointed star of Pyrethrum, looped with Sedum acre variegatum and Alternanthera, with a broad band of Achillea umbellata as an edging. This plant has small silver-grey foliage, deeply cut, is of neat, compact growth, and most effective, but is seldom met with in such a thriving condition. The remaining beds were filled with Ageratums, Pelargoniums, &c.

The Begonias, of which upwards of 1000 are used, are struck from cuttings in early spring, and when rooted are transferred to pits, there to remain till the beds in which they flower are ready to receive them. Viewing the whole from the upper rooms of the house, it presented a most pleasing sight, especially some oval-elliptical shaped mounds of Clematis Jackmanni, which were one mass of bloom.

On another part of the lawn a new oval Clematis bed has been formed, with oval top of wire. This is planted principally with C. Fair Rosamond and C. Star of India, which are just beginning to get established in their new home.

The walks and drives around the grounds are without a weed upon them—a fact which may seem hardly credible on first hearing it; and upon enquiry I found that Mr. Gray, the gardener, who kindly accompanied me through the grounds, was a great advocate for the careful distribution of arsenic, which is prepared in the following way:—3 lb. of arsenic to 3 gallons of water, which is boiled in a furnace, and to which an additional 7 gallons of water is added when cold. When thus weakened this liquid is capable of covering a distance of 90 feet. The walks here average about 9 feet wide and are of considerable extent, and to economise labour a zinc cistern is made to run on three wheels, for the purpose of scattering the liquid, with a spreader in the back part of it. This machine is drawn from the front, and is in fact a miniature watering-cart of the ordinary type. This is made of sufficient width so as not to allow the liquid to go near the lawn, the sides being done by the hand with watering-pots. These walks receive this dressing annually, and should a weed appear it is soon destroyed.

The fruit and vegetable department here is large and well done. Apples are represented in a fair crop, Pears rather few, and Plums a heavy crop. As is usual in kitchen gardens of this sort, some good herbaceous beds occupy the sides of the walks, and here I noticed Asters and Intermediate Stocks, together with the several varieties of Chrysanthemums (Paris Daisy), including C. frutescens, C. Etoile d'Or (the new French Marguerite), and what appeared to me like the old Anthemis frutescens aureum, a variety much deeper in colour than the preceding, with slightly smaller flowers of good substance. These were occupying the four corners in the centre of the kitchen garden, and surrounding the fountain. In the herbaceous borders were Phloxes, Geranium sanguineum, Anemone japonica alba, Aconites, and a variety of useful annuals. Strawberries are grown extensively for forcing, and promise to make fine plants. Gardenias are also largely grown for cut purposes. One pitful of these are looking very healthy; this lot was at one time covered with mealy-bug, and the only thing which has been done to free them from this pest is continuous syringing and shutting them up wet at night, and it has proved most effectual in its results, for they are well set with bloom-buds and looking most healthy. %.

CISSUS DISCOLOR.—On a wall in a stove some 30 feet long in Mr. Joad's garden, at Wimbledon, is a fine display made with the foliage of this plant, which forms a dense covering from the ground to the roof.

HYBRIDISATION.

THE following experiments were not undertaken originally for any scientific purpose, but simply to assist myself, and to satisfy a natural curiosity in connection with an old pursuit, to which I have been addicted for many years—the raising of seedling florists' flowers. The conclusions which I have arrived at by an analysis of these experiments, as well as some of the facts which experience has taught me in the pursuit of my hobby will, I faintly hope, be of some interest to many of your readers.

The plant on which the experiments were carried out was the Zonal Pelargonium, or the Scarlet Geranium, in its more popular appellation. I selected this plant because my gardener, at that time, was a novice in seedling growing, and I thought the cultivation of this plant would give him less difficulty. It proved, however, too great a difficulty for him. Such is the kind of gardener often recommended to us. Much of my own work, I fear, and much of the value of the following remarks, have suffered in consequence of this man's lack of skill.

The number of varieties on which I operated was 142. They consisted of the best of the older varieties of the period, and of about sixty of the latest introduction, selected from the English and French nurseries. The hybridising was performed on these during the summer of 1877. The number of different successful crosses, or of crosses from which I gathered seed, was 391; the number of seeds procured was not accurately noted, but the number of plants growing at blooming time was about 2000. Of course, under ordinary treatment, plants from seeds sown in 1877 should flower in 1878. I was much vexed to find that none did. In the following autumn, therefore, I changed my gardener, and was fortunate enough to secure the services of a veteran at the work, whose zeal was at least equal to my own, and who has been a successful raiser of florists' flowers for many years—Mr. H. Eckford.

Under Mr. Eckford's treatment the plants at once revived, and we began to reap the results. Unfortunately, many of the plants by this time had become "leggy," or drawn, so that one of the characters which I should have liked to investigate more fully, the influence of the parent on the "habit," has been noted only in a small number of the experiments—in eighty-five cases only out of 550.

In the hybridisation the plants to be operated on were deprived of their anthers, either so soon as, or in most cases before, the pollen was developed, and in every case before the stigma of the pistil had opened and was ready to receive the pollen. In the Pelargonium it is an invariable rule, so far as my observation goes, that the floret is never impregnated by pollen of the same floret, and hence arises a natural disposition of self-set flowers to give variation in the offspring, or, in florists' terms, "not to come true from seed." The formation of the pistil in the Pelargonium is such that its fitness for reception of pollen can be readily ascertained. The stigma is formed of five segments, which at first lie parallel, like the closed ribs of an umbrella, and in an upright position, and as the plant grows these spread backwards or open laterally, forming a kind of cross. The inner side of the expanded segments is set with minute hairs, which, when the divisions of the pistil are erect, lie close against its inner side, and, as the segments open or curve back, stand out at right angles and form a kind of brush. The Pelargonium is thus dependent on exterior sources for fertilisation, which is not the case with all kinds of flowers. I think, therefore, the value of the present observations is increased by this property, though, of course, there is always a possibility of miscarriage in some details in every long investigation.

When the hybridisation is completed it is necessary, of course, to preserve a record of the operation, if only to secure variations in the act; and without a means of marking the details none of the results which I am about to describe could have been obtained. When the number of subjects to be operated on is as large as I used, a system of registering the act became absolutely necessary. I devised, therefore, the following plan for marking the floret operated on, so as to show me, when the seeds were fit to be gathered, what pollen had been employed for fertilisation. I describe my system, and which has been arrived at after several variations and developments during many years, for the benefit of those who may like to use it, as well as to show how far my experiments may be

relied upon as giving correct results as to the parentage of my seedlings.

Of course, in my catalogue every variety which I grew had its number, and by which any plant could be at once identified. What was required was something to mark the floret operated upon, and which would denote the number of the pollen plant used. The originality of my plan consists in being able to represent any number from 1 to 300 or 400 by means of a material which could be readily tied around the pedicel of the floret. What I use is variously-coloured worsted and silk thread. In my scheme, the worsted (Berlin wool) represents the units, and sewing or purse-silk the tens, and the various colours of the spectrum with black and white give the several numerals, thus:—

Black.	White.	Violet.	Indigo.	Blue.	Green.	Yellow.
1	2	3	4	5	6	7
		Orange.	Red.			
		8	9			

Then, by using grey to represent 100, and brown 200, drab 300, I had as high a number as I ever required.

As an example of the mode of using the above plan, suppose that I desired to cross Jean Sisley with Sir Charles Napier, using the pollen of the former on to the stigma of the latter, on taking pollen from Jean Sisley, the number of which was thirty-eight in my catalogue, I should take a piece of violet silk to denote thirty, and a piece of orange wool denoting eight, or together thirty-eight, and tie them around the pedicel of the pip operated upon; this would, of course, remain until the seed was ripe. On gathering the seed the mother plant would be witness for itself, and the male parent would be known by the colours used.

Each seed in my experiments was at once labelled on gathering and placed in a small pill-box, and its numbers marked on the lid, thus—73 × 38, the former being that of Sir Charles Napier in that year's catalogue. On sowing, each seed was sown singly in a thumb-pot, and a small glass label, written with a scratch diamond, inserted at the side. These labels are cheap, indelible, and indestructible, and I have found them very suitable for my purpose.

Before proceeding I may here say that for the purpose of taking the pollen I prefer the use of velvet to the camel's-hair brush, and always used the former. The velvet may be tied around the top of a stick, when it represents somewhat the bumble-bee. I prefer also black velvet, with which it is easy to see what pollen one has collected, and it is very easy, after each operation, to cleanse the velvet by passing it three or four times across the coat-sleeve. I consider that the camel's-hair brush cannot be so readily cleaned, nor can it be ascertained whether it is cleansed, so that it would have been difficult to feel certain that only one kind of pollen had been used in any single operation. In many instances it is better perhaps to use no instrument, but to apply the pistil itself, but this could not always be achieved, and it involves the destruction of the bloom and more time, and with the velvet no chance of admixture of pollen need happen.

The seeds were sown in the autumn of the same year, 1877, and, as already said, they did not bloom, except in a very few instances, till the summer of 1879.

For carrying on the present enquiry each seedling on blooming, so soon as it arrived at its best, was placed between a plant of its male and female parent, and a separate note of the apparent predominating influence of its male or female parent in each case arranged under the following divisions:—A, in habit; B, in the foliage; C, in the colour; D, in form of pip; E, in the truss; F, in the time of flowering. During the latter part of the investigation the last-named enquiry was abandoned; and as regards the habit, as already stated, any satisfactory conclusion could be drawn only in eighty-five cases, while results were obtainable on most of the other points in 550 examinations.

In noting the influence that seemed to predominate in each plant the following letters were employed:—M, when the male influence was most apparent; F, when the female influence was more marked; I, when the result was intermediate between the male and female; and N, when no resemblance was to be detected. A table formed out of these, as below, was employed to arrive at the conclusions:—

Numbered Seedling.	Parentage	Habit	Foliage.	Colour.	Form of Pip	Truss.
18	20 × 2	N	F	I	M	M
19	63 × 17	—	M	F	I	F
20	51 × 61	M	M	M	F	F

The above, which is an extract from a page in the note-book formed as described, identifies the seedling by a number in the first column, gives next its male and female parent, and then, by the symbols used, denotes whether the male or female influence predominated in the particulars of each column, or whether the effect was intermediate or *nil*. It will be seen that often the predominating influence was different in the different parts of the same seedling. This, No. 18, resembled its female parent in the foliage, but the male in form of pip, while the colour of the corolla was intermediate, and this variability of influence was evident in a great majority of instances.

To arrive at any general conclusion, the table thus formed, when 550 seedlings had been examined, was analysed, and the following general results were obtained—that is, the various columns have been analysed, and the calculations reduced to the same ratio, or to a ratio per centum :—

Influences Prevailing, per Cent.

	In habit.	Foliage.	Colour.	Pip.	Truss.	Generally.
Male	18.82	25.22	21.35	25.65	14.45	21.10
Female	47.05	40.22	23.95	33.91	25.17	34.06
Intermediate ..	24.70	27.72	40.52	31.08	50.58	34.92
None	9.17	6.81	14.16	9.34	9.79	9.85

There are many interesting facts to be drawn from the above table, to some of which I will direct attention.

1. That some effect from the artificial hybridisation was apparent in 90 per cent. of the whole.

2. It will be seen, on referring to the last column, where the general results appear, that the influence of the female was greater than that of the male parent in the ratio of about three to two.

3. And that a joint influence of both parents was shown in rather more than one-third of the whole.

4. The above being the general influence, it will be seen that the influence of either parent varied considerably in the particular properties of the plants, thus :—

5. As regards habit, the female influence was the greater, as it was also in the foliage.

6. As regards the colour, for which the hybridiser often aims, it will be seen that the male and female influences are much more equally poised, and their joint influence in modifying the result was shown in 40½ per cent.

7. As regards the pip, which includes that property which the enthusiastic florist so much seeks after in England—"form," my table goes to show that the influence of male and female are much more equal than is usually supposed, the female influence really preponderating only in the ratio of about six to five. In making this estimate the 31 per cent. of joint influence must not be omitted.

8. The eighth fact which the table shows, and which appears to be of a very encouraging kind to all hybridists, is that whether we look to the general effect, or to particular effects, the highest percentages are on the line of intermediate influence of the parents. An intermediate result in Zonals may be expected, at least in colour and size of truss.

Lastly, as regards this intermediate influence of the parents, I observed some curious and unexpected results. I was prepared to believe that very little change of breed or blood might produce great change of colour. There can be but very slight vital difference in the different portions of the same petal in flaked and variegated flowers, and yet the difference of colour is often great and quite opposite. In many of my hybrids, however, I found that the crossing of two shades of colour produced just such an intermediate colour as would be derived by mixing the colours on a palette, as though the colour was produced by a mechanical admixture of the sap rather than a vital change. Thus a scarlet and a white produced a seedling of light scarlet, like the result of mixing vermilion and white lead. A pink and a scarlet give a scarlet with a pink flush, a shade now quite familiar to florists. *W. H. O. Sankey, Sandywell Park, in the "Florist and Pomologist."*

A FINE CEDAR OF LEBANON.—A gigantic specimen of this Cedar occupies a good position in the gardens of W. Jones Lloyd, Esq., Langleybury, Herts, its huge and massive branches spreading far and wide. The tree in question measures, at 4 feet from the ground, 22 feet 4 inches in girth; the spreading branches extend over a space of 105 feet, and its height is 107 feet. The great weight of its branches after heavy rains or snowstorms is such as to have caused each limb to be tied by iron rods to the main stem, to prevent their splitting off, whereby upwards of 1½ ton of iron has been used to secure it, forming quite a network among the branches. Fine specimens of this size, of such clean growth, are not an everyday occurrence.

NOTES FROM THE LEA BRIDGE NURSERIES.

THE MACARTNEY ROSE.—This truly old species, *Rosa bracteata*, is still flowering in the Lea Bridge Nurseries, against the front of the Camellia-house. The plant has been in its present situation for upwards of forty years, has thrice narrowly escaped being killed outright by severe winters, and on one or two occasions has been cut to the ground by the frost's severity, and notwithstanding all this it is still growing vigorously, and producing its pearly-white flowers in profusion.

HYDRANGEA PANICULATA GRANDIFLORA.—Several hundreds of this handsome deciduous flowering shrub are now producing a fine display here with their extraordinary large panicles of bloom. For an autumn flowering plant this is a great acquisition and a boon to many; also a most useful and desirable plant when forced for conservatory or other decorative purposes. Several beds of this in various stages of development are to be seen at present in these nurseries.

PERSIAN CYCLAMEN.—Many thousands of these are grown annually by Mr. Fraser, and he has at the present time an exceedingly fine lot, which will present a very gay appearance in a few weeks. The plants for the most part are grown in 48 and 32-sized pots. One house of these, 100 feet long and 12 feet wide is filled with them, as are also several frames, and these keep up a successional flowering period for several months.

TYDÆA ROBERT LE DIABLE.—At this season of the year for a profusion of blooms few plants can equal and none surpass this most beautiful of all Gesneraceous plants. It is of easy cultivation and sure flowering, so much so that spring-struck cuttings when grown quickly may be had in flower during late summer and autumn of the same year. The flowers, which are of a rich crimson velvet densely spotted with black, spring from the axils of the leaves, and form one dense pyramid of its lovely flowers. It is also a most showy plant by gaslight, and therefore most valuable as a table plant. After the plants have ceased flowering they should be placed on a shelf in the greenhouse ranging in temperature from 45° to 50°, watering them according to the luxuriance of the plants, never allowing them to become too dry. A fine batch of these is now flowering here, and presents a very gay appearance, also a seedling, as yet unnamed, with violet-maroon flowers and lighter throat.

IXORA FORMOSA.—This is now flowering freely in one of the stoves in quantity. This, with several other varieties, including *Ixora amabilis* and *I. Williamsii*, are, for the most part, grown in 5-inch pots, the plants being short-jointed and bushy, with several fine trusses of bloom on each, and free from the many pests which so frequently attack this genus. Such a goodly batch of young plants, with such a profusion of blooms, is seldom met with. The variety in question is pale salmon-red in colour; the trusses, which are most compact, are nearly globular.

GREVILLEA ROBUSTA AND BOUVARDIAS.—A house of these, too, are doing well, the one-half being devoted to the former, with its deeply laciniated foliage, the other half to *Bouvardias* in variety, forming a good contrast.

LAPAGERIA ROSEA.—Trained to the roof a house some 50 feet long is this good old greenhouse climber flowering admirably, the full extent of the one side of the house being literally covered with blooms, presenting a most striking appearance. The plant in question is flowering in a house with *Boronia megastigma*, Himalayan *Rhododendrons*, and other plants, and has now upon it upwards of 400 fully-expanded blooms. A fine plant of the white variety in another house has also a quantity of buds just beginning to expand.

BIGNONIA GRANDIFLORA.—One of the most beautiful of this genus, with large scarlet flowers in trusses, and flowering freely. A nice batch in 5-inch pots in a cool house, associated with *Solanums*, *Azaleas*, *Lapageria rosea*, and other plants are looking quite gay.

RUBRICKIA NEUMANNI.—As a hardy perennial decorative border plant for lines or masses at this season of the year, none can surpass this either for colour of flower, or for its adaptabilities in a cut state. It grows about 2 feet high, is of erect habit, requires no staking or tying; and bears bright golden orange-yellow flowers with a black disk. A good representative of this is now flowering in the herbaceous ground. Imagine a few beds of these one mass of bloom in some of our London parks just now; what a relief it would be to the eye, after the formal appearance of the present style of bedding. J.

DISEASE OF TURNIPS.

OIDIUM BALSAMII, Mont.

The ravages of this fungus have recently taken alarming proportions in Dorsetshire: it seems, therefore, desirable that special attention should be directed to it.

I will briefly give a history of the obnoxious pest as far as my knowledge extends (adverting at the same time to the past and present nature of its attacks upon wild and cultivated plants), and then describe the appearance of the fungus as seen under the microscope.

Oidium Balsamii is a mildew, or mould, closely allied to the mildew of the Vine and the Peach, but although it is just now afflicting Turnips to an unprecedented extent it is not the "Turnip mould" proper. The latter parasite is a close ally of the fungus of the Potato disease; it is named *Peronospora parasitica*, and as far as my experience goes it is this year unusually common. The two fungi are totally different things, although to the naked eye they are not to be distinguished from each other.

Botanists have had *Oidium Balsamii* in view for more than a quarter of a century. It was first noticed growing on a Mullein—*Verbascum montanum*—in Milan, by Balsamo; this gentleman sent specimens to Dr. Montagne under the name of *Oidium Tuckeri*, he erroneously thinking that it was the same with the fungus of the Vine. In 1853 the Rev. M. J. Berkeley recorded the occurrence of the pest on another Mullein—*Verbascum nigrum*—in this country.

The first important notice of this fungus is from the pen of the Rev. M. J. Berkeley, and is to be found in the *Gardeners' Chronicle* for 1854, p. 236. Here we find that the pest has appeared, not on the *Scrophulariaceæ* as before, but upon one of the *Rosacææ* in the cultivated Strawberry. Mr. Berkeley describes the entire destruction of a crop of Cuthill's Black Prince Strawberry, the little white mildew attacking first the leaves, and then infesting with increased vigour the flowers and footstalks, and ultimately inducing the wretched appearance so common with the mildew of the Vine. It is strange in the above instance that the *Oidium* confined itself to the Black Prince, as plants of Keens' Seedling on the same shelf were perfectly free from the taint. Mr. Berkeley then describes the form and size of the spores, identifying the plant with the *Oidium* of the Mullein. He mentions how it may be destroyed with lime and sulphur, but a remedy of this nature cannot be applied over vast areas, as in the case of the Turnip fields now under consideration.

About a fortnight ago Professor James Buckman, of Bradford Abbas, Sherborne, Dorsetshire, sent me some mildewed Turnip leaves, with a request that I should examine them. I paid little attention to them at first, thinking they were probably afflicted with the old Turnip mildew (*Peronospora parasitica*), so common just now. But it soon struck me that I had never seen or heard of such a profuse and overwhelming growth of this parasite, neither had I ever seen it densely covering both sides of the leaves as in the present case. A glance through the microscope soon showed the mildew to be an *Oidium* and not a *Peronospora*.

Oidium Balsamii is mentioned as a name, but not described in detail either in Mr. Berkeley's *Outlines of Fungology* or in Dr. Cooke's *Handbook*, and it does not occur at all in the recently published *Mycologia Scotica*, by the Rev. John Stevenson—certain varieties of *Oidium*, and this amongst them, being justly considered as mere states of other fungi. Several species of *Oidium* are known to ultimately take another form, but no such condition is as yet known in what may now be appropriately termed the "Turnip *Oidium*."

Mr. Berkeley, as well as Dr. Cooke—one judging from a drawing, and the other from a specimen—agreed that the plant was probably *Oidium Balsamii*, though neither gentleman was able to compare the Turnip *Oidium* with authentic specimens. It, however, agrees exactly with Mr. Berkeley's original description of the Strawberry parasite, in the *Gardeners' Chronicle* before cited.

Being unfamiliar with the pest myself, and thinking it strange that it should fly from the Mullein to the Strawberry, and from the Strawberry to the Turnip—three plants belonging to different natural orders—I enquired the experience of Mr.

Berkeley, Dr. Cooke, and several other Woolhopeans who have paid especial attention to fungi. Mr. Berkeley, although he could not speak for certain, as he had no specimens for comparison, said he thought the plant might safely be considered *O. Balsamii*, and that he had found it very common on Turnips. Dr. Cooke considered the parasite to look like *O. Balsamii*, but he had kept no specimens: he had seen it on all the Mulleins and other Scrophulariaceae, and he believed some years ago as a pest on Turnips. Mr. C. E. Broome had only found it on Mullein, and then not often, probably from not having looked for it. The Rev. J. E. Vize had seen it on Mullein, but never on the Turnip or any ally of the Turnip. Mr. C. B. Plowright had seen the *Oidium* on Mullein, and an *Oidium* frequent on Turnips, but did not at the time suspect them of being the same. Mr. William Phillips had never met with the *Oidium* either on Mullein or other plants, probably from not having looked specially for it. Other evidence was of the same indefinite character.

A point of great interest is of course the present extent and effect of the fungus on Swedish Turnips. Professor Buckman writes that whole fields are attacked—over hundreds of acres. The Swedes, it appears, get stopped in their growth by continued dry weather, and then the mildew appears. Many farmers object to early sowing of Swedes as, they say, they are sure to get mildewed. The mildew first attacks the outer leaves of the Turnip plants that have prematurely ripened from want of moisture, and this year the exceeding dry month of August, now followed by a humid September, has accelerated the growth of the *Oidium* to an unwonted extent: so much so, that a sportsman traversing a field of these roots soon gets his trousers and boots white with the myriads of shed spores. The prevalence of mildew always argues a comparatively short crop of roots. Professor Buckman says that there is reason to believe that this onslaught, taken in connection with a wide attack of *Puccinia graminis* on grass, is doing mischief to sheep this year.

To the naked eye the foliage of the Swedes is white on both sides with the mildew: under a low power of the microscope this white coating is seen to be a dense felted mass of spider-web-like threads, dotted all over with uncountable thousands of oblong spores.

But the higher powers of the microscope are required to see the exact nature of the fungus and the leaf it grows upon. As the parasite has not hitherto been illustrated, it is here engraved for the first time in the *Gardeners' Chronicle*, where the fungus was originally described. Let any reader of this journal get an infected leaf, and cut a piece one-eighth of an inch square out of the leaf-blade. This piece is far too large for a microscopist; so, with a lancet sharper, finer, and with a better temper than any razor, this small square piece of Turnip leaf must be cleanly cut into twenty-four long thin slips, or rods; these rods, in their turn, must be again cut across each into twenty-four minute cubes, or 576 pieces, out of the eighth-of-an-inch square. If one of these very minute atoms be now dexterously taken up with the tip of an exceedingly small camel-hair brush, placed under the microscope and examined with a good light, all the points of structure of leaf and fungus may be clearly seen, as in fig. 73. The part from A to B shows the structure of the blade of a Turnip leaf, as seen in transverse section; A is the upper surface, B the lower. At C, C, C, may be seen the mouths, stomata, or organs of transpiration of the leaf; at D the cells of which the leaf is built up with the intercellular air passages where the cells are more loosely compacted together. At E is seen (cut across) one of the bundles of spiral fibres (answering to one of the most minute veinlets) which go to strengthen the leaf. At the top and bottom of the leaf is a cushion of jointed spawn or mycelium, closely interwoven; and from these jointed threads arise numerous jointed club-like branches. Each branch is terminated by an elongated barrel-shaped spore, densely filled with protoplasm and furnished with a cell-wall. In the Bradford Abbas specimens these spores measure .00125 of an inch in length, and this agrees well with the size originally given by Mr. Berkeley in the *Gardeners' Chronicle*, viz., "from .0012" to .0013". When Mr. Berkeley published this plant in the *Annals of Natural History*, he changed the dimensions to .0015", and this is repeated in Dr. Cooke's *Handbook*. A glance at the illustration will show the number of spores that are visible on the

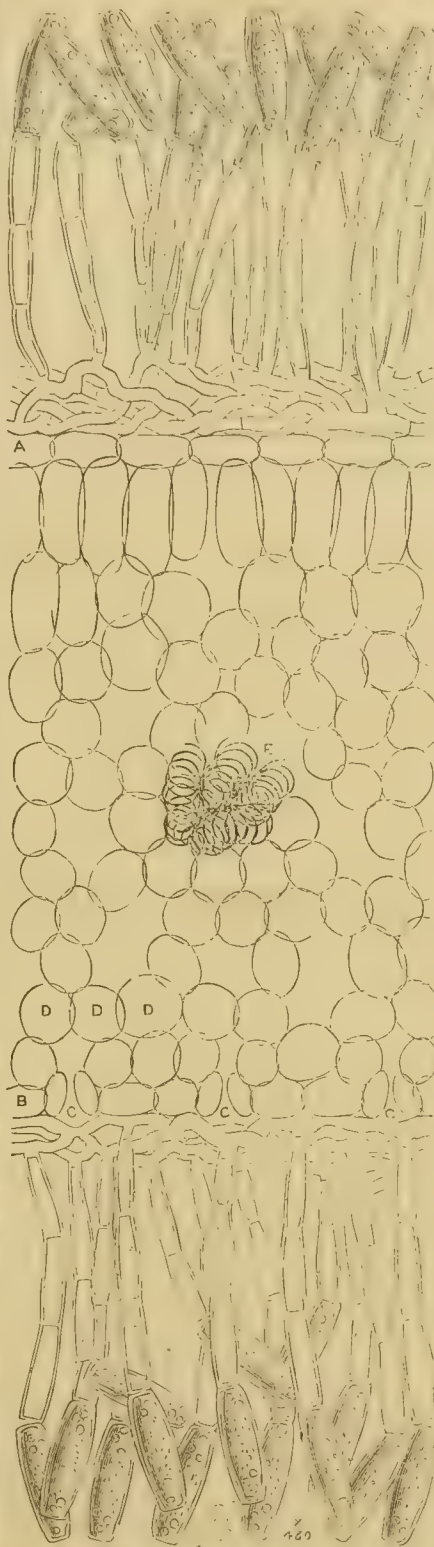


FIG. 73.—TURNIP DISEASE: *OIDIUM BALSAMII*. (Magnified 480 diam.)

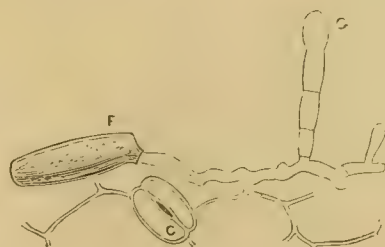


FIG. 74.—TURNIP DISEASE: SPORE OF *OIDIUM BALSAMII* GERMINATING. (Enlarged 480 diam.)

five hundred and seventy-sixth part of a square inch as seen edgewise; eight or ten times as many would be really present on the cubical piece of leaf-blade here illustrated. How many spores, then, must there be on one leaf, on all the plants of one field, or dispersed over the hundreds of acres near Sherborne? How, too, can the plants grow with such a cushion of spawn enveloping the foliage all over?

The spores germinate very readily; they have only to be dusted on to an uninfected leaf or on to a piece of clean glass, and kept under a bell-glass in moist air. An opening speedily appears at the edge of one of the ends of the barrel-like spores, and through this opening a thread of spawn emerges, which rapidly reproduces the parent *Oidium*. A germinating spore is shown in fig. 74, F, a new immature club is seen at G. The spore is on a piece of Turnip-leaf, one of the stomata, or mouths, being visible at C.

The above is only a short part of the life history of *Oidium Balsamii*: whence it comes, where it goes, what other form it takes, on what plant it may then live, and how it hibernates, no one at present knows. *Worthington G. Smith.*

NOTES FROM THE VICTORIA NURSERIES.

NEPENTHES HOOKERIANA.—Suspended in baskets to the roof of one of the houses in this nursery, this *Nepenthes* is doing well with some remarkably fine pitchers, some of the largest of these being capable of holding nearly a pint of water.

DISA GRANDIFLORA, THE "FLOWER OF THE GODS."—A very fine variety of this was at the time of my visit just passing out of flower, having had some very fine spikes. The actual hardiness of this plant is little known, it having, under my experience, withstood 10° of frost without the slightest injury to the tubers. Surely this fact should recommend it to all lovers of hardy and half-hardy Orchids.

ANÆCTOCHILUS.—The beauties of the first introductions of this genus are too well known to most of our readers to require further comment, but of the modern introductions, which I do not hesitate to say are a decided improvement, too much cannot be said. In the above nursery these are remarkably fine, comprising every shade of velvet from crimson and bronze to a rich silken green. Two most noticeable among a large and well-grown batch are *A. Reinwardtii* and *A. zebрина*.

ADIANTUM FARLEYENSE ALCICORNE.—A most singular and interesting sport from *A. farleyense*, of less robust habit than the typical form. The pinnules are irregularly deeply divided and cut, many having the appearance of stag's horns, which probably suggested the varietal name.

LÆLIA ELEGANS.—Three exquisitely fine forms of *Lælia elegans* have been flowering freely in these nurseries for some time past, and are most distinctly marked, their names being *L. elegans Turneri*, *L. elegans Bluntii*, and *L. elegans prasiata* respectively.

GLEICHENIA DICARPA LONGIPINNATA.—A most beautiful variety of this handsome Fern, recently introduced by Mr. Williams from Australia; in general habit and appearance it resembles *G. dicarpa*, but is of more free and rapid growth, hence it will soon become a universal favourite among exhibitors, for which purpose it is most suitably adapted.

DENDROBIUM SUPERBIENS.—Too much cannot be said of this charming Dendrobe, the flowers of which are purple-mauve coloured, and borne in profusion on crescent-shaped stems; its most valuable property is, perhaps, the lasting qualities of the blooms, which continue in flower for ten or twelve weeks in perfection. At the time of my visit (August 30) it had been in flower upwards of six weeks, and showed no tendency to fade. For cut purposes this will prove invaluable.

CERATOPTERIS THALICTROIDES.—A singularly attractive greenhouse and stove aquatic, which at first sight reminds one of the forms of Meadow Rue (*Thalictrum*); it is of erect habit and free growth, and is a most interesting viviparous Fern.

CROTON STEWARTII.—Without doubt one of the most distinct of the new broad-leaved kinds; the leaves are obovate, slightly rounded at the base, short stalked, dark olive-green, irregularly banded and margined with rich orange, the midrib and petioles being bright magenta, producing a striking contrast to the carmine marking on the remaining portions of the leaf. It is of dwarf, bushy habit, and is a native of New Guinea,

Some good, well-coloured specimens may be seen in these nurseries.

ADIANTUM WILLIAMSII, THE "GOLDEN MAIDENHAIR."—A most distinct and interesting Fern from Peru, found at an elevation of 12,000 feet, the rachis and young fronds being densely clothed with a golden farina, which gives to the whole a very novel appearance.

DIPLADENIA PROFUSA.—A very free-blooming variety, possessing in habit and general appearance all the qualities of *D. Brearleyana*, but this is a more lasting bloomer. The flowers average from 4 to 5 inches in diameter, are of a rich carmine colour and good substance, and a good constitution.

IXORA PILGRIMI.—As regards quality and compactness of truss this is, without doubt, a fine addition to this genus; the trusses are large and well formed, with good robust habit, and distinct. It will be welcomed by all true lovers of stove flowering shrubs. A fine specimen of this, some 3 feet by 2 feet, has been very fine in the above nurseries.

UPLEATHAM HALL.

(Concluded from p. 371.)

LEAVING the long carpet-border the walled garden is entered by a pair of handsome iron gates. In this garden are the principal plant and fruit structures, the first of which consists of a long range of wide, well-built, commodious houses facing the south, with a deep hip-roof at the back. Commencing at the eastern end the first is used for fruiting Pines: these are stout short-leaved plants, calculated to produce good fruit, such as Mr. Letts usually grows; they occupy a bed in the centre of the house. The space over a wide back path is utilised for Melons cultivated in pots. A succession is kept up all through the summer by sowing a few seeds at short intervals. Read's Scarlet-flesh is the variety mostly used: the first are ripe at the beginning of May. At the ends of this house, as also on the front stage, are grown some beautiful specimens of *Ixoras*, *Dipladenias*, and *Crotons*, the latter consisting of *C. Johannis*, *C. Weismanni*, and *C. majesticus*, all in splendid condition both as regards the colour and dense character of their foliage. The *Ixoras* comprise the best seedling varieties, such as *I. Williamsii* and the species *coccinea*, which was here both well grown and finely flowered. The next house, some 50 feet in length, is a vinery, planted by Mr. Letts three years ago; the roots are yet all inside. The varieties are Black Hamburgh, Foster's Seedling, and the useful Buckland Sweetwater; at the time I saw them—the beginning of July—the crop, a good one, occupying about half the length of the rafters, was just ripe. These Vines are intended for forcing when fully established, to come in by the end of April, and with this object they have not been allowed to carry more fruit than they can finish without distressing them.

The adjoining house, similar in size, and also a vinery, has been forced to come in as the second this season: the crop was mostly cleared out, but what remained was of excellent quality. From these Vines were cut the Grapes with which Mr. Letts took 1st for four bunches at the Newcastle show, and also the two varieties of Grapes in his 1st prize collection of four dishes of fruit. The sorts are Foster's Seedling, Buckland Sweetwater, and Black Hamburgh, all well finished, the Hamburghs particularly so, being as black as it was possible to have them, heavily bloomed, and free from the least spot or defect. These Vines have been planted thirty years; the whole of their roots are in an outside border, and, like all the others here, of late years have not had anything in the shape of fermenting matter on the border, but simply protection early in the autumn. The Vines in this house have very much improved in strength and good condition since I last saw them two years ago.

Next is a large span-roofed house some 3 feet higher than the others, running right and left from it. In this are a number of specimen flowering and fine leaved plants, including *Azaleas*, *Statice*, *Cordylines*, *Yuccas*, and others of a like character, amongst which was one of the most perfect examples of *Dasyliro* I have ever met with. In addition to these this house is used for growing quantities of plants for conservatory decoration and for the production of cut flowers, for which there is a continuous demand. Along with other things I noticed a number of *Tuberose*s unusually well managed, with stout and much shorter

flower-stems than this sweet-scented favourite ordinarily produces, the fault, as it is generally met with, being that they get too tall to look well, which correspondingly reduces the value of the plants for decorative purposes. Several *Fuchsias* are planted out on the front of the house, and are trained up a limited portion of the roof. In no other way are these plants seen to the same advantage as when grown in this manner, in addition to the much greater quantity of flowers they give so grown than when their roots are confined to pots.

The remainder of this range corresponds in the size and number of the houses to those already described at the opposite end of the central house; the adjoining one is a vinery filled with Black Hamburgh and Lady Downe's just colouring, a very good crop, handsome bunches and good berries. The old Vines in this house have their roots all outside; the border has not been renewed or interfered with in any way, but they have much improved by the inside treatment given them. After this comes another vinery, forced to come in first; the crop had all been cut some time. They are old Vines, consisting of Black Hamburgh, Muscat of Alexandria, and Frontignans. The last of the range is principally devoted to succession Pines. A couple of very large *Stephanotis* grown in pots occupy the space under the hip-lights at the back; there is also another trained over the path along the front of the house. These plants give a continuous supply of flowers for cutting from spring to autumn. Well known and universally admired as is the bloom of this easily grown subject, unsurpassed as a white sweet-scented flower, it is often treated in a way that does not admit of its blooming nearly so freely or with such certainty as desirable, from the fact of its being grown in houses kept over-moist, with an insufficiency of air and not enough light. The somewhat drier atmosphere of a Pine-house, with no shade and a position fully under the influence of light such as when run immediately under the glass, is just what it likes, and when so treated *Stephanotis* can scarcely fail to bloom.

The range just described stands separated from the wall at the northern side of the garden by a broad walk, at the opposite side of which, against the wall, are two Peach-houses, each about 55 feet long, lean-to's, with a high steep roof, the roots occupying a border both inside and out; the earliest contains a couple of Peaches—Bellegarde, and two Elruge Nectarines. These have borne some very fine, highly coloured fruit this season; but the arches in the front wall for letting the roots pass into the outside border are too deep; this defect is about to be remedied, and the border renewed. The house is forced so as to come in at the beginning of May. In the second house are one Royal George and one *Violette Hâtive* Peach, with a Hardwicke Nectarine; young, vigorous trees planted four years ago, and just filling the house, they were bearing a nice crop coming on without any forcing. Outside the enclosed garden are two new span-roofed houses, like the others very substantially built; one of these is used for Ferns and other medium temperature plants. In it are some large splendidly grown *Gleichenias*, amongst them being *G. Mendelii*, 7 feet in diameter, one of the most perfect specimens I have met with; *G. rupestris*, and two examples of *G. Spelunca*, only a little inferior in size, and equally well done; the scarce and handsome *Sadleria cyatheoides*, a fine specimen; *Davallia elegans*, and others. Along with them were two large thriving examples of *Anthurium Scherzerianum*, which does much better grown in an intermediate temperature, as here, than when it is subjected to hotter treatment. In this house also during the summer are kept about a dozen very large specimens of *Eucharis amazonica*. The shade this plant gets here with the Ferns suits it better in summer than where it receives more sun, which frequently destroys the leaves when they are too much exposed to its influence.

The adjoining house is principally occupied by hard-wooded plants, amongst which are some large healthy *Heaths*, including *Erica ferruginea superba*, *Cavendishiana*, *depressa*, *multiflora*, *Shannoni*, *ampullacea*, *Lindleyana*, *venosa*, *Fairrieana*, and others, varying from 3 to 4 feet in diameter; these, with *Aphelexis*, *Hedaromas*, *Dracophyllum gracile*, *Epacris*, *Pimeleas*, and similar hard-wooded species, both specimen size, and in a smaller state form a nice collection of these desirable plants, now undeservedly neglected. One of the most essential things in the working of a garden, especially where there is a considerable amount

of glass, is a sufficiency of water without the great expenditure of labour required when it has to be carried from a distance, or pumped out of wells or tanks: at Upleatham there is a never-failing supply from a pond at a higher level, which gives the requisite pressure, which so much expedites its use for many purposes.

Adjoining the Hall on the eastern or garden front, immediately overlooking the flower-garden, is a lofty conservatory, some 60 feet by 20, built of iron with a ridge-and-furrow roof; this, in addition to the usual smaller decorative plants, flowering and ornamental leaved, contains a number of very fine specimens, including *Encephalartos Vroomii*, about 9 feet in diameter, of a much denser habit of growth than usual, and altogether a beautiful plant; *Encephalartos Altensteinii*, 10 feet high; *Dion edule*, a 4 feet stem, with a splendid head, 7 feet in diameter: these plants are grown cooler than we ordinarily see them, which very much improves their appearance, causing a less straggling growth. *Cycas revoluta* and *C. circinalis*, both large handsome specimens; *Dicksonia antarctica*, *Cyathea medullaris* and *C. dealbata*, having tall straight stems, with fine heads; several very large Palms, &c. All the above plants are grown in pots or tubs, which admits of their being moved about, and a difference made in the arrangement, which is not possible where they are planted out. The front and ends of the house, all glass down to the floor level, are occupied by Tea Roses on a light wire trellis, where they thrive and bloom well, giving a long succession of flowers in the early part of the year.

Herbaceous plants of the most handsome and useful kinds, such as produce flowers best adapted for cutting, are not neglected; there is a considerable space in the pleasure ground devoted to them, where they thrive well, and one of the long walks in the kitchen garden in front of the principal range of houses has a border on each side filled with them. Carnations, Pinks, Aquilegias, and others of a like description, are grown in quantity.

The kitchen garden is surrounded by excellent walls 16 feet high, but most of the old trees had got worn out and bore little fruit. Mr. Letts has removed many of these, and replaced them with young ones, as likewise a quantity of those that occupied positions bordering the walks. Most of the free-bearing varieties of Apples, Pears, and Plums, do well here, but this season, as at many other places, especially in the north of the kingdom, there is a thin crop on all but the hardiest sorts. Strawberries and bush fruits also bear freely. Kitchen gardening is well done; the effects of deep trenching, with additions of fresh soil, are apparent in the uniformly fine crops coming on, which with the order and general keeping present, make the vegetable department equally pleasing to look upon with the rest of this well managed garden.

T. B.

A HOLIDAY IN PEMBROKE-SHIRE.

(Concluded from p. 360.)

ON Wednesday, August 25, thirty members of the Cambrian Archaeological Association drove to Castle-martin Church; this is one of Mr. E. A. Freeman's "double-bodied" Pembroke examples, with a fine Norman font. A former incumbent of this place lived to be ninety years of age, and his widow (who died in 1804) 104 years. A divergence was here made for Flimston Chapel, a half-ruinous and half-modern "chapel of ease." The piscina, sedilia, &c., are still intact, but the structure is now a double-bodied barn of two storeys, or rather of a loft and basement; the loft is used as a granary, the basement as a cart-shed and place for the deposition of all sorts of farm rubbish, lime, and odds-and-ends. This desecration is not at all uncommon, for nothing is more frequent than to see (after restoration) old fonts used as hog-troughs in Wales. The roadsides all over this district are a garden of Composite plants. *Eupatorium cannabinum* and *Inula dysenterica* are extremely common. *Tanacetum vulgare* is also common, with different species of *Senecio* and *Doronicum*. *Malva moschata* is frequent, and *Scolopendrium vulgare* seems to grow in every possible position and with the greatest luxuriance. *Lunaria* and *Dianthus* (as escapes from gardens) are by no means rare. The study of archaeology proper ceased for a time at Flimston, the drags left the roads, and bumped over the stony fields to

wards the edges of the cliffs. The magnificent "Stack-rocks" were visited on the south-west coast, and then the wonderful aperture through the rocks down to the sea-level known as "the Cauldron." Next an ancient British camp with double ramparts of earth on the cliff edge, and "Bull Slaughter Cave" were visited. Near here is a place termed the "Sunken Forest;" it is an immense, steep, and deep cup-shaped depression in the solid rock. Growing at the bottom and up the sides is a dense plantation of Ash trees, but all the tops of the trees are shaved off close to the level of the grass-covered rocks by the blasts of wind which sweep over the place from the sea. The sides of this huge cup are greasy clay, more or less clothed with Ferns. Several members exchanged a perpendicular for a horizontal position on these slippery slopes. A most extraordinary rude natural funnel in the rocks is near here, named "Bosherton Meer;" the mouth is like the great mouth of a natural well, and the aperture goes down 200 feet, and opens out on a level with the sea. Rough south-westers make such a terrible roaring sound in this natural funnel during the winter, that the din may be plainly heard for 3 miles. The sea, too, whistles and forces itself into the funnel, and flies some 30 or 40 feet into the air above the level of the cliff tops. The dangerous chasm, known as the "Huntsman's Leap," was then reached; this is a narrow and deep fissure in the cliffs, spreading inland, with the sea at the bottom, and the two edges of the fissure some 30 or 40 feet apart at the widest place. A legend says that a horseman in full career was once carried by his steed over this dangerous chasm (hence the name), and that the rider, safe though he was, died directly after the jump from shock at the danger he had escaped.

The chief point of interest near here is St. Govan's Head, cave, and chapel. The precipitous cliffs are here about 160 feet above the sea level. Here and there *Centaurea solstitialis* may be seen. About seventy rude steps aid the descent to the rude little thirteenth-century chapel or cell, which is built on the dangerous cliff side. The cell is ruinous, dilapidated, and modern looking; it is damp and dull, and reminds one of acute rheumatics. St. Govan, the "holy anchorite" who once lived there, is identified with Sir Gawaine of King Arthur's Round Table. There is a "holy well" on the spot, and patients "even of the upper classes" (so says Murray) sometimes repair there to drink the not very clear water. There is also a mass of miraculous mud in an angle of the cliff derived from the decomposition of the rock, and Murchison says that lame and blind pilgrims are "anointed with a poultice formed of the moist clay, and left there several hours to bask in the summer sun." A melancholy event occurred at this sacred spot during the time of our visit, for one of our party, whilst most lucidly and eloquently describing the architectural peculiarities of the spot, suddenly turned round and sprained his ankle. A gloom immediately fell over the rest, and all things became dull and devoid of interest. Although there was no end of miraculous mud, with plenty of clerical poultice makers, a holy well, with potent and curative waters, and two young ladies who had made a special study of sprained ankles, the treasurer remained obdurate—he was without faith—and without this mud and water can do very little.

Bosherton Church was now reached. There is a recently erected monument in the churchyard here, erected by a husband in memory of a deceased wife. The husband has placed the following inscription on the marble—"I called on the Lord and he heard me, and delivered me from all my fears." (!) Near this spot there is a choice example of Dendrological Teratology, illustrative both of stasimorphic internodes and the heteromorphic perversion of tissues as opposed to hymenopterous hypertrophy (advocated by Professor Westwood), and highly suitable for illustration in the *Gardeners' Chronicle*. [1] The cut ought to have been in this place, but whilst the writer was explaining the subject to the young ladies, the good Dean Allen, of St. David's, hastily walked off with the camera-lucida, and the sketch was never made.

Stackpole was now made for, the roadsides everywhere thickly clad with Hart's-tongue Ferns, carrying fronds both bifurcate and trifurcate; here the party was to see a pre-historic village, with the remains of beehive huts made by Neolithic men. The village was not satisfactorily found, or rather re-found. The gentleman who sprained his ankle was the original discoverer, and, owing to the pain in his foot he

really could not light on the actual village. Remains of huts were, however, seen, and pieces of flint, brought up from the beach, were soon lighted upon. The spot is a great rabbit-warren overlooking the sea, with numerous plants of *Hippophaë rhamnoides*, possibly planted. Mr. Park Harrison speedily found a Neolithic miller, formerly used for pounding corn, with many shells of limpets and oysters, the remains (so said Mr. Park Harrison) of Neolithic molluscous feasts. Three flint arrow-heads were picked up, the best one by Professor Babington, of Cambridge; a flint "scraper" by the younger son of the writer, and numerous "cores" and "flakes." Several large stones, resembling portions of ruined cromlechs, were passed, but time was insufficient for critical examination. The party then went to Stackpole Court, to partake of refreshments provided by Colonel and Lady Victoria Lambton, on behalf of Earl Cawdor. Dean Allen conducted the party over the house. The most remarkable object seen was the "Hirlas horn." This was a gift of the Earl of Richmond to Davydd ap Ieuan, in whose castle at Llywedd Llandissiliogog Richmond was entertained on his way to Bosworth. There is a Romano-British inscribed stone in a side chapel of Stackpole Elidor church (formerly an altar stone), now placed in a flat position (as on an altar), with the tops of the letters (CAMV . . . ORISI . FILI . FANNVCI) towards the spectator. The churches of St. Petrox and St. Twinnels, down on the programme, were not visited, time being so short. There was no evening meeting.

On Thursday morning some of the party were unwell, and one had mysteriously disappeared: the latter gentleman was missed very much, for he had been telling us all about the primeval people of Wales and their present descendants. He could tell the descendant of a Saxon, a Dane, a Fleming, a Roman, Iberian, or a Celt by the convolutions of the ear or the incurving or outcurving of the nose, by the colour of the eyes, by the length and width and circumference of the head: he said your artist was a "Composite." This incited a revengeful feeling, and your artist suggested that if the ethnologist would only run over to Galway (very convenient from Pembroke) and take his craniometer and other apparatus with him, he would find some most interesting skulls for study and measurement amongst the impecunious and unsophisticated "Composites" of that free and hearty place.

Nash Church was the first place visited, and an effigy (without any legs) drawn and measured: then Upton Castle and Upton Chapel, then Carew Castle, Cross, Church, and old fortified Rectory now deserted—old kitchen garden plants growing everywhere, Potatoes prostrate and putrid with disease; then on to Manorbere Castle, where fashionable London picknickers from Tenby (the British Naples) were giggling and eating and drinking (British port) on the grassy places outside, and the daughters, with their backs to the sea and the Castle, were greedily devouring trashy yellow-covered shilling novels. The party were well entertained by the lessee of the Castle, the Rev. Mr. Harper, the Principal of Jesus College. From Manorbere the party drove off to Hodgeston Church, and Lamphey Church and ruined Palace. At Lamphey Palace there are some excellent and well-kept old-fashioned gardens full of fruit trees and old-fashioned flowers: the old walls covered everywhere with fine plants and escapes from the beds. At one place *Campanula Rapunculus* was growing on and from the sides of old walls. *Iris Pseudacorus* is very common in many damp places on the tops and sides of old walls. Lamphey Church is a very handsome structure, with a fine square Pembrokeshire tower; but it is impossible to see it from any given point owing to the dense foliage of the large trees growing close to the church. Some of these trees might be removed with advantage, so as to better display the architectural beauties of the structure, and especially the fine tower. There is a remarkably handsome Norman font in Lamphey Church.

On Friday the party once more included the gentleman who had hurt his ankle and Professor Westwood, whose indisposition had vanished; the presence of these two gentlemen, who know all about every village, old church, and old stone in Wales, brightened up the party very pleasantly. Mr. Park Harrison could not be found; some said he had suddenly rushed off to measure the Neanderthal skull at Swansea; others thought he was studying the auricular convolutions of the Galway composites. The tumuli near Speculation were the first objects on

the programme, but no one cared to descend from the carriages to see mere grass-grown mounds, so Castle-ton was visited, and then the partially overturned cromlech on Newton Burrows: the cap-stone of this ancient monument is 13 feet long, 8 feet 6 inches wide, and 2 feet thick. Some little time was spent here in making careful drawings and measuring. The cromlech is not on the Ordnance map, neither is it referred to in Murray; the stones are known as the "Holy Rocks" by the rustics. From this spot the vehicles went over dangerous roads covered with large stones, on to Nangle, Block House, overlooking Milford Haven; the scenery of islands, sea, and cliffs from this point is most magnificent. Over still worse roads, over grassy expanses covered with pieces of loose rock and heaps of drifted sand, and burrowed and tunnelled by innumerable rabbits, the brakes now made their way, swaying from side to side, and groaning and squeaking in the direction of Nangle (or Angle, according to the Ordnance map) village. Nangle Old Church has been "restored"—in other words, the old church has been completely pulled down, and an entirely new one erected in its place. Here there is a ruinous fortified Rectory of unusual interest, and a columbarium—a stone structure where pigeons were at one time kept. There was a difficulty in getting refreshment at this place, so the Cambrians were fain to be content with some sour beer and bread and butter—the bread cut from one of those huge Welsh loaves which are always baked in the general household washing-pan. From Nangle to Eastington the roads were again uncommonly bad, other grass-grown expanses of sand and stone were crossed, and at length the sea shore of Milford Haven was reached; the tide being down, the drivers decided upon crossing the sands at Nangle Bay. Here we got the smell of the sea and plenty of seaweed; the wheels went deeply into the sand, crushing cockles and crabs, and disturbing cohorts of crying sea-gulls. On nearing Eastington on the shore of the bay, apparently reached and washed by the sea, there was a considerable crop of Henbane growing. At Eastington there is a large old thirteenth-century house, now a farm, nearly ruined and defaced (from an archaeological point of view) with modern interpolations. The next drive was to Rhoscrowther, where a farmer came up to us carrying in his arms a number of Turnips afflicted with the "finger-and-toe" disease. He said he supposed we were all men of science, and so respectfully demanded an explanation of the condition of his Turnips. Professor Westwood (who at the time was watching a butterfly flutter by) gave him one in first-rate Latin. Here there is an old stone in the churchyard wall likely to provoke a good deal of discussion. There are several incisions resembling small letters on the stone, but what these letters mean and when they were cut is likely to be a disputed point. The last place visited by the Cambrians was Pwllcrochan. In the churchyard here there is another "holy well," with a cross, cup and chain adjoining, for thirsty drinkers. As in the St. Florence spring, the Pwllcrochan well is in the churchyard, and much below the made earth of the many closely adjoining graves.

A good deal of the drawing in connection with these meetings is done before breakfast. It often happens that the keys of churches and museums are left with the artist over-night, so that he may let himself into these places at six in the morning, long before the ordinary members are awake. Much of the out-of-door sketching is also done at the same early hour, before the townspeople are out of their beds.

A meeting was held on Thursday evening in the Town Hall at Pembroke (sometimes called the Assembly Rooms), to transact business and appoint the place of meeting for next year. Some twenty members assembled, but there was a difficulty as to lights—the place was in darkness: there was a table, three or four chairs, and a rusty iron "gasolier," but neither gas, candles, nor matches. Nothing could be seen but bright eyes, glancing like the eyes of hyænas in a cave. Ever and anon some late-arriving archaeologist stumbled up the stairs (these stairs were outside the Town Hall, in the dark street), and groped his way into the dark room, stumbling against his brother archaeologists, and kicking against the chairs and tables. Gas it was impossible to get, so some one had gone out and taken the key of the meter in his pocket. One of the younger members, at last, went to the chief hotel of the place, and borrowed a box of

matches and two short pieces of thin candle; a little light was then forthcoming, though unsatisfactory, for the candle-flames danced up and down in such a curious manner that the members seemed to be constantly grimacing at each other—such was the grim effect of the light and shade. The Secretary, who originally proposed the Pembroke meeting, was not present. He did not grace one of the Pembroke excursions or meetings, and it was furtively rumoured (but hardly believed) that he had "gone to be married." The more aged members knew this to be impossible, no true archaeologist would so far forget himself as to be married at such a critical time. At last the business was disposed of, Church Stretton was selected for next year's exploration; the treasurer suddenly blew out both candles, and the members were in utter darkness once more, and thus the Pembroke meeting ended. *W. G. Smith.*

Foreign Correspondence.

BINGEN: Aug. 23.—I think when I last wrote to you (see p. 269) I mentioned that German agriculture and German gardening, in this part of the empire, were not very flourishing—not from want of skill, nor from poverty of soil, it would appear, but because all the skill is lavished upon the Vines. There is, however, one department in which the Germans along the Rhine may bear the palm over the heads of any nationality with which it has yet been my lot to come into contact. If they have not quite a monopoly of stinks, yet, at least in fulness and intensity of stink (yes, I must use the word, as none other at all does justice to the subject), they are surely not to be surpassed. They are not so proud of their glorious Rhine as to avoid defiling it. Its beauties strike the eye and refresh the spirit, but something is due to the nose, and that something is paid liberally. Cologne, once famous in this particular, has happily lost its notoriety, but the numerous towns and villages on both banks are in this respect horrible to think of, worse than horrible to endure in a hot August sun. I will not speak of domestic arrangements, even in the best inns, but out-of-doors a stream of sewage sluggishly crawls along either side of the street, close under the windows and doors of the inhabitants. There it trails its loathsome length, undisturbed by fresh water, unstirred by broom or hose, till at length it slowly reaches the broad swift current of the noble river, to the disgust of the passengers on the steam-boats as they churn up the putrid fluid and incorporate it with the purer current born afar off in the mountains of Switzerland. I can't help feeling a personal interest in the stinks of the Rhine, for after various minor inconveniences, and numerous expressions of disgust, my rambles were at length temporarily arrested, as I believe, solely from a too potent dose of stink, and which produced consequences too much like those of fever to be at all agreeable to my companion. As for me, I was nearly as *insouciant* in the matter as if I had been a native; only their indifference arises from immunity—a finer, more wholesome-looking race, could scarcely be met with anywhere—while mine was due to the stupor of narcotic poisoning. However, removal into purer air happily soon produced its good effect.

I must apologise for introducing a personal matter of this kind; but it may be that these notes may be read even in Rhineland, and if so they may do some service by calling the attention of the powers that be to an intolerable nuisance; which, indeed, is worse than a nuisance, for when on my rambles I heard of the death of a young lady from typhoid fever, presumably from this cause. It must not be thought that these abominations are in obscure, out-of-the-way places, they are in the very haunts of the tourists who throng the Rhine banks; they poison the finest hotels; they defile the otherwise most agreeable promenades. Away up in the Eifel, and in the more remote districts, there the nuisance is apparently of lesser dimensions.

The harvest is well-nigh over; and, as even trifles serve as indications, it is curious to see how carelessly and untidily the Wheat is bound into sheaves and shocks. I enclose also a sketch of a substitute for a rick-cloth, the use of which seems universal in this part of Germany, as in Holland, and in some parts of Northern France. The movable thatch shown in the sketch (fig. 76) slides up and down on its uprights just as may be required.

But hereabouts it is the Vine upon which all the care is lavished. Wherever a Vine will grow, there it grows. I was almost going to say, wherever a Vine won't grow, there it grows. Indeed it is very remarkable to see in what apparently inaccessible places on the sides of the rocks the Vines are often growing; and it is striking to notice how every perch of available space is duly occupied. Available space—a necessary qualification, for it is only in certain places, below a certain elevation, and in certain aspects, that it is profitable to grow the Vine. Given a slope facing nearly due south, backed up by protecting hills, and screened from cold blasts on either side by projecting cliffs, and there the Vines thrive. The Vines are between the sun and the rock, without an atom of shade, and there they thrive where another plant would be frizzled to a cinder. The rock is uncompromisingly hard, sometimes slaty, sometimes of volcanic origin, rarely, in this district, limestone. The soil is scanty indeed; its surface is so thickly bestrewn with flat pebbles and bits of rock, which serve to prevent undue evaporation, that it seems all stones and no soil. On some of the ledges holes are bored in the solid rock, and baskets of soil with the Vines rooted in them, like pot-Vines, are sunk in the holes.

In many places the terraces are supported by low walls, as seen in the sketch (fig. 77) on p. 401, showing the Vines grown in the vicinity of the famous Mouse Tower of legendary note; so that every precaution is taken to prevent the soil

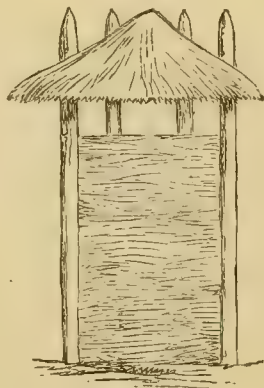


FIG. 76.—THATCH FOR A HAYSTACK.

from being washed away by the rain. It seems a mystery where the Vines can get water enough for their requirements, but it is clear they do, for cleaner, healthier foliage could hardly be seen. Lift up the leaves, and there are the bunches—small, indeed, and with overcrowded berries, but there are plenty of them. My first impression was that the crop was deficient, but closer inspection shows this was a mistake; there is every prospect of a good crop. The Vines are pruned in spring, and allowed to form four or five rods, some 4 or 5 feet in height, from a single upright stock. They are grown in rows about 3 feet apart, and in point of picturesqueness are far inferior to the Hops in a Kentish Hop-garden. In point of height, too, it is somewhat odd to see the French Beans in many places considerably overtopping the Vines. The land is kept so scrupulously clean it would be difficult to find a weed.

The vintage is very late, the finer wines being produced from the Grapes when we should call them over-ripe. But the result!—

"O! quam placens in colore,
O! quam fragrans in odore,
O! quam sapidum in ore."

Mark Twain must have been very unlucky when he got some samples which he could not distinguish from vinegar save by the label. Had he forgotten his Longfellow? Did he not remember that—

"At Bacharach on the Rhine,
At Hochheim on the Main,
And at Wurzburg on the Stein,
Grow the three best kinds of wine!"

I incline to think he got his samples in a London dining-room, and that he did not go up the Rhine in

blazing weather like this, when the Rhine itself in mid-stream sends the thermometer over 75° Fahr., or he would acknowledge—

"What a delicious fragrance springs
From the deep flagon while it fills
As of Hyacinths and Daffodils."

and would have subscribed to the ejaculations of Friar Claus:—

"O cordial delicious! O soother of pain!
It flashes like sunshine into my brain
A benison rest on the bishop who sen's
Such a fudder of wine as this to his friends!"

Teetotallers need not be very much shocked, for the beverage is not potent, and by no means so capable of inducing headaches as the horrid fluid mentioned in the early part of this letter; at least, that is the *bond fide* experience of a Rambler.

SUCCULENTS AT KEW.

FEW can form an idea of the imposing character of a collection of succulents without seeing some such an one as is contained in our great national garden at Kew. The few that are in private collections would amply enough justify the remark of a very intelligent writer, who avers that they are "cultivated in this country for curiosity in greenhouses." And so they are; but why, we might justly ask, should this be so, especially in a progressive age such as this, and with every desire on the part of an ambitious and industrious nation to realise all that is realisable even in the matter of plant collection and cultivation? The extraordinary eccentricity of the growth of some of the Indian Figs, and the intensity of colouring of many of their flowers, would, one would imagine, command a much larger patronage; and then the great variety there is in Agaves, and Aloes, and Yuccas, and Beaucarneas, and Dasylirions, impart to a house—such an one as is at Kew, for instance—a degree of interest which commands general attention. Over and above all this, though these succulents have a pretty wide geographical distribution, they form a very happy and apparently contented family under one roof. This is not always the case. Brazil, Peru, and Mexico, have each furnished a large quota of the showy Cactaceae, as the numerous East Indian islands, Abyssinia, and Africa, have given up their Aloes to our collectors; and looking to Kew, and to the collection which Mr. Peacock had, they seem to thrive well under similar treatment. Even those charming dwarf and much branched Stapelias, and the deep-channelled upright-growing Euphorbias which Dr. Isaac Balfour brought recently from Socotra, although meantime relegated to another house, will doubtless eventually find their way among their companions in that most interesting succulent house at Kew, which we shall proceed to describe somewhat in detail.

The house, which is span-roofed in design, is about 180 feet long by about 30 feet in width and about 12 feet high in the centre. It is, therefore, a commodious one in every respect, and probably as well adapted for rearing the plants under its covering as any one at Kew. If there is any fault at all, it is in the passages, which are only 3 feet wide, being much too narrow for a house open to the public in such an important establishment as this. Its interior arrangements include a centre bed of 18 feet width, the two passages, each 3 feet wide, and the raised tables next the side upright lights, which are also about 3 feet wide each. The big plants in the centre are classified and grouped—and, indeed, most of the plants, with very few exceptions, round the side or raised stages are also grouped—so that any one interested in these plants can have a quiet survey without running from one part of the house to the other to compare species. There is the unfortunate narrow path, which makes every one walking quietly round an obstructionist; and there is this barrier, an admitted necessity, of keeping promenaders walking one way, which prevents those who are taking notes in their mind's eye from contrasting species with species in the central bed, ranged as the groups are across the area.

Confronting the entrance is the group of those shrubby succulents, the Euphorbiaceae, which seem to be found, either as trees or in minute size, all over the world. The most conspicuous are those long known, such as *canariensis*, not unlike a gaunt, upright-growing Prickly Pear, much branched, and

quite 10 feet high; the handsome pale green-skinned triangular, singular in having a leafy protuberance like a lid covering the base of the crowd of claret-coloured spines; the colossal arborescens lids fair to press its extremity beyond its prison, and looks like its name among the much-branched antiquorum; the free-flowering splendens, so well known and appreciated in all collections of plants thirty years ago, and still deservedly so, and many others. Next to these come the Opuntias and Cereuses, many of them as straight and stiff as the pipes of an organ. Looking at these plants, with their stem and branches pointed, armed with spines in bundles, and no end of bristles, without a single leaf to adorn them, wonder is the more excited at the grandeur and brilliancy of many of their flowers. And look, too, how enduring the life of the plant is! The South American *Opuntia decumana* at once arrests attention. It is made up of great thick ovate limbs, not unlike for cubic dimensions the "scones" which the Scotch peasant bakes and uses for a tea meal, held together by a fragile-looking connection, some standing horizontal, some semi-erect, and some in a depending position. This and *O. candelabiformis* are the most gigantic of the group, the latter being clad with spines, and far more unapproachable than most even of this fierce-looking race; it would, indeed, be a proper "monkey puzzle" in this or any other country, for no animal could approach it with impunity.

The species of *Cereus* form a considerable array, standing erect, and not unlike in dimensions a set of castigating wands in various shades of green—peruvianus, the Brazilian alaciportanus, the South American strictus, the more recently introduced rigidus and Tweediei being the giants of the group. The Chilian candicans is a stiff, fierce-looking subject, and erio-phorus and colubrinus are noteworthy species; grandis is remarkable for its branching habit, and the Mexican gemmatus looks like a giant Cucumber stood up on end. Amongst a numerous family of this kind it is quite impracticable to note all that one sees, but some of the Pilocereus, and the Turk's-cap (*Melocactus communis*), are prominent, the latter species particularly so, from its cup-like crown resting on a stout imposing succulent pedestal.

Next in the grouping come the Aloes in considerable variety, some of the largest of them being quite 9 feet high, *Aloe frutescens* or *arborescens* being quite a specimen 4 feet across. Among the others we note *africana* platylepis, *supra-levis*, the grand broad-leaved nobilis (a first-rate decorative plant), *saponaria*, *albo-cincta* (smooth on the surface as the palm of one's hand, and the leaves margined, with a brownish tint), the piebald *latifolia*, with its arching leaves; *grandidentata*, of the same character, but handsomer still, makes a noble-looking plant; the South African *plicatilis* is peculiar in having bare woody-like stems; and the rarer *Barberae* takes the eye from its dark green leaves with white margins, which leave their photograph as they unwind from the stem in their amplexicaul state.

The Agaves are much the handsomest so far as plants out of flower are concerned in this arrangement. Indeed they serve to make everything look better about and around them, as is well exemplified in fig. 51, vol. xiv., p. 273, *Gardeners' Chronicle*, where there is a capital representation of a group of succulents in the garden of Mr. Thomas Hanbury, at the Palazzo Oregno. At Kew, as in the illustration, *Agave Salmiana* is one of the most distinguished. Next comes *Hookeri*, throwing its erect flower-spike as straight as a gun-barrel, and of the dimensions of a good stout Larch pole, 14 feet long away out of the house into space, where, if weather permits, it may produce flowers; then *americana* and its golden-edged form, which is always attractive; *fourcroyoides* is also a fine species of the showy or ornamental order. This, as well as *dealbata* and *Giesbreghtii*, command attention from even the most casual observer. These Agaves cover the greater part of the half of the house, and are really as fine a lot of ornamental-leaved plants as one could well see.

The Yuccas come next in order, the best of them being *striata*, the Mexican *corulescens*, a grand species; the equally attractive *filifera*, *Roeziana*, the broad-leaved *Celsiana*, *heteracantha*, and many others. These, associated with *Beaucarneas* and *Dasyliirions*, among which *acrotichum* still takes, when in condition, first rank either in a small or a large state; *glaucum* is also good, and the *linifolia* form of *Beaucarnea* has its leaves so pendulous and elegant-like as

to represent the downcoming spray of a fountain; *Puya chilensis* is also in flowering condition, throwing up its erect spike. Not the least ornamental plant in this group is the *Fourcroya Bedinghausi*, the fine dark green of the leaves, and the arching character of them, makes this a fine companion to the *Beaucarnea* above noticed. What lends attraction to these groups is the fact that the plants, from being either planted out or plunged, are within easy reach of the eye, and undoubtedly they are in a good state of keeping.

About the remainder of the groups in the side-stages, and Mr. Peacock's group in another compartment, we shall have something to say at some future time. *James Anderson*.

AGRICULTURAL CHEMISTRY.

(Continued from p. 373.)

INFLUENCE OF LIEBIG'S TEACHING.

CONFINING attention to agricultural research, it may be observed that about the year 1843, that is, very soon after the appearance of the works in question, there was established the Chemico-Agricultural Society of Scotland, which was, I believe, broken up, after it had existed for about five years, because its able chemist, the late Professor Johnston, was unable to find a remedy for the Potato disease. Shortly after this, the Highland and Agricultural Society of Scotland appointed a consulting chemist; somewhat later the Royal Agricultural Society of England did the same; and later still followed the Chemico-Agricultural Society of Ulster. Lastly, the very numerous "Agricultural Experimental Stations" which have been established, not only in Germany, but in most Continental States, owe their origin directly to the writings, the teachings, and the influence of Liebig. The movement seems to have originated in Saxony, where Stöckhardt had already stimulated interest in the subject by his lectures and his writings. After some correspondence, in 1850-1, between the late Dr. Crucius and others on the one side, and the Government on the other, the first so-called Agricultural Experimental Station was established at Möchern, near Leipzig, in 1851-2. In 1877, the twenty-fifth anniversary of the foundation of that institution was celebrated at Leipzig, when an account (which has since been published) was given of the number of stations then existing, of the number of chemists engaged, and of the subjects which had been investigated. From that statistical statement we learn that in 1877 the number of stations was:—In the various German States, 74; in Austria, 16; in Italy, 10; in Sweden, 7; in Denmark, 1; in Russia, 3; in Belgium, 3; in Holland, 2; in France, 2; in Switzerland, 3; in Spain, 1;—total, 122.

Besides these 122 stations on the Continent of Europe, the United States are credited with one, and Scotland also with one.

Each of these stations is under the direction of a chemist, frequently with one or more assistants. One special duty of most of them is what is called manure or seed or feeding-stuff control; that is, to examine or analyse, and report upon such substances in the market, and it seems to have been found the interest of dealers in these commodities to submit their proceedings to a certain degree of supervision by the chemist of the station of their district.

But agricultural research has also been a characteristic feature of these institutions. It is stated that the investigation of soils has been the prominent object at 16 of them; experiments with manures at 24; vegetable physiology at 28; animal physiology and feeding experiments at 20; Vine culture and wine making at 13; forest culture at 9; and milk production at 11. Others, according to their locality, have devoted special attention to fruit culture, Olive culture, the cultivation of moor, bog, and peat land, the production of silk, the manufacture of spirit, and other products.

Nor does this enumeration of the institutions established as the direct result of Liebig's influence, and of the subjects investigated under their auspices, complete the list either of the workers engaged, or of the work accomplished in agricultural research. To say nothing of the labours of Boussingault, which commenced some years prior to the appearance of Liebig's first work, and which are fortunately still at the service of agriculture, important contributions have been made by the late Professors Johnston and Anderson in Scotland, and in this country both by Mr. Way and Dr. Voelcker, each alike in his private

capacity, and in fulfilment of his duties as chemist to the Royal Agricultural Society of England. Nor would it be fair to Mr. Lawes (who commenced experimenting first with plants in pots, and afterwards in the field, soon after entering into possession of his property in 1834, and with whom I have myself been associated since 1843), were I to omit in this place any mention of the investigations which have been so many years in progress at Rothamsted.

RESULTS.

So much for the machinery; but what of the results achieved by all this activity in the application of chemistry to agriculture?

As I have already intimated, and as the foregoing brief statistical statement will have convinced you must be the case, it will be utterly impossible to give, on such an occasion as this, anything approaching to an adequate review of the progress achieved. I propose then to confine attention to a few special points, which have either some connection with one another, or to which recent results or discussions lend some special interest.

First, as to the sources and the assimilation of the carbon, the hydrogen, and the oxygen of vegetation. From the point of view of the agricultural chemist, the hydrogen and the oxygen may be left out of view; for, if the cultivator provide to the plant the conditions for the accumulation of sufficient nitrogen and carbon, he may leave it to take care of itself in the matter of hydrogen and oxygen. That the hydrogen of the carbo-hydrates is exclusively obtained from water is, to say the least, probable; and whether part of their oxygen is derived from carbonic acid, and part from water, or the whole from either of these, will not affect his agricultural practice.

SOURCES OF CARBON.

With regard to the carbon, the whole tendency of subsequent observations is to confirm the opinion put forward by De Saussure about the commencement of the century, and so forcibly insisted upon by Liebig forty years later—that the greater part, if not the whole of it, is derived from the carbonic acid of the atmosphere. Indeed, direct experiments are not wanting—those of Moll, for example—from which it has been concluded that plants do not even utilise the carbonic acid which they may take up from the soil by their roots. However this may be, we may safely conclude that practically the whole of the carbon which it is the object of the cultivator to force the plants he grows to take up is derived from the atmosphere, in which it exists in such extremely small proportion, but nevertheless large actual, and constantly renewed amount.

Judging from the more recent researches on the point, it would seem probable that the estimate of one part of carbon, as carbonic acid, in 10,000 of air, is more probably too high than too low as an estimate of the average quantity in the atmosphere of our globe. And, although this corresponds to several times more in the column of air resting over an acre of land than the vegetation of that area can annually take up, it represents an extremely small amount at any one time in contact with the growing plants, and could only suffice on the supposition of a very rapid renewal, accomplished as the result, on the one hand, of a constant return of carbonic acid to the atmosphere by combustion and the respiration of animals, and, on the other, of a constant interchange and equalisation among the constituents of the atmosphere.

It will convey a more definite idea of what is accomplished by vegetation in the assimilation of carbon from the atmosphere if I give, in round numbers, the results of some direct experiments made at Rothamsted, instead of making general statements merely.

In a field which has now grown Wheat for thirty-seven years in succession, there are some plots to which not an ounce of carbon has been returned during the whole of that period. Yet, with purely mineral manure, an average of about 1000 lb. of carbon is annually removed from the land; and where a given amount of nitrogenous manure is employed with the mineral manure, an average of about 1500 lb. per acre per annum more is obtained; in all an average of about 2500 lb. of carbon annually assimilated over an acre of land without any return of carbonaceous manure to it.

In a field in which Barley has been grown for twenty-nine years in succession, quite accordant results have been obtained. There, smaller amounts

of nitrogenous manure have been employed with the mineral manure than in the experiments with Wheat above cited; but the increase in the assimilation of carbon for a given amount of nitrogen supplied in the manure is greater in the case of the Barley than of the Wheat.

With Sugar-beet, again, larger amounts of carbon have been annually accumulated without the supply of any to the soil, but under the influence of a liberal provision of both nitrogenous and mineral manure, than by either Wheat or Barley.

Lastly, with grass, still larger amounts of carbon have been annually accumulated, without any supply of it by manure.

Many experiments have been made, in Germany and elsewhere, to determine the amount of the different constituents taken up at different periods of the growth of various plants. But we may refer to some made at Rothamsted long ago to illustrate the rapidity with which the carbon of our crops may be withdrawn from the atmosphere.

In 1847 we carefully took samples from a growing Wheat crop at different stages of its progress, commencing on June 21, and in these samples the dry matter, the mineral matter, the nitrogen, &c., were determined. On each occasion the produce of two separate eighths or sixteenths of an acre was cut and weighed, so that the data were provided to calculate the amounts of the several constituents which had been accumulated per acre at each period. The result was that, whilst during little more than five weeks from June 21, there was comparatively little increase in the amount of nitrogen accumulated over a given area, more than half the total carbon of the crop was accumulated during that period.

Numerous experiments of a somewhat similar kind, made in another season—1856—concluded in showing that, whilst the carbon of the crop was more than doubled after the middle of June, its nitrogen increased in a much less degree over the same period.

Similar experiments were also made in 1854 and in 1856 with Beans. The general result was, that a smaller proportion of both the total nitrogen and the total carbon was accumulated by the middle or end of June than in the case of the Wheat; though the actual amount of nitrogen taken up by the Beans was much greater, both before and after that date. The nitrogen of this leguminous crop increased in a much greater proportion during the subsequent stages of growth than did that of the gramineous crop; but the carbon increased in a larger proportion still, three-fourths or more of the total amount of it being accumulated after the middle of June.

I should say that determinations of carbon, made in samples of soil taken from the Wheat field at different periods during recent years, indicate some decline in the percentage of carbon in the soils, but not such as to lead to the supposition that the soils have contributed to the carbon of the crops. Besides the amount of carbon annually removed, there will, of course, be a further accumulation in the stubble and roots of the crops; and the reduction in the total carbon of the soil, if such have really taken place, would show that the annual oxidation within the soil is greater than the annual gain by the residue of the crops.

Large as is the annual accumulation of carbon from the atmosphere over a given area in the cases cited, it is obvious that the quantity must vary exceedingly with variation of climatal conditions. It is, in fact, several times as great in the case of tropical vegetation—that of the Sugar-cane for example. And not only is the greater part of the assimilation accomplished within a comparatively small portion of the year (varying of course according to the region), but the action is limited to the hours of daylight, whilst during darkness there is rather loss than gain.

But it is remarkable that whilst the accumulation of carbon, the chief gain of solid material, takes place under the influence of light, cell-division, cell-multiplication, increase in the structure of the plant, in other words, what, as distinguished from assimilation vegetable physiologists designate as growth, takes place, at any rate chiefly, during the night; and is accompanied, not with the taking up of carbonic acid and the yielding up of oxygen, but with the taking up of oxygen and the giving up of carbonic acid. This evolution of carbonic acid during darkness must obviously be extremely small, compared with the converse action during daylight, coincidently with which practically the whole of the accumulation of solid substance is accomplished. But, as the product

of the night action is the same as in the respiration of animals, this is distinguished by vegetable physiologists as the respiration of plants.

(To be continued.)

Forestry.

KEEPING YOUNG TREES CLEAR OF WHINS, &c.
—At this season of the year one of the most important duties to attend to is that of keeping all young and tender tree plants free from Whins, rank and luxuriant growths, and herbage of every kind. It is often a matter of deep regret that the best descriptions of soil and most favoured situations in our woods and forests for the growth of trees are almost invariably those either altogether or almost destitute of a crop. The cause of this is not obscure or difficult of discovery, for we have only to look at the luxuriant herbage growth of such favoured situations to be able at once to account for the circumstance. In such places trees, when fairly started in growth, will keep pace and out-grow most descriptions of herbage, but it is the first few years subsequent to planting that the difficulty and danger lies in. The Nettle, Thistle, Dock, Bracken, Bramble, and suchlike growths usually luxuriate in fertile and favoured situations, and completely overgrow and choke the tree plants before ever suspicion is awakened that anything is wrong. It does not require years or months to destroy the tree plants beyond remedy, a few weeks are often amply sufficient to do all the mischief, and indeed young plants completely secluded from light and air and submitted to a damp atmosphere may be hopelessly ruined in a few days. Any one at all acquainted with farming and farm crops knows that a very few days beyond the proper time for thinning the Turnip crop will so unfavourably affect it that the best skill and judicious future treatment will be of little or no avail in restoring it. It is the primary stage and beginning of almost everything that is the most important and critical, and certainly the growth of forest trees forms no exception. If we compare the state of two trees at twenty years' growth, the one having got freedom and a favourable start, and the other confined and restricted by surrounding overgrowth, it will be found that the former is twice or three times larger and more valuable every way than the latter; and not only is the market difference to be seen at twenty years' growth, but it continues throughout the whole history of the tree—once first in the race always first, and if the difference is greater at one period than another it will almost invariably be found to be at the end of the race or growth of the trees. The manner in which trees are treated and start in early life better explains and accounts for the difference of size and value when at maturity than anything else can. The urgency, therefore, for trees being delivered from these fetters and confinement at as early a stage of growth as possible, or, better still, of preventing them from ever being so embarrassed and confined, will, we trust, from these remarks be made clear and obvious.

Where the work of clearing the plants is extensive, and cannot be all overtaken, the most needful should be done first, and that usually consists of the trees most recently planted. Sometimes those of two years' growth have more need of relief than those of only one. When planted, the turf and herbage are usually cleared away for some distance round the plantlet, and when this is well done, the growth does not so injuriously affect them the first as it does the second or third season; therefore it is not always the youngest and most recently planted trees that require clearing most urgently.

The health and life of the plants are imperilled almost exclusively by the kind and description of the herbage amongst which they grow. Brackens, Nettles, and all soft and luxuriant grasses with broad leaves are most fatal, and indeed unless all such are completely cut and cleared off twice a year, better that the ground had never been planted. In some cases planting has inadvertently been done among rank and luxuriant Heather, and all such planting is fraught with disappointment. In several instances where this had been done, it became necessary to burn over the whole surface, plants inclusive, and replant the ground with small plants; and when this has been done the very best results have succeeded.

Of all difficulties to contend with in clearing trees of injurious growths the worst is that of keeping down Whin or Gorse. The Whins, although completely cut over, and even the roots removed, will again shoot up

with such rapidity and vigour as to choke the tree growth before it can rise above them. In cutting the Whins it is very difficult to save the trees, especially Scotch Pine, which is of nearly the same colour and shape. After unsuccessfully trying various methods of growing trees amongst Whins, I have at last succeeded almost completely. The method is to plant the trees in rows, leaving a clear space of 6 feet between the rows, and by means of the Whin scythe cut close and bare the open space between the lines of trees. The trees in the lines occupy about 2 feet wide planted zigzag, and they by very little attention can be kept clear of all interfering growths. By this method there is no risk of cutting the plants, and the work is done at comparatively trifling expense. C. Y. Michie, Cullen House, Banffshire, Sept. 20.

Garden Operations.

KITCHEN GARDEN.

Our plantations of Cabbage plants, both for early use and for the general crop, are now finished off hand, and we shall at once proceed to prick out an adequate number of the small plants remaining in the seed-beds which were sown for the general crop on August 8 last. These plants will be pricked out into good ground, so as to form a longitudinal bed about 4 feet wide in a somewhat sheltered but open space fully exposed to sunshine; they will be put at about 3 inches apart all ways, preparatory to being transplanted again next spring as a subsequent crop to the foregoing ones, and for the purpose of substituting any plants which may be lost during the winter period. At this time the earliest section of Cauliflower plants for next season will be almost, if not quite, fit for shifting out of the seed-bed. Those plants which are intended to be grown in handglasses should be planted in them at once, if, as we assume, the necessary preparations for them have been made by giving the ground an ample dressing 2 or 3 inches thick of thoroughly well decomposed and strong manure; and this material, by the process of deep digging or forking, has been properly incorporated with the soil. Single rows of handglasses for this purpose should have from 12 to 13 inches space left between them, and if lines of these are employed they should be at least 2 feet asunder. The practice of filling these glasses with more plants than is necessary for the object in view is not to be commended. We much prefer to give only those plants which are actually required the benefit of all the space to themselves, and this proves to be a means which contributes much towards successful results in the end. Four or five plants in each is, therefore, ample. After these plants are planted, the top-lights should be kept entirely off until autumn frost is imminent. It is with me a customary practice to have a hundred or two of the earliest plants of the earliest kind put into large 60-pots: these make fine plants for transplanting into suitable and warm aspects early in the spring. The later sorts of Cauliflower plants will also speedily be ready for pricking out in places where they are to remain through the winter months. The chief object is to keep these plants sturdy and hardy; they can be preserved in almost any place where they can be kept moderately dry, as frost is not so destructive amongst them as the effects arising from imperfect ventilation and a damp state combined. If really good plants are to be had they should have a space of from 4 to 6 inches allowed between the plants; the soil in which they are planted should not be over-rich, and the lights or coverings should be kept entirely off the plants until frost is apparently certain to prevail.

The most important subject demanding attention in this department, at this particular season, is Lettuce. The plants for early spring work will ere long be ready to be transferred to other quarters. The preparations which are needed for these are identical with those advanced for Cauliflower plants in handglasses. These plants can be grown as expeditiously under the same conditions, but in order to save time and space we find it more economical and convenient to provide a rough frame, on which sashes can be laid when the nature of the weather is such as to demand it. One place for this purpose is provided already, and as soon as the plants are fit we intend to plant them at once, in rows 6 inches apart every way, and alternately with one of the Black-seeded Brown Cos, and the other Stanstead Winter Cabbage. After these are drafted out of the beds, we shall go on with the plant-

ing out-of-doors. For early work a border having a descent towards the south is an appropriate place for them at this season; 12 inches apart all ways should be allowed, and if drills are drawn for planting these should be filled up prior to the advent of much frost and wet. After this section has also been planted out a further and sufficient quantity of plants should be pricked out at a place where they can be protected slightly when severe frost or other inclement circumstances necessitate it. By this means a supply of plants for putting out next spring will be ensured under any conditions.

The late rainfall which we have had came most opportunely for the subjects in this department, and supplied a need which was very much wanted in many places, to lessen the demands on time which necessarily was required to be given to watering. Suitable opportunities as they occur should be embraced for such operations as soiling up Celery, lifting Potatoes for storing away, and adding fresh soil between the rows of Leeks, &c., and also to other matters, as stirring the surface soil between autumn-sown crops of Onions, Carrots, Turnips, Spinach, &c. The grubs are very troublesome here this season among the plants of the former subject, and caterpillars on some of the Brassica tribe are exceedingly rife. As crops of vegetables become exhausted and useless do not suffer them to encumber the ground for a longer period afterwards than is absolutely necessary.

FRAME GROUND.—Make a sowing of Wood's Early Frame Radishes at once, and as soon as the plants are up remove the lights from off them every day. Carrots which were sown under the same conditions will also need an abundance of air every day when the weather is fine, and so also will late Peas. French Beans will now require to be kept somewhat closer, and ere long will need to be covered up with mats at night.

MUSHROOM-HOUSE.—Continue the necessary preparations as manure comes to hand, and make up beds in the way recently described. See that former made beds do not become dry, and use no fire-heat whilst the internal temperature will stand at 50°. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

THE CHERRY-HOUSE.—In a preceding Calendar on this subject I recommended, wherever it was practicable, that the lights be removed from off the trees within this structure, with a view to retard the natural development of growth, and also for the purpose of checking the tendency that exists in early forced trees to start into growth prematurely. If this was accordingly done the heavy rainfall we had recently will saturate the borders sufficiently to meet the requirements of the roots in this way at this period, but if, on the contrary, the trees have not been exposed to these elements altogether, the borders would naturally, from the effects of the late prolonged period of arid weather, become somewhat dry, unless they were watered regularly and liberally. It is very important for the roots to be moderately moist at this season; see, therefore, to this matter, and should any doubt whatever exist about it, clear it up by an examination. The autumnal tints in the foliage of our trees are fast appearing, and the process of ripening is evidently progressing satisfactorily. Every means should be used to keep the leaves clean and free from insects, so that these may be preserved to the utmost limit; for this purpose considerable attention to syringing those trees which are still under glass will have to be given frequently. Proceed with any preliminary matters, as cleaning or painting the sashes whilst they are off the house, so that in case of need they will be ready to be replaced at any time they are wanted. See also to the requirements which may be needed in the way of fresh soil or materials for drainage, and in the event of any of the trees having assumed a sickly appearance, seek for the cause at the root, as hereat equally lies the source of the mischief. If the soil is at all in an unsatisfactory state about the roots by all means remove it, and at the same time see that the drainage is not impeded. After this is done carefully lift the roots to within a few feet of the base of the tree, and replant them at once in fresh compost consisting of virgin loam and a sixth of road scrapings. This operation is indubitably one of the most important cultural operations in connection with the cultivation of fruit trees, and a practice which is not resorted to by

many so often as it should be under such circumstances. Operations of this nature should be carried out at once in early forced houses. If new borders are to be made for Cherry trees, let these in the first place be properly drained. After the base of the border is levelled to its right fall, drains should be formed about 6 feet apart—2 or 3 inch pipes will suffice for the purpose; these should fall towards a transverse one, which should be made to convey the water right away. Between and above the drains within the house 15 to 18 inches of rubble—broken bricks being most valuable for this purpose—should be placed; on this a layer of fresh cut sods should be laid the grassy side downwards, on which the border, made up of the compost before described, about 30 inches deep, should be placed, and it should be permitted to settle down before the trees are planted, the roots of the latter being kept within 9 or 12 inches of the surface. For early work we have found no varieties to equal the Black Circassian and Elton, and therefore these varieties should occupy the warmest end of the house. If others are to be associated with them, Governor Wood, Bigarreau, Frogmore, and May Duke may with propriety be selected, and for the coolest position in the house, a place should be given to that wonderfully fine variety, Bigarreau Napoléon. *G. T. Miles, Wycombe Abbey.*

VINES.

In large forcing places where the old and new Grapes overlap each other the former should now be well coloured, and although such kinds as Lady Downe's, Black Morocco and Gros Colmar may be sufficiently ripe for exhibition purposes, they will require a considerable time on the Vines before they are fit for removal to the Grape-room, and a longer period after they are cut to bring them into the best possible condition for dessert. Up to the present time we have found a good covering of foliage favourable to the colouring process; but now daylight is almost counterbalanced by darkness, and nights are getting cold, all lateral growths should be removed to admit of a free circulation of dry warm air through the bunches and amongst the main leaves, which should be kept clear of the glass to prevent the retention of moisture by night as well as day. Where a house of Hamburgs is now ready for cutting they will keep up the supply until the Alicantes come into use from November to January, when the Moroccos should lead on to the Lady Downe's—still the best keeping Grape we have for use up to May. To have Gros Colmar in the very best condition they should be cut when the Vines are quite clear of leaves, bottled, and kept in a warm Grape-room for a month or six weeks, sufficiently dry to prevent the fleshy stalks and shoulders from damping, when they will be found so much improved—the earthy flavour having disappeared—as to fit them for the choicest dessert from January to March. To have new Grapes ready by the end of April and the beginning of May the Vines should now be pruned, washed, and dressed at the earliest convenience, and made ready for shutting up the first week in November. If the houses have been kept free from spider and other insects, a good washing with warm soapy water, or a solution of Gishurst Compound will be found sufficient, as many healthy Vines are ruined by the barbarous practice of scraping, scrubbing, and dressing where there is no necessity for it. The most troublesome insect we have to deal with is the mealy-bug, particularly when it gets established on old Vines. The modern remedy for its destruction is paraffin, and a very dangerous insecticide it is in the most careful hands, as many gardeners have proved to their sorrow. After carefully cleansing the house and Vines, the proper and most effectual time to deal with the enemy is through the spring and summer, when every insect that has escaped the winter dressing should be destroyed by the application of methylated spirits before it has time to move away from the crack or crevice in which it has spent the winter. If not already done, advantage should be taken of this fine weather for getting all external borders put in order, by thoroughly clearing them of old mulching and inert soil quite down to the surface-roots, and top-dressing with new compost consisting of rough, turfy loam, burnt garden refuse, and 10 or 12 per cent. of bone-dust, thoroughly mixed and used in a dry state. Beat firmly with the back of a steel fork, and cover up with 3 or 4 inches of fresh stable litter for the present. Let the borders have the full benefit of all the rain that falls up to the end of October, and increase the covering in time to protect from frost and snow. If the introduction of new or fresh kinds is contemplated, the simple method of bottle-grafting may be adopted as soon as the wood of the current year is ripe. *W. Coleman, Eastnor Castle.*

PLANT HOUSES.

ORCHIDS.—Now that the long days of summer have passed, and that every day brings with it a

shorter period of light than its predecessor, it becomes necessary so to modify our treatment of these plants that they may rest, grow, or flower, whichever the case may be, in harmony with the season through which they are passing. Winter, we know, is not far ahead, but there is time meanwhile, if we give them proper management, to prepare our Orchids for that trying period. In neither department must water now be used, either at the roots or for the purpose of atmospheric moisture, so freely as in the heat of summer. Then, with the hot and dry external air rushing through the wide open ventilators, it was of no great consequence if a little too much water was used either here or there, as its power for evil was greatly reduced or entirely counteracted. No longer is the external air hot and dry, but, owing to the drenching rains which we have lately received, it is cool and so moist that almost any Orchid would be satisfied with it in that respect. This being so, there is no longer the need to damp down so often, neither to use so much water at each damping down. From the present time until a considerable deal of fire-heat has to be used to keep up the temperature, a moderate damping down each morning and evening will suffice for the Cattleya, East Indian, and intermediate houses. In the cool-house, where no fire-heat is at present required, one thorough damping down in the morning will be sufficient for all dull days. After a bright day it may be necessary to sprinkle the floors over in the evening. Provided the ventilators are so used that an abundance of the moist external air finds its way to every portion of the house, it is almost impossible for the inmates of this division to suffer from atmospheric dryness. The drying up of each division for a few hours in the middle of the day, mentioned in the last Calendar, must now be strictly attended to, for nothing will more assist in the proper ripening up of growth than this. Where the spot disease has attacked Phalenopsis, Aerides, or Saccolabiums, nothing will check it sooner than this drying up of the division they are in. If the external air will allow of it, air the house freely, at the same time taking care to close the ventilators early enough in the day that the temperature may rise to between 80° and 90° by sun-heat. Some hours will elapse before this sinks to 70°, when enough fire-heat must be used to hold it there. Avoid even in this, the hottest division, a higher night temperature than 70°, for an over-high night temperature, combined with an atmosphere constantly saturated with moisture, will bring spot and decay among Orchids quicker than all other causes combined. Many of the spring and early summer flowering Angræcums, Aerides, and Saccolabiums will in a week or two have passed their growing season; and although this class of plants never really stop growing, as many of the Dendrobiums do, they require in a great measure to be treated as resting plants, more particularly in the way of water at the roots, which must be given them only just often enough to prevent loss of foliage. Their top-dressing of growing sphagnum, which for the last three or four months has never been otherwise than green, owing to the frequent waterings given, must now be allowed to dry up till it gets of a whitish-green colour before water is given. The cooler growing Aerides, which comprise such splendid Orchids as A. Fieldingii, A. crassifolium, A. crispum, A. Lindleyanum, and A. Warneri, will as yet have only made up half their growth, and for some time must be kept constantly moist at the root. Perhaps the greatest error made in growing these plants is to keep them too close, in reality they require a very airy position. Given this, and kept moderately shaded, they appear to enjoy a high sun-heated temperature, but fire-heat to any great extent quickly brings them into a debilitated condition. It is now a critical time with some few Cattleyas that are finishing up their growth, such as C. Mendelii, C. Trianae, C. Dowiana, and C. gigas. The grower will notice that those bracts or scales which in well preserved old bulbs have the appearance of a wrapping of tissue paper are now passing from the fleshy to the papery state. Much of the given-off moisture from these bracts appears to get between them and the young bulb, and has often been the means of rotting the bulb: to avoid this, keep such plants extra dry at the root, and also see that the atmospheric moisture is not in excess for a few days. Of course they should also have a very light airy position, which will prove the best guarantee for their ripening up properly, and not breaking again prematurely. *J. C. Spyers, Burford Lodge, Dorking.*

CYCLANTHERA PEDATA.—This Cucurbit, a widely distributed tropical climber, cultivated in some gardens, has in a general way solitary female flowers, shortly stalked, and originating in the axils of the leaves. The male inflorescence, which proceeds from the same axil, is a long-stalked, many-flowered, panicle cyme, the individual flowers being small and greenish. M. André kindly sends us a specimen in which female flowers have, by exception, been produced on the male panicle, thus completely altering the aspect of the plant. Such cases are not very uncommon, but are always interesting.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Sept 27	Sale of Dutch Pulbs, at the Auction Mart, by Protheroe & Morris.
TUESDAY, Sept 23	Clearance Sale of Stove and Greenhouse Plants and Effects, at Belsize Court, Hampstead, by Protheroe & Morris.
WEDNESDAY, Sept 23	Sale of surplus stock of Plants, at Woodville's Nursery, Harrow Road, N.W., by Protheroe & Morris.
THURSDAY, Sept. 30	Sale of Orchids, Stove and Greenhouse Plants, at Parkes' Nurseries, Tooting; also the first portion of the Greenold Land, in Flats, by Protheroe & Morris.
FRIDAY, Oct 1	Sale of Camellias, Azaleas, Mexican Orchids and Pulbs, at the Auction Mart, by Protheroe & Morris.

THE managers of THE INTERNATIONAL POTATO EXHIBITION may fairly be congratulated on a great success. Through their agency was got together on Wednesday and Thursday last a display, the like of which for both quantity and quality was probably never before seen. In another column will be found a detailed report of the objects exhibited, but in this place a few general remarks may not be inappropriate. In the first place it appears to us that the managers might now fairly constitute themselves into a Society. As a general rule, we are not inclined to look very favourably on special societies for this, amongst other reasons, that such institutions convey the notion that gardeners in general are either not competent or are too careless to deal with the objects for which these special societies are founded. However, as it is not our intention now to discuss that question, let it be assumed that special societies are always, as they certainly are sometimes, useful institutions, doing good work and not frittering away time, labour and money about matters which might with advantage be dealt with in a more comprehensive and broader spirit. A very great deal hinges on a name. An International Potato Exhibition, of course, suggests an exhibition only. An exhibition is a very good and desirable thing, but the general public regard it pretty much as a mere trade bazaar, useful in its way to professional growers and merchants, but only indirectly concerning themselves.

It may thus happen that the managers of such an exhibition do not obtain such an influence as their collective knowledge and experience entitle them to. An illustration suggests itself to us in the case of the late report of the Committee of the House of Commons on the subject of the Potato disease, and to which we have already adverted. No one who reads that document will doubt that the Committee of the International Potato Exhibition, assisted by scientific experts on points where their assistance would be valuable, would have produced a much more satisfactory document than that which has been published under the sanction of Her Majesty's Government. A Parliamentary inquiry of this nature is almost sure to be unsatisfactory, because the evidence given is not sifted, classified, and gauged, as it would be by a committee of experts. The managers of the Potato Show can hardly feel aggrieved that their advice was not sought. Had they been constituted as a Society their opinions would have had more weight. The committee of the Potato Show have shown on more than one occasion that they are willing to do more than merely get up a show. They did good service some time since in publishing and circulating in Ireland and elsewhere a series of recommendations as to the best sorts to plant, and the best means of planting. If it had not been so we should scarcely have ventured to suggest that the committee should assume a more permanent shape, and so enable themselves to accomplish more generally useful work than that of offering prizes for so many collections of Potatoes, many so-called sorts of which are so like others that little difference, save in name, exists. A show of this character, however excellent, is of but limited utility. Its great deficiency seems to be that it effects so little in proportion to the pains taken. Indeed, how

little instruction is afforded by such a show; it affords an opportunity for displaying the results of good cultivation, and is useful as bringing before the cultivator a large number of sorts that it is desirable he should know. But beyond this little information is afforded, and the spectator has to find out as best he can what is the character of growth of this or that Potato, whether it is early or late, productive or not, adapted for market purposes or for the table of the connoisseur, suitable for cultivation on light or heavy soil, and a variety of other points on which it is most desirable the cultivator should be informed. What service, too, might not such a Society render by drawing up a list of such Potatoes as are sufficiently distinct, or sufficiently good, for various purposes—revising the list from year to year, according to the experience gained in different parts of the country, and ignoring the others. In this manner it might serve as a check on the widely-circulated statements of persons interested in some particular varieties.

As to the Potato disease, enough has been said and written for the present perhaps, but on one point of utmost moment the Society might and should assert itself. We mean in the matter of prevention. The researches of the microscopists have told us of the nature of the enemy and of the futility of looking for a cure under existing circumstances. At the same time they point unmistakably to the possibility of prevention to a considerable extent. People seem to think that because it is not possible to prevent it altogether that it is not worth while to try and prevent it at all. Such people prefer no bread to half a loaf. Because it is not practicable to destroy the diseased haulm or the diseased tubers on a large scale in every locality, it is not worth while, in their opinion, to try and do it on a small scale somewhere else. These people argue on the same lines as those silly, we may say wicked people, who urge that their children must have measles or scarlet fever, and therefore they take no precautions to prevent them from catching them, and with results that are distressing enough. It would really seem as if some cultivators took pains to propagate and spread the disease, in proof of which see the masses of rotten haulm and tubers left about, or thrown on the manure-heap, the feeding of pigs and other animals on diseased tubers, and the consequent infection of the manure-heap. See, too, what happens even in London streets; see the flags of Covent Garden strewn with diseased haulm, used as packing and discarded when no longer of service, to be swept up with the rest of the refuse, and carted off—where? There is a great work for the Society here, and we are convinced that, as practical men, they need but to have their attention drawn to the matter to remove some of the apathy which now exists.

Then there is the question of disease-resisting varieties. We have no great faith at present in such varieties as absolutely, or nearly absolutely, disease-proof; but it is quite certain that under some circumstances some varieties are less subject than others to disease. What are they? Why is it so? These are questions for the Potato Society to answer.

The interesting statements of the percentage of starch in each variety as grown and exhibited by Mr. OSCAR MOOYER at Angermünde in North Prussia, are very suggestive. We see that the tall herbage and vigorous haulm of the Champion is associated with so large a percentage of starch as 22. A plant must have great vitality to turn sun and air and water into such a proportion of nutritive starch; and such a Potato might be expected to resist the attack of the fungus better than others whose powers of life are less. Mr. MOOYER's exhibit exemplified, by supplying, one of the deficiencies of such shows. His Potatoes were by no means equal in appearance

to those exhibited by English growers, but not one of them shown by the latter class of exhibitors afforded any information beyond what could be seen by the eye; whereas the German exhibitor was careful to give information, the value of which is incontestable.

While thus throwing out suggestions for the increased utility of such exhibitions, we must not omit to call special attention to one exhibit, made by the veteran raiser, Mr. FENN. With indefatigable singleness of purpose this gentleman has been experimenting for many years, cross-breeding and selecting, with a view to improve the quantity and quality of the crop. He has gone to work in no haphazard way, but systematically, and on the whole he has had a large measure of success. It is right and proper for a Society to encourage the ordinary cultivator by awarding prizes for the best samples shown, but it is still more essential that the patient labours of the careful experimenter and the unwearied naturalist—labours which the general public, and even the mass of Potato growers, cannot appreciate, should receive acknowledgment at the hands of such a Society.

The following is the table of percentages furnished by Mr. OSCAR MOOYER with the samples exhibited by him at the Crystal Palace on Wednesday last:—

Percentage of starch.		Percentage of starch.	
1. Kaiser, early ..	15	25. Early Blue Six-Weeks ..	16
2. Sunrise, early ..	17	26. Early White Round Six-Weeks ..	13
3. Richter's Gem ..	15	27. Risquit, early ..	16½
4. Eureka, feeding ..	14	28. Victoria Violette ..	14
5. Peerless, early ..	14	29. Giant Marmont, feeding ..	12
6. Seed of Gleason ..	20	30. German Red ..	20
7. Victoria ..	17½	31. Compton's Surprise ..	15
8. King of the Earlies ..	14	32. Snowflake ..	13
9. Bovinia, feeding ..	13	33. Vicar of Laleham ..	11
10. Aurora, early ..	17½	34. Schoolmaster ..	14
11. Late Blue Rose ..	15½	35. International Kidney ..	10
12. Extra Early Vermont ..	12	36. Magnum Bonum ..	17
13. Early Pose ..	12	37. Chardon, feeding ..	12
14. Late Rose ..	14	38. Champion ..	22
15. Red-skin Flourball ..	14	39. Achilles ..	13
16. Improved Peach-blow ..	17	40. Fidelio ..	16
17. Yellow Rose ..	17½	41. Lurline ..	15
18. Late Prolific ..	13	42. White Flourball ..	16
19. Richter's Elegant ..	13	43. Erectiflorus ..	10
20. Early Peachblow ..	15	44. Farmer's Blush ..	11
21. Early White Rose ..	13	45. Mr. Iresee ..	11
22. Peachblow ..	16	46. Red Cone ..	
23. Richter's Prolific ..	14½	47. Pride of Chili ..	
24. Early Six-Weeks ..	13		

It will thus be seen that the percentage of starch was highest in Champion—22 per cent., and lowest in International Kidney—10 per cent. Of course, under other circumstances, the percentage might be very different, even in the same variety.

— PROFESSOR HANSTEIN. —We regret to hear of the death, on August 27, of Dr. HANSTEIN, the Professor of Botany and Director of the Botanic Gardens at Bonn. Dr. HANSTEIN was chiefly known as a physiologist, but the garden under his charge, though ill-kept, from financial reasons, is one of the most interesting of the smaller Continental gardens. There is a fine Palm-stove and a house for the Victoria regia. The collection of hardy herbaceous plants, while strictly systematic, is yet arranged with more eye to effect than is usual in most botanic gardens where the gridiron has apparently furnished the idea to the planter.

— VINE DISEASES IN JAMAICA. —Mr. D. MORRIS, of the botanical department, Jamaica, has sent us from King's House leaves of Vines, remarking that the cultivation of the Vine is being attempted in Jamaica, but everywhere the plants are attacked by fungoid growths which threaten to destroy them altogether. One of the enemies is clearly the old *Oidium Tuckeri*, from which Vines of American origin seem to be entirely free. The other parasite is a species of *Uredo*, a genus which has not hitherto been found on the Vine or any plant of the same natural order. The species are yellow, elliptic or elongated, and more or less echinulate. We have written for further specimens. We also found a third parasite, but in very minute quantities, a species of *Septoria*. *M. J. B.*

— DAVALLIA MOOREANA. —Few plants can compete with this as a basket Fern, for which its general decorative qualities most admirably adapt it;

and these are so well known as to need little comment. A fine specimen, some 6 or 7 feet through, is being grown in this way in Mr. JOAD's garden, at Wimbledon, and is very striking and effective.

— POMONA IN EXCELSIS.—A remarkably fine fruit of Warner's King Apple, of unwonted size and handsome proportions, occupied for a few days a conspicuous position in the window of the General Horticultural Company in Regent Street, and was recently sold for 5s. Its unusual size and value as an attractive object secured this fancy price, but the fact is worthy of record. It has been a season for fruit of a large size and of splendid proportions. Some of the finest Lord Suffield Apples probably ever seen

nearly orbicular outline. In one of the herbaceous beds in Mr. JOAD's garden, at Wimbledon, it is now flowering freely.

— CRYPTOGAMIC SOCIETY OF SCOTLAND.—An exhibition of Ferns, Mosses, Fungi, &c., is announced to be held in the Coal Exchange Hall, West Regent Street, Glasgow, on Thursday, September 30, and the following day. A very extensive collection of plants will be exhibited, comprising specimens of all the British Ferns, many exotic Ferns (including Tree Ferns), Club Mosses, British and foreign Mosses, seaweeds (olive, red, and green); Lichens, Liverworts, &c.; fossil Ferns, Horsetails, &c.; but the unique feature of the show will be a

ing over New Zealand with astonishing rapidity. From the same source we learn that in the province of Canterbury alone 250 species are more or less naturalised. Some of them, especially a number of the grasses, are very useful, whilst others are serious pests.

— RHEEA FIBRE IN INDIA.—Rheea fibre or China-grass, the fibre from the stem of *Boehmeria nivea*, has often been brought to public notice both in England, in India, and in the Colonies, on account of its peculiar adaptability as a textile material. After all that has been done towards, and a great deal more that has been said about, the proper methods of cleaning and preparing the fibre for

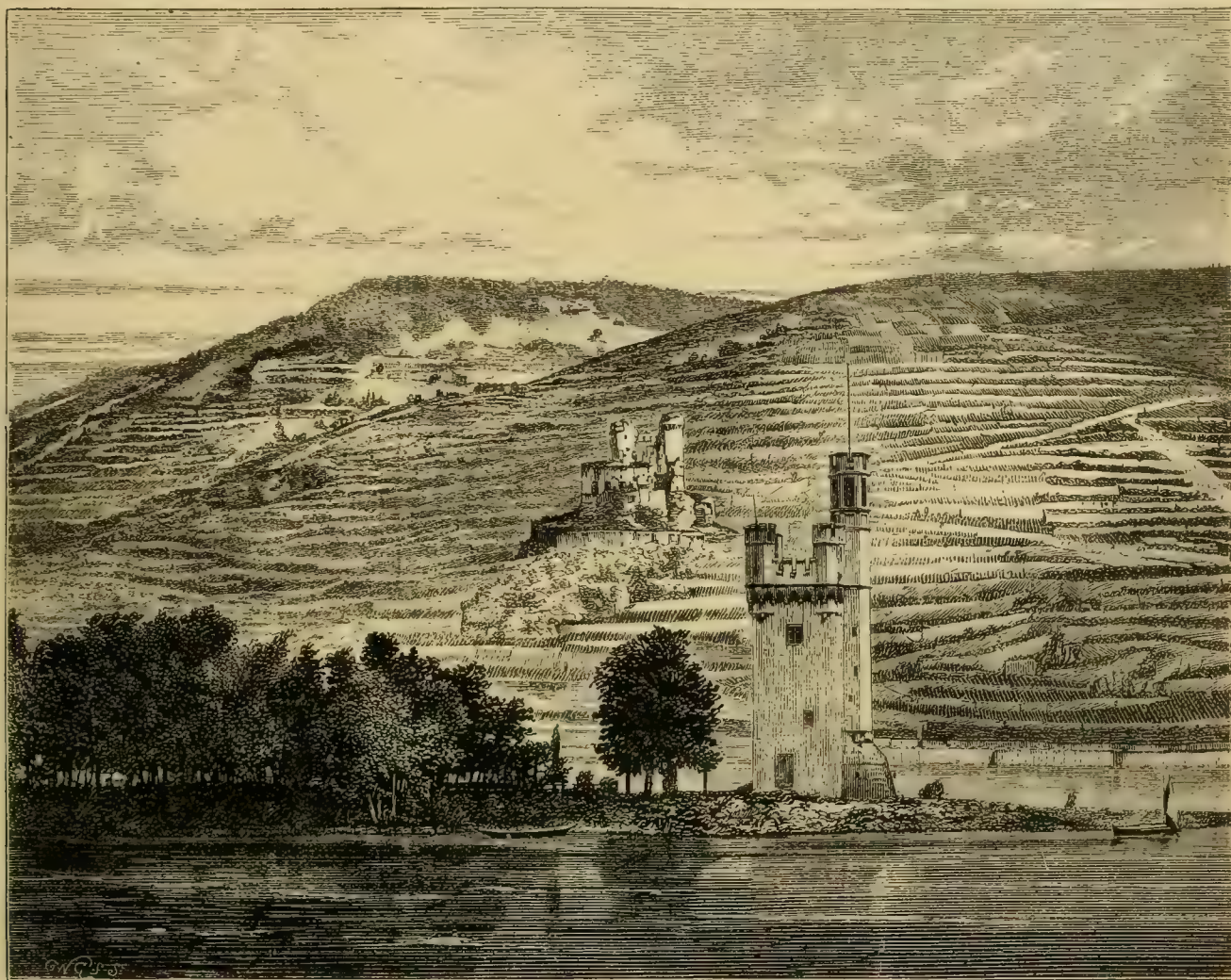


FIG. 77.—VINE GROWING ON THE RHINE. (SEE P. 396.)

have been produced this season. Emperor Alexander, the large Codlins, Blenheim Orange, Small's Admirable, Nelson's Glory, Stirling Castle, Stone's Apple, and other large sorts have been in grand form during the summer. Selected Bon Chrétien Pears have been fetching the high price of 30s. per bushel; one grower who this season could only muster 40 bushels as against 500 in a good Pear season, sold nearly all at this figure, while when there is a good crop the price averages from 7s. to 9s. per bushel. Hesse Pears have realised as much as 9s. per bushel, an unusually high figure for this sort. When crops are scarce prices must be expected to rule high.

— PENTSTEMON MURRAYANUS.—Of the fine old examples of this genus this is one of the grandest and one of the most distinct, having flowers of a bright scarlet. The flowering stem rises to a height of 6 feet; the perfoliate leaves are of a glaucous hue, and

collection of many thousands of fresh Fungi, such as Mushrooms, "Toadstools," Puff-balls, and a host of others that bear no popular names. At intervals during the two days popular addresses, in illustration of the various sections, will be delivered by Colonel R. E. S. HARRINGTON-STUART, of Torrance; Dr. STIRTON, Dr. BUCHANAN WHITE, and other gentlemen.

— ANACHARIS CANADENSIS IN NEW ZEALAND.—We learn (September 8) from the *Proceedings of the New Zealand Institute* that this aquatic, although only recently introduced into New Zealand, is already abundant in the Avon and other rivers, where it seriously interferes with drainage and navigation. After overrunning England in an incredibly short time, it seems to have exhausted its extraordinary vitality. Probably this will prove to be the case in New Zealand; but European plants are spread-

the weaver, it is somewhat disheartening to find that the fibre in its partially cleaned state is now offered for sale in the market with a view to its use for no better purpose than that of tying-up plants in gardens. The reward offered by the Indian Government a few years ago for the best machine for cleaning and preparing the fibre was almost barren of results. Fabrics made from the fibre grown, cleaned, prepared, and woven in India, leave nothing to be desired. How this preparation is carried on is very well described in some papers recently communicated to the Agri-Horticultural Society of India. The process described is that which has existed for many years at Bhangulapore by some families of the Dhanook caste. The cultivation of the plant is similar to that of the Sugar-cane, without the labour and expense of yearly planting, the Rheea being perennial. The roots, properly attended to, will give three or four cuttings yearly; and it is stated that they may be left in

the open fields, for cattle will not touch them. These qualities are very desirable in the estimation of the Rajpoot and Brahmin cultivators. The site of the little factory is chosen, if possible, near a stream of soft water, as the process is one of slow boiling or simmering and beating in combination with washing. The factory "plant" is an earthen or other pan or boiler, and two notched boards, such as dhobies use. The workpeople number two men, two women, and two boys. The boiler is charged with sufficient water to cover the shoots, and to it are added about 10 chittacks of *sujee-matee* for a maund of plant placed in the boiler; the whole is then allowed to simmer or boil slowly for from half to two hours. The shoots are then taken by or handed to the nearest man with a notched board before him (the boards being placed near by or partially in the water, dhobie fashion) in such portions as can be held firmly between his two hands. He continues to dash it against the board, washing it at the same time, thus clearing each end alternately of the wood and portions of the bark and gum. The handful is then passed on to the second man with a similar board, who beats and washes it in the same way. To free the filaments still further from gum and bark. After this it is taken by the boys back to the boiler, to be again slowly boiled or simmered for about an hour; it is then again beaten and washed by the two men as before, then the gum is removed and the filaments are free. The two women next take charge of the fibre, to be dried, beaten, and drawn or carded. A maund of shoots per hour can thus be easily worked off, which, if "filament" or fibre is contained in the stems in the proportion of 2½ per cent., will produce one seer of fibre fit for spinning by the native hand method or for the carding machinery sent to Europe. By adding half the original quantity of *sujee-matee* to the water in the boiler it may be used again, afterwards the water should be changed. Messrs. BURROWS, THOMSON, and MYLNE, of the Jugdispore estate, Behua, from whose report the foregoing facts are chiefly derived, say in conclusion:—"We propose introducing the domestic cultivation of the Rhea plant and preparation of fibre to the people of the villages on the Jugdispore estate, in the hope that it may make a considerable addition to the family earnings, especially to high-caste families, to the women of whom the preparation of the fibre would be a profitable way of passing time otherwise useless. The plant being perennial and hardy would require but little care from the men beyond perhaps loosening the surface and weeding every two months, and giving some manure twice yearly. Should any simple machine be required or found to be beneficial, we have reason to believe that the want will be met by two small rollers on the principle of the native chirkree or cotton gin roughed on the surface and working at different degrees of speed; this has been found to loosen and partially remove the bark, and to some extent free the filaments from the gum or gluten by the drawing or tritulative motion of the rollers so adjusted to each other." After consideration of the above communication by the Society in India, it was resolved to recommend that a large sample, cleaned and prepared in the way here described, which seems to produce a very superior fibre, should be sent to England to be carefully reported upon and valued, so that we hope this may be another impulse to a proper utilisation of this valuable textile substance.

— *SIBTHORPIA EUROPEA VARIEGATA*. — A charming potful of this "miffy" little plant occupies a place in a cold frame in a pot 9 inches in diameter, (over whose sides it is hanging), together with a small collection of alpine, in Mr. WHITEHEAD's garden at Bickley, and where also the beautiful *Armeria juncea* is doing well.

— *FLORA OF THE PROVINCE OF CANTEBURY, NEW ZEALAND*. — Mr. J. B. ARMSTRONG contributes to the *Transactions and Proceedings of the New Zealand Institute* an interesting sketch of the flora of this province, together with a complete catalogue of the flowering plants and Ferns hitherto observed. The author divides the province into four districts—namely: 1, Littoral; 2, Banks' Peninsula; 3, Lowland, or Middle; and, 4, Alpine. The Littoral district contains about 110 species, belonging to no fewer than eighty-three genera. So large a proportion of genera to species could probably not be found in any similar area outside of New Zealand. Banks' Peninsula contains 350 species of flowering

plants, belonging to 171 genera; and the Lowland district 360 species, belonging to 160 genera. But the Alpine district is by far the most interesting, containing, as the author says, a very large number of most beautiful shrubs and herbaceous plants, which are likely at no distant date to become the common ornaments of European gardens, for which they are eminently fitted from their great hardiness, easy propagation, and exquisite beauty. Mr. ARMSTRONG recognises in the Alpine district a zone of Beeches, a zone of shrubby Compositæ and Scrophularinæ, a zone of herbaceous plants, and a zone of perpetual snow. In this district Mr. ARMSTRONG has observed 496 species of flowering plants, belonging to 164 genera; but he states that it has not been even moderately well explored. The total number of species of flowering plants known to occur in the province is 750, referred to 236 genera; and 107 species of Ferns, belonging to 34 genera. The largest orders are Compositæ, with 110 species; Scrophularinæ, 63 species; Cyperaceæ, 55 species; Graminæ, 51 species; and Umbelliferæ, 43 species. The largest genera are *Veronica*, with 44 species; *Celmisia*, 23; and *Ranunculus*, 22. Independently of the foregoing statistics, Mr. ARMSTRONG's essay is exceedingly interesting, and contains much valuable information.

— *LINUM VISCOSUM*. — This is a charming Pyrenean species with rose-coloured flowers, seldom seen in what may be termed specimen form, but possibly if amateurs and others would adopt the plan of pegging it down close to the ground they would find that, instead of having one erect stem with a few flowers, as is generally seen, they would have an abundance of stems and a profusion of blooms, which would amply repay the small trouble taken.

— *OUR ILLUSTRATIONS*. — We have experienced a slight feeling of surprise at seeing two of the illustrations originally produced in the *Gardeners' Chronicle* reproduced this week, one in the *Journal of Horticulture* and the other in the *Illustration Horticole*, without one word of acknowledgment. In the case of *Rubus roseifolius* var. *coronarius* the initials of the artist have been removed. In the *Illustration Horticole* our illustration of *Anthurium Andreanum* has been given, while the text conveys the impression, if it does not exactly say so, that the woodcut in the publication in question was taken "exactement sur le vif" from specimens in the nursery of M. LINDEN. The real truth is, that the plate in question was drawn, at our request, by Mr. WORTHINGTON SMITH in the gardens of the Royal Horticultural Society from a plant exhibited by M. LINDEN, and that afterwards it was engraved at our expense, also by Mr. SMITH. We have always endeavoured to treat our friends and contemporaries with liberality in these matters. Our rule has hitherto been not to accept any remuneration from a professional contemporary for the use of any cuts that have appeared in these columns, but to lend them when requested to our friends under the conditions that the ordinary courtesy of acknowledgment should be made, that the trifling cost of electrotyping should be defrayed by the borrower, and that the cuts should not be used elsewhere without our consent. We have, however, suffered so much from our good nature in this matter that we constantly take up catalogues in which our blocks are used in some unauthorised manner, and decidedly not improved in the transfer. A feeling of what is due to the honour of journalism as well as to ourselves has prompted these remarks, and may lead us in the future to be more chary in lending.

— *FRUIT CROPS IN CAITHNESS*. — A travelling correspondent, writing from Wick on September 16, says:—"At Sandside, one of the seats of the Duke of PORTLAND, I saw the other day fine crops of Hawthornden and other Apples, as well as grand Pears. At Castle Hill, the seat of J. C. TRAIL, Esq., they have also good crops of Apples and Pears, and I also saw *Begonias* doing remarkably well in the open air. Verily, Caithness is a fine open county."

— *GIBALTAR MINT*. — It occurred to us that this name might with advantage be introduced in place of the very long and very awkward *Mentha Pulegium gibraltaricum*, an epithet which involves the use of three names, a mixture of neuter and feminine terminations, the true significance of which none but a professed botanist can be expected to know, and the

use of a capital P under circumstances which convey a distinct meaning to a botanist, but which is simply bewildering to one who has no concern with the botanical history of the plant in question. We rather prided ourselves on the innovation, but our good intentions have brought us, and we regret to say others, into trouble. Gardeners have been known to be searching the Parks lately, inquiring in vain for Gibraltar Mint, but even now we cannot help thinking "Gibraltar Mint" preferable for garden purposes to *Mentha Pulegium gibraltaricum*. The objection obviously is that there are other Mints in Gibraltar, but the gardener is not at present concerned with them, so far as we know. Where a common name is in general and unequivocal use, by all means let us retain it; but to coin English names where none exist has been tried by some of our best botanists, and has always resulted in failure. A very small percentage of such names gets adopted, while, on the other hand, the public soon get to use such once dreadful names as *Rhododendron*, *Chrysanthemum*, *Fuchsia*, without inconvenience.

— *PHÆOSPERMUM GLOBOSUM* (see p. 375). — We owe to the courtesy of M. DECAISNE the following note relating to this ornamental Grass. The seeds of *Phæospermum* were obtained from China, through the mediation of the Abbé DAVID. The plant was named in 1876 by the late General MUNRO, and it has figured in the annual catalogue of seeds of the Museum since that year.

— *FUNGUS FORAYS*. — The members of the Epping Forest Field Club intend to explore the district of High Beech on Saturday, October 2, in search of fungi, rare and common. The party will be accompanied by Dr. COOKE, Mr. WORTHINGTON SMITH, and Mr. ENGLISH. In the evening of the same day the finds will be discussed and commented upon at the "Foresters' Arms," near the spot explored. — The Hereford meeting is appointed for Thursday, October 7, when the grounds and park of Holme Lacey will be explored. Several papers are to be read, as "Mushroom Sauce," by Dr. COOKE; "The New Sclerotium Disease in Irish Potatoes," by Dr. BULL; "The British Hypomyces," by Mr. C. B. PLOWRIGHT; "Spirulina oscillarioides," by the Rev. JOHN E. VIZE; "Notes on *Telephora Lycii*," by Dr. COOKE; "Note on Spore Diffusion of the Larger *Elvellacei*," by Mr. C. B. PLOWRIGHT; and "The Luminosity of Fungi," by Mr. Wm. PHILLIPS. MM. MAXIME CORNU and ROSE have promised to come from Paris to attend this meeting. — There will be a fungus foray at Coed Coch, Denbighshire, on October 11 and 12, under the general direction of Mrs. LLOYD WYNNE and the Rev. M. J. BERKELEY. The fungological members and visitors belonging to the Woolhope Club will, it is expected, be present at the Coed Coch meeting.

— *THE WEATHER*. — General remarks on the weather during the week ending September 20, issued by the Meteorological Office, London:—"The weather has been cloudy, unsettled, and very rainy, in all parts of the kingdom. Thunderstorms occurred at several stations on the 14th, and again on the 18th and 19th. The temperature was a few degrees below the mean in all districts. The maxima were all very low, the highest reading registered being 69°, which was recorded at Loughborough on the 16th. The lowest of the minimum readings (36°) occurred at Glenalmond on the 20th, elsewhere the minima were generally 39° or 40°. A frost was experienced on the grass in London early on the morning of the 20th, but the sheltered thermometer at 4 feet from the ground did not fall below 41°. The rainfall was more than the mean in all districts; over Ireland, "Scotland, E.," and the western parts of England, the excess was not great, but over the greater part of England, and in "Scotland, W.," the fall was very heavy. Bright sunshine was less prevalent in most districts than during last week. The registered percentage of total possible duration was greatest (40) in "Ireland, S.," and least (27) in "England, N.W." The wind at the commencement of the period circulated round a depression over the south of Ireland, being strong from the south or south-east of England, light from the north in Scotland, and strong from the west at Valentia. During the 15th and 16th north-easterly gales or strong winds were felt in nearly all parts of the kingdom, but by the 17th the wind had moderated, and backed to west or south-west at all stations, and continued in that direction, blowing strongly in the south during the 18th and 19th. On the 20th the wind was moderate from the north-west on all our coasts.

NOTES FROM SYON.

WITHIN a stone's-throw of the busy High Street of Brentford, there may be seen as fine an example of the rapidity of tropical vegetation as can be found under glass anywhere in the kingdom. It is in the Banana-houses at Syon where this is evidenced. The vegetable development of the plants here is simply marvellous. Probably there are other gardens in the kingdom where the noble Musa is as finely done—better it cannot be. Two houses are devoted to the growth of the Banana, and stepping from the lofty well-furnished vineries into these tropical houses certainly does present a strange contrast in fruit production, where are seen side by side the most favoured fruit of Europe, in rich luscious abundance, hanging pendent and cool, almost in a state of rest, whilst adjoining, the noblest of all tropical fruits is being produced under conditions and methods as can well be conceived.

How finely do these features in high-class horticulture manifest the power over Nature exercised by the modern gardener. Last April 24 the grand plants of Musa Cavendishii, now ranging from 12 to 14 feet high in height, were planted out, and but two months before they were mere suckers. How they thrive in the rich roomy soil-beds and in the heated temperature, the massive stems and the magnificent leafage show. On one plant is already a more than half-developed bunch of fruit that promises to be nearly a yard long—and the rest will soon follow in its wake. One or two tall kinds put in at the back serve to show how valueless they are except as examples of tropical vegetation, throwing up grand leafage above the heads of less elevated plants. What a noble plant would the Musa make for sub-tropical planting if it would but thrive in the moderate sunshine of our uncertain summers.

One of the chief houses of Grapes now hanging is of the Madesfield Court, a very fine Grape indeed, but one that has had to endure during its short existence a great deal of animadversion from those who, by reason of soil, situation, or defective culture, have failed with it. At Syon it is admirably done, the bunches not large, but of the most serviceable size, the berries large and richly coloured; indeed, as good as well can be. Mr. Woodbridge, it is evident, does not believe in driving this Grape; he does not split upon a rock that brings some growers to grief—that of attempting to force too rapidly an excessive amount of juice into the berry, thus bursting the tender skin ere it has matured the external cuticle. The growth is moderate and steady, and beyond the needful warmth to produce that rich coloration so pleasing to growers, care is taken not to attempt too much. It may surprise some persons to learn that so amenable to simple culture is the Madesfield Court that it will set berries freely in the open air, and show even greater productions than the Esperione, or Sweetwater, under similar conditions. The Alnwick Seedling has fruited finely in one house, and bears evidence of being a first-class Grape.

There is a large crop of fruit on the Syon Plum Tomato under glass. It is quite a wonderful cropper, and if the fruits were suited for the dessert this would be of all kinds the best for the purpose. There are some persons who display a very decided fondness for Tomatos in the raw state. This Red Plum kind is perhaps better than any other for such use, and certainly is as rich in flavour as a Tomato can be. By-the-bye is not the Tomato everywhere unusually free from disease this season both indoors and outside? This improved condition on that exhibited during the past three years is doubtless due to the influence of the dry and parching weather of the preceding five weeks, and which has held in check the fertile spores of the Peronospora.

Five thousand pots of Strawberries, chiefly President, have a luxuriant, healthy appearance; better they could not be. The heavy rains and cooler weather will help to swell the crowns and induce the development of a grand crop of fruit in the spring. How well pot Strawberries repay the little additional labour involved in doing them well. Lapageria rosea is under glass flowering grandly, trained to a roof that is almost flat. Here the pleasing mottled appearance that good flowers should have is finely developed, and seems to be quite a feature either of the cultivation or of the variety. Dipladenias Brearleyana and boliviensis, trained to wires in the stoves, flower finely and furnish an abundance of cut bloom.

In the shrubbery the Tamarisk, most elegant and

graceful of deciduous trees, is in beautiful flower; the bloom, like the leafage, singularly elegant and pleasing. Both are of the greatest value for vase and room decoration.

Camellias under glass are this year well studded with bloom-buds, and the plants have made a good growth. Probably the lack of flower which characterised the past season will not again be manifested for many years.

Under the effect of a heavy rain the flower garden, which has been very beautiful, does not now look its best, but a couple of small succulent beds lit up with Alternanthera and variegated Mesembryanthemum are in the downpour simply charming. Whilst the Pelargoniums look downcast and dismal, these little beds seem but to smile amidst the shower of Nature's now welcome tears.

NURSERY NOTES.

MESSRS. LOW'S NURSERY, UPPER CLAPTON.—Those of our readers who do not know to what extent plants are grown at this establishment may be recommended to pay a visit to the nurseries and see for themselves at once, otherwise if left too long in the season the greater portion of the stock will be cleared away as winter encroaches upon us; in fact, the plants are daily and hourly being sent away in vanloads by the hundred, acres of ground being covered with Heaths, Epacris, Solanums, English-grown Azaleas, Genistas, Hydrangeas, and a host of others, the system being that of starting to supply orders on September 1 in each year with the large stocks of soft and hard-wooded plants, and of which a great clearance has already been effected. The rapid sale of this class of plants arises from the fact that the plants are large, well grown, well set for bloom, and in a most healthy condition.

In my walk through the Heath ground, which is very extensive, I noticed a fine batch of Erica hymenalis, of which upwards of 40,000 are grown in 48 and 32-sized pots. A few of these had been allowed to grow without being stopped in the usual way, the result being that the rods were of enormous size, and well set with bloom to within 4 inches of the pot; these will, when fully developed, be a sight worth seeing. To those who want finely flowered specimens this would be a good plan to adopt. There is also a fine lot of E. hymenalis superba. This appears rather more erect in habit than the type, and more robust, the flowers being nearly twice the size, which fact will render it a most useful and desirable plant. E. gracilis autumnalis is represented in a nice lot of about 10,000; these are also grown in the two sizes of pots above referred to, the largest of these forming handsome bushes, many being from 18 to 20 inches high from the pots, and one mass of bloom. E. Wilmoreana, a very nice lot in 32-size pots and extraordinarily fine; E. candidissima is a very good variety, and well represented in a large batch, forming, when in flower, dense sheets of white. E. melanthera is of dwarf bushy habit, and of which upwards of 10,000 are grown: this variety is remarkable on account of its withstanding wet to any amount, and it never objects to being plunged—a remarkable circumstance in connection with this variety being that out of the whole of this batch only one plant has failed. E. persoluta alba is also largely grown, and when in flower is one mass of snow-white blossom. E. colorans is a most distinct Erica, of erect sturdy habit, and deep green foliaged rods; this is also largely grown. E. ventricosa coccinea minor, one of the best of this section, is represented in a large well-grown batch, as is also E. perspicua nana: in general habit this plant much resembles the preceding. Many other varieties are grown according to their requirements.

I next turned to a fine batch of home-grown Azaleas, and which undoubtedly are a grand success. The plants are of good robust habit, being freely and well plumped up with bloom-buds. A few of the best are—A. Flag of Truce, a pure white and semi-double; A. Fielder's White: this is a remarkably fine variety; A. Charmer, bright amaranth, and of good form; A. Iveryana, white and striped with rose; and Souvenir du Prince Albert, deep rose, margined with white, distinct and double. These are all grown in quantity, and quite equal if they do not surpass any Continental-grown plants I have seen. These, for the most part in a small state, are planted out in pits and frames, and at the proper season are lifted and potted for next year's flowering. A. amena is also very

largely grown, the usefulness of which is already known.

Epacris were the next to attract attention: these also were of the same free growth and robust habit; in fact, it seems a prevailing feature in this nursery, to do everything in the best possible manner, no one plant being made a speciality, but everything to which attention is turned being well done. Among these I noted E. Eclipse, E. miniata splendens, E. rubra superba, E. candida, E. Lady Panmure, and E. carminata. Independently of the flowering plants of these, thousands of others are growing on to take their places another year.

Pelargoniums, of which some 40,000 of the best varieties are grown, are looking clean and healthy, many having been already transferred to their flowering pots, and thousands still remaining to be shifted on. A few of the best of these are Captain Raikes, fiery-crimson on the upper petals, flaked with black, and bordered with carmine; Digby Grand, of a delicate blush-white; Dr. Masters, an exceedingly fine variety, with large trusses; Queen Victoria, also a good well known variety, of a rich vermilion groundwork, the petals being broadly margined with pure white, and having a beautiful crisplike appearance.

Hydrangeas are also largely grown. Some large lots of these in young plants were making good progress, noticeable among them being a fine lot of H. Thomas Hogg. Bouvardias, of which too much cannot be said for their excellent blooming qualities, are to be found here in almost every stage of growth, from newly-struck cuttings to specimen plants—plants that have done flowering having been cut back and repotted, others a little forwarder are making good headway; and so on till the specimen size is reached, of which a houseful, 100 feet long, were being tied out. Something like 50,000 of these are grown, and according to the system of growing these plants they must be in flower several months of the year—some of the best varieties being B. elegans, the best of the scarlets, much finer than Hogarth; B. Vreelandi, white; B. jasminoides, pure white and very fragrant, a most useful variety for general purposes; B. Humboldtii corymbiflora is the largest variety at present known, its snow-white flowers, which are produced in dense corymbs, being very fragrant; B. longiflora flammea, vermilion-rose, and very free; B. Queen of Roses (this variety was the first known of its colour), with fragrant flowers which are of a bright rosy-pink.

Of Genista (Cytisus) fragrans, a large batch of nice compact, bushy plants is grown, and which is most useful for conservatory and other decoration. As a pot plant few can equal this.

Solanums are also very largely grown here, the visitor meeting them by the houseful at every turn. Some 17,000 are to be seen in various stages of colouring. Few plants of similar commercial value are of such a water-loving nature as this. They have been supplied with water during the recent hot weather four times daily, and had the pots filled up each time. Some idea may be formed from this of what this one item in the growing of these plants costs. They are looking most healthy, are well grown, and freely set with large berries.

Grevillea robusta, of which 7000 form the stock of young plants, in 48-sized pots, fill four houses with their attractive and Fern-like foliage. G. Preissii, which is rather new, is also grown largely. This is a very distinct plant and a good acquisition.

A very large collection of New Holland plants is kept up generally, comprising some rare and good species, noticeable among which are Eriostemons in variety, Diosmas, Dracophyllum gracile, Genetyllis, Boronias, Leschenaultias in variety, Correae, Pimeleas, Acacias in variety, and many others.

Acacia Drummondii is largely grown, and is a most useful plant. A large house of Cyclamen persicum is looking robust and healthy, and will presently make a fine display. In some thirty trays, 18 inches square, a fine batch of seedlings are ready for pricking off, and in which several thousands are still springing up. Another house, 100 feet long, is filled with the Scarborough Lily, Vallota purpurea, and in which are several thousand bulbs, some of which are still flowering. Close to these are two other houses of the same length filled with Odontoglossum Alexandræ; these are a remarkably fine lot, and in excellent condition. To meet such a lot of these in flower is a sight never to be forgotten. Adjoining this is another house of equal size occupied with O. cirrhosum, evidently enjoying the treatment they

receive; a goodly batch of Mesospinidium vulcanicum, the best of this group, with rose-coloured flowers, was also in flower, several good spikes looking very gay. Among *Acerides* are noticeable fine batches of *A. quinquevulnera*, showing a quantity of flower-spikes, and looking most healthy; *A. affine*, *A. crassifolium*. Of *Vandas* I noted *V. lamellata* Boxallii, a very fine variety, of which there are some 200 plants doing well; *V. Batemaniae*, *V. Parishii*, of which there was a variety with variegated foliage; and many others in equally healthy condition.

Oncidiums are represented largely; among these are *O. Krameri*, which is of a soft yellow, deeply margined and blotched with dark cinnamon-brown, and beautifully crisped; one plant in this lot has remarkably fine flowers, being much larger, of greater substance, and with darker markings: this is certainly a fine acquisition. *O. varicosum*, from Brazil, is producing several spikes of its lovely yellow flowers; *O. flexuosum*, of which some fine old plants has ceased flowering; *O. cheiroporum*, from the volcano of Chiriqui, and *O. Lanceanum*: of this there are many sizes of plants here, the largest having leaves about 18 inches long and 4 to 5 inches wide, and making fine growth. *Pleione Wallichiana* (syn. *Ceogyne*), from Arracan Mountains, is producing its lovely rosy-purple flowers. *Saccolabium Blunei* and *S. ampullaceum* are both doing well; *Miltonia candida* is also flowering.

Among Dendrobies are some very fine varieties, all doing well. I noted *D. Bensoniae*, *D. formosum* giganteum, with large white flowers and very fragrant; *D. giganteum*, *D. luteolum*, *D. nodatum*, *D. chrysanthum*, *D. thysiflorum*, and others. The extremely pretty flowered *Lælia Dayana* has on it several very fine flowers. This is a most delightful variety, and of which too much cannot be said.

A large houseful of *Cattleya speciosissima*, with some fine plants in flower, are doing well and making fine new growths. The plant is in the way of *C. labiata*; the lip is of a rich velvet-purple and distinctly lined, having yellow markings on the throat; sepals are of a soft rosy-lilac and white, one of the flowers measuring 6½ inches across, the lip 2 inches, and the labellum 2½ inches. This is a very fine variety, and deserves to be largely grown.

One of the most remarkable features in the Orchid department here is the enormous quantity of *Phalænopsis* in great variety which are grown; these occupy two very large and commodious houses, in which there are several thousand plants grown for the most part in baskets and shallow pans, which seem to suit them admirably. These are placed on raised open wooden stages near the glass, where they receive an abundance of light, the huge fleshy roots protruding from the base of the plant, showing full well the health and vigour of the plants, which are also making fine growth.

Among Cypripediums I noticed *C. Stonei*, with labellum of a dull purple, the upper and lower lip being white. *C. Argus*, from the Philippines, is represented largely. *Calanthes* are doing well, and grown in quantity.

Among greenhouse Ferns I saw among others *Lomaria gibba*, of which there were some 600 plants in 5-inch pots; these were remarkably well done, and I may in fair justice to the plants say my eyes never rested on a cleaner, better grown sample—they were simply perfect. A large quantity of *Lygodium scandens* is also grown, as are also *Adiantum cuneatum*, *A. pubescens*, *A. Capillus-Veneris magnificum*, which is seldom met with so good as here represented; *A. scutum*, *A. amabile*, one of the most graceful of all basket Ferns; *Pteris umbrosa*, a good useful plant, said to stand the ill-effects of gas with impunity; *Polypodium (Drynaria) muscicola*, *P. mucronatum*, and a host of others.

In the myriads of plants that are here grown it is a difficult matter to find any in ill-health, except, perhaps, newly imported consignments of plants that have not yet had time to recover; the only wonder being to know how such a vast multitude of plants, as grown in this great forest of glass, can be annually disposed of. *J.*

EUCALYPTUS GALLS.

THE singular mass of galls, of which a slightly enlarged figure is here given (fig. 78, p. 405), were sent from the Phytologic Museum of Melbourne, Australia, to Dr. Masters, by Baron Ferdinand von Mueller. They were found by Mr. Tepper on *Eucalyptus gracilis* at Spencer's Gulf, South Australia. The branched twig before me (only a portion of which is figured) bears several hundred galls, thickly clustered, and their position is such as to induce a belief that each gall is a modified flower-bud. In a dried state the galls are reddish-grey in colour. They are of a long spindle shape, slightly curved, with the apex much produced, the outer surface slightly rugose, and with

faint longitudinal ribs. The length of the individual galls varies from 6 to 13 lines, and the average diameter is about 1½ line. When broken they are seen to be quite hollow, with only thin walls, and they emit a pleasant aromatic resinous odour, similar to that of Rosemary. Many of them have a small circular opening (see the enlarged figures) a considerable distance below the apex, whence an insect has escaped.

I have broken open many galls from which an insect had not escaped. In some of these I find the shrivelled-up remains of a larva (never more than one in a gall) that appears to be dipterous, and no doubt the true gall-maker, but in the majority there is the dried-up pupa of a Hymenopterous parasite with clavate antennæ, apparently belonging to the group Ptenomalini of the Chalcididae. In all those galls from which the insect has emerged I find only the puparium of this parasite. I have not sacrificed every unperforated gall, but those examined have not presented dipterous pupæ, nor the remains of any dipterous insect ready to emerge. We are thus left somewhat in the dark as to the real nature of the gall-maker, and it is very desirable that specimens of the galls in alcohol be examined; but the form and position of the galls themselves are so extraordinary, and so unlike anything that has been previously noticed, as to render this short description, and the accompanying beautiful figure by Mr. W. G. Smith, of interest both to botanists and entomologists. *R. McLachlan, F.R.S.*



Home Correspondence.

Unequal Rating of Market Gardens.—This subject, which I brought before the readers of the *Gardeners' Chronicle* some months ago, has attracted less attention than I had reason to expect, seeing that some years ago there was a movement in connection with the question in the neighbourhood of London. I am, however, pleased to notice that the *Gardeners' Chronicle* recognises the grievance, and seems to view it in the exact light in which I do. I have no right to complain because a man who has Strawberry leaves on his coronet sells his Strawberries in the same market in which I sell what I grow; what I do complain of is, that while he escapes the heavy assessment I am compelled to pay, on the ground that he consumes the produce of his garden himself, he does no such thing, but sells the greater part of it in open market as I do mine. I read in the *Irish Gardeners' Record* this season that a great nobleman, recently Her Majesty's representative in the Sister Isle, sold the greater portion of the fruit grown in the Viceregal Gardens at the public expense to support the dignity of Royalty. This same nobleman has long been known as an English market-gardener, and it would be interesting to know at what sum his palatial gardens are rated, or what return he makes to the Income-tax Commissioners for the proceeds of his gardens. I had, some months ago, to attend a meeting of the creditors of a fruiterer in a large provincial city, where the list of creditors was read over. There were noble lords, baronets, noblemen's factors, and a host of gardeners; I alone was the only representative of the class that depend on market-gardening for a living. The fact seems to be, that county rates are assessed and levied as well as spent under the superintendence of county esquires, whether noble or otherwise; and until there is a thorough reform in county management, the present grossly unjust system of rating will prevail, and to the polling booths alone we must look for a remedy. The policy of noblemen selling their fruit is a question I have nothing to do with, though I am very sensible it has two sides. That, however, is no one else's concern; what concerns me and my class is, that we should not be unjustly handicapped in the race. *A Market Gardener.*

Garden Ground for the Miners.—I have just read "N. J. D.'s" observations on this subject in the *Gardeners' Chronicle* of the 18th, with very great interest. Will you permit me to endorse his remarks by stating that I know from experience, having lived for many years of my early life in the neighbourhood of both large coal and iron mines, that whenever garden-ground was given to the workmen, they, with but very few exceptions, cultivated it well; and as a

natural consequence sobriety followed, for the men who spent most of their evenings in digging and planting had but little leisure time to idle away in the village public-houses; and I am very certain that what "N. J. D." says is quite correct—the master who gives his miners, wherever it be practicable, a fair allowance of land with his cottage, or a piece of allotment ground near his house, will ultimately reap the benefit of it by having better workmen, sober, steady, good men, who will stand by their employer in time of difficulty or of strike; and if ever they do feel inclined to verify *Punch* by "leaving 'arf a brick" at a stranger, depend upon it it will be because they mistake him for an arch-delegate, come into the district to try and render them discontented. *H. G. W.*

Phæosperma globosum.—I think I can give "W. E. G." the information he wants about *Phæosperma globosum* (p. 375). It was sent from China to the Paris gardens by the Abbé David. I saw it at Paris in 1874, and had a small plant from there under the name of "*Panicum*, sp. China." Two years later it flowered here, and was seen by General Munro, and I well recollect the pleasant surprise I had in showing him a grass that was absolutely new to him, and which he soon decided to be, not only a new species but a new genus. He first named it *Phænocarpum Davidii*, which he afterwards changed to its present name, *Phæosperma globosum*. The plant is quite hardy, and grows freely, and I have been able to give away several plants. In my own specimen the leaves are longer than "W. E. G." describes them, but his seed-spike is longer than I have yet seen it. It is not in flower this year. *H. N. Ellacombe, Bilton Vicarage, Gloucestershire.*

Gros Colmar Grape.—This is a grand Grape when well done, but it is a rare thing to find it in grand condition. It is well worth a place in every collection of Vines. I have always found it to do well in a Hamburg-house, though I have read and heard of it succeeding in a Muscat-house; but having seen it twice in both cases, with equal justice with regard to soil and other treatment, I can vouch for the truth of this. I have always found it to succeed best in the Hamburg-house, ripening much better and quicker, whereas in the Muscat-house it took much longer to ripen, and often after it was considered ripe not equal to that grown in the Hamburg-house. I am told it ought to be planted in the Muscat-house by some of our gardening periodicals: my experience leads me to think otherwise, and, as far as I have seen of the Grape, I have always found it succeed best in some cool or late vinery. When properly managed they will be sure to give entire satisfaction. The foliage of this Vine is remarkably thin and soft, and, judging from the appearance it assumes, it is greatly benefited by a thin covering or shade; for while it is exposed to the more powerful influences of the sun it is sure to suffer thereby, and to be powerfully subjected to the attacks of red-spider. With regard to the thinning of this Grape it ought to be left in the hands of those who have a thorough experience of the matter, for in a great many instances careless thinning has spoiled many a splendid bunch that might have been otherwise. Give the berries plenty of room to swell; be not afraid to apply the scissors, for the more the berries are thinned the better for those that are retained on the bunch. I have seen the berries of this Grape much larger than Green Gage Plums. It is subject to cracking after being ripe; but that easily remedied by keeping the atmosphere of vinery much drier and cooler. If properly matured, by the end of September, it will hang a long time, and retain its freshness much longer and better than some of our other late-keeping Grapes. *George Drummond, Bournemouth Gardens.*

Succulent Beds.—These and other specimens of the confectionary art may be rendered passable by carpeting the ground between the ornaments with something that is pretty. I saw a large bed at Glasnevin rather artistically planted, but Mr. Moore, with most commendable taste, had interspersed a quantity of *Mesembryanthemum tricolor*. This had grown with great freedom, and on a very hot day, when I saw it, it was a various hued mass of scintillating beauty, relieved here and there by the succulents it was intended to adorn. *T. Smith.*

Vicomtesse Héricart de Thury Strawberry.—Although much has already been said in praise of the Vicomtesse Héricart de Thury Strawberry, enough I might say to hold for it a position in the minds of the public against all comers, I would still solicit permission to give one more instance of its wonderful fruiting powers. During the whole of this month we have had a regular supply from forced plants planted out in May. In former years we have enjoyed this

welcome treat from forced plants, but to my extreme delight and surprise, on September 18 I was able to gather at least 1 lb. of well ripened fruit off plants four years old, and the same quantity on the date I write (20th inst.); and from present appearances we hope to enjoy ripe Strawberries for some time. I might mention here that these plants supplied a summer crop on an average of $\frac{1}{2}$ lb. to the plant. We force a large quantity of this Strawberry every year, and we can bear good testimony to its forcing qualities. *W. Masson, Pease Park, Colubrook, Bucks.*

Herbaceous Plants for Autumn.—It is surprising how some herbaceous plants continue to flower when they are planted in a rich open soil. *Coreopsis lanceolata* has been flowering continuously for the last three months, and is still bright and showy. *Senecio pulcher*, a rather shy grower, in some places has succeeded as well as anything in the herbaceous garden here this season, and is still bearing flowers. *Pascalia glauca* I have not seen mentioned that I

enable beginners to select plants that would answer their purpose. Those that I have mentioned, except the *Tradescantia*, would not be of much service as cut flowers. I should like to obtain hardy plants that would yield flowers at this season to take the place of *Gardenias*, *Eucharis*, *Bouvardias*, *Dipladenias*, *Abutilons*, &c. *Cultivator.*

Veronica decussata and rotundifolia.—No class of autumn-flowering plants is more useful for purposes of cutting or for the embellishment of beds or borders than the shrubby Veronicas. The two varieties above mentioned are now in flower with us, and their shrubby, compact habit renders them almost weather-proof. The flowers of *V. decussata* are white, and those of *V. rotundifolia* purple or bluish-purple; the former does not exceed a foot in height, and the latter grows but a few inches higher. During the late storms of wind and rain outside flowers have been severely knocked about and divested of much of their beauty. Plants therefore possessing such admirable

their fragrant flowers had forsaken us. The word had all but been given to cut them down, when all at once it seemed as if fresh blood and life had been poured into them, and in an incredibly short time buds pushed out and leaves developed themselves, and with increasing vigour they seemed resolved to make up for lost time, and at this date (September 22) one of the four plants has now made over 90 feet of growth, in fact more than recouped itself of its former dimensions. Some of the growths measure over 16 feet in length, and it seems as if they would still grow several feet. Few flowers are more welcome in spring than Roses, and when they give us such proofs of their suitability as climbers I think we ought to see them oftener used for that purpose. *W. Masson.*

Calceolaria amplexicaulis.—I do not greatly admire masses of either *Calceolarias* or *Pelargoniums*, but I was particularly struck the other day with a large bed of this at Glasnevin, resting upon the green turf, well relieved on all sides by shrub and tree masses. Its soft charming yellow was very beautiful. The plant itself has more wild luxuriance than any other bedding *Calceolaria*, and the bed, therefore, lacked the formality attaching to other kinds—in fact, by contrast with such sorts as *Golden Gem*, &c., hard by, the latter was gaudy and devoid of all real beauty. *T. Smith, Newry.*

Young Mulberry Tree Unfruitful.—Your correspondent, "C. T.," p. 284, refers to a Mulberry tree which he had planted against a wall some eighteen years ago, and which has not yet brought any good fruit to maturity. My experience with several young Mulberry trees leads me to infer that young Mulberry trees do not bear, or at least that they do not bear appreciable crops, such as the many aged ones scattered about the country are known to do. Young trees, which I have experience of, and the age of eighteen or twenty summers I consider young for such a tree, commenced first of all to give male catkins only. This they did for a few years together, and I have imagined this a peculiarity in Nature which supplied pollen by means of the young tree for more certain fertilisation of such aged ones as were near by. After about five years male flowers, together with a few female flowers and fruits, commenced to form, but the fruit never ripened as do those upon aged trees, but seemed to fall off prematurely. From these young trees my attention was directed to young branches upon old trees, and here again I found a similar want of fruitfulness, under precisely similar conditions as above stated. My inference is, that young Mulberry trees short of thirty summers do not habitually bear fruit. *William Earley.*

Slugs in Orchid Houses.—I have been much troubled with slugs in my *Odontoglossum* house this summer. Can any one suggest any way of keeping them from eating the spikes off? The larger ones will cut a stiff spike off, and the smaller ones—quite little mites—get down the leaves and eat holes into the spikes when in a very young state. I have caught hundreds, and still they come. Cotton-wool or silk has very little effect in preventing their getting up. When no other way is open to them, they crawl up some plant or rafter, and by means of a glutinous matter, which they exude from their tails, they let themselves down to the spikes. I have known a small one let itself down 18 inches, and doubtless it could have gone much further. When a small one can travel at the rate of 3 or 4 inches in a minute, it is easy to imagine the destruction they cause in a short time. One day, in a house only 60 feet long, when hunting for them, I noticed a nice spike, and said to myself, I will put some cotton-wool on you when I come back again (the wool being at the further end); but when I did return, after only about ten minutes, the spike was cut through about three-parts up, and the slug gone. I believe in some cases they do it for mischief sake only, or to exercise their jaws, for one year I had a fine spike of *Odontoglossum Reichenheimii*, with thirty-six buds just about to open, when one morning I found over thirty of them cut off, and not one eaten. A large slug was found under the pot, and I concluded that the few buds at the extreme end of the spike had escaped because the spike swayed about too much to please the heavy gentleman. *Robert Warner, Broomfield.*

The Golden-leaved Tulip Trees.—Allow me to assure you that the varieties are not at all one and the same thing, as you seem to assume, on p. 370 of your last issue, when commenting on the leaves sent you by Messrs. Cripps of Tunbridge Wells. These two highly ornamental foliaged trees have been under my observation now for several years past, so that I am pretty well acquainted with them, and know them to be entirely distinct, the one from the other. My specimen of the blotched variety is now 10 feet 3 inches in height, and seems considerably the stronger grower of the two. It has a distinct golden blotch in the centre of each leaf, but has never any golden-margined variegation. My specimen of the



FIG. 78.—GALL OF EUCALYPTUS. (SEE P. 404.)

remember, but it is a very distinct and striking flower for borders. It grows over 2 feet high, and bears large Daisy-shaped flowers of a bright orange colour with a dark centre. *Solidago mexicana*, a hardy plant, with upright stems thickly set with yellow flowers, if not attractive affords variety at this dull season. Among several varieties of *Asters* *Amellus* seems the best to my fancy. I suppose there is another (major) still better. *A. horizontalis* is a neat autumn border plant, its habit being the chief thing that I can see worthy of notice. *A. novi-belgii*, a tall grower and only suitable for back lines of borders, is another variety favourably spoken of. It is a free grower anywhere, but being rather top-heavy it requires a stout stake to keep it from being blown about in stormy weather. *Tradescantia virginica* is flowering as freely now as I have seen it during the season; it is slightly shaded from the south by a Laurel hedge, and it seems to enjoy its situation. The *Tritomas*, always attractive, are not less so here. Will some one having a choice collection in flower just now kindly say what other plants I could have to flower during this month and next. I think writers ought to be more explicit in their descriptions of herbaceous plants in order to

qualities as the Veronicas ought, I think, to be more extensively grown than they are, not only for the decoration of beds and borders, but also for conservatories during the autumn months. *W. Erind.*

Maréchal Niel as a Climbing Rose.—A remarkable instance of the free-growing qualities of this Rose has come under my notice here. Last year I purchased four *Maréchal Niel* Roses of Mr. Bird, of *Chrysanthemum* fame, in October. They at that time did service on the south wall of his house, near Hounslow. The plants were lifted with great care, as they had not yet shed their leaves. The plants were brought home and planted in a well-drained and newly-prepared border in a cool conservatory, it being intended that they should cover the roof. Every precaution was taken to insure their well-doing. However, contrary to our hopes and expectations, the leaves shrivelled, and branch by branch died off, so that in June of the present year, eight months from the date of planting, only a few twigs remained to us of our *Maréchal Niel*, clustered round the top of the standard Brier, for they are worked on standard stems. At this time all hope of revelling in the perfume of

golden-margined kind is now 5 feet 8 inches in height, and was obtained some five years ago from Mr. Van Houtte, of Ghent, who bought the stock of this fine variety from its raiser, Herr Gag, of Bollwiller, on the Upper Rhine, and has figured, first a single leaf of it, in the nineteenth volume of his *Flore des Serres*, &c., tab. 2025, and secondly, a flowering branchlet of it on a double-page plate, in the twentieth volume of the same work, t. 2080-1. Both these varieties seem perfectly hardy and should be in every collection of ornamental trees, for though present planters may never see them flower, they are well worth growing for their handsome foliage. *W. E. Gumbleton.*

The Araucaria imbricata.—To the west of the fair city of Perth 14 miles, and 4 miles to the east of the rapidly rising town of Crieff, now a great resort of summer visitors, situate on the southern slope of a somewhat steep eminence, and sheltered from the north, is the parish manse of Fowls Wester, commanding one of the loveliest uninterrupted views that can possibly be imagined in this or any country. To the south for 15 miles, and bordered by the lofty Ochill range, to the east and west, 20 miles, lies the fertile valley of Strathearn, abounding with many noble mansions and richly wooded landscapes of rare beauty. On the lawn in front of the manse there is growing one of the finest specimens of *Araucaria imbricata* for health and symmetry that I have seen, and now bearing fourteen cones as large as Cocoanuts, and showing indications of ripening. There were several cones on it in 1879, but they did not ripen. It was planted eighteen years ago, and has attained a height of nearly 25 feet. When *Araucarias* and many of the finer trees and shrubs got browned in the district by severe frost the *Araucaria* at the manse has always been uninjured, which I attribute to its high altitude—300 feet above sea level, its growing chiefly amongst lime rubbish, with a small portion of loam, and having a few feet distant to the south of it a retaining wall of several feet in depth which entirely carries away any superfluous moisture. The consequence is, the young growths are always thoroughly ripened. Can a similar instance be given this season of the *Araucaria* bearing so freely after such a cold, wet, ungenial season as we experienced in 1879? So far as I am aware there is no such other instance in Perthshire. Besides the *Araucaria* there are many fine trees and shrubs, all thriving equally well. The neatness and order around the manse, the hearty welcome received from the Rev. Mr. and Mrs. Hardy, "the latter taking a keen interest in gardening matters," made my walk of a few miles to see the *Araucaria* a very pleasant one indeed. *Visitor.*

Stopping Laterals upon Grape Vines.—The correspondence which has followed my remarks in your columns regarding stopping laterals shows plainly that many growers do more than follow an old rule-of-thumb practice in the culture of the Grape, as also of other subjects. It is becoming more evident daily that every gardener's reputation is bound up with the amount of success which he obtains over the peculiar soils with which he has to do in the particular neighbourhood wherein his allotted work is situated. In other words he must make even the seeds which fall amongst dry rocks produce good results if he would obtain the coveted reputation of being a good gardener. Hence are the words of your distant correspondent, who writes from Jamaica, greatly to the purpose, wherein he says:—"It is the clever worker alone who can by his adaptation of the means at his command surround his plants with the conditions essential to their well being." When first I wrote regarding this important subject it had occurred to me that, whereas aged Vines invariably produced uniformly good, well coloured and flavoured fruits, very strong, apparently strong and robust Vines, often failed to give moderately good fruit. Yet one had its roots hidden away, no one knew where, whilst others or younger ones had every possible support which could be bestowed. As regards the old Vines the operator had little opportunity to vary his treatment in regard to the stopping of them, so uniformly slow was their growth and so small and cramped up the points of the shoots compared to those of younger and more vigorous ones. If under this more moderate rate of growth of aged Vines good crops are surely obtainable, then it appears to me that the more we can apply a similar practice to younger Vines the greater will be our success from a fruit producing point of view. Note how rapidly the laterals often extend upon young Vines, how long-jointed, and how large and prominent the tendrils. By contrast with the fruiting success attending old Vines this cannot be good. Rude extravagant growth never can be the precursor of large, abundant, and good fruit. It is opposite to root-formation, no doubt, but the very fact of its existence amply testifies that root-power in regard to such is always ample. Is it not an error, therefore, to encourage this to an undue extent? My proposition is that, in the case of all strong sappy young Vines, which it is our intention

to fruit, we cannot stop the laterals too quickly, nor too determinedly. Let the strongest, best looking Vine—that is, if it be a young and vigorous one—but have too great freedom in the matter of initial or early season growth even, and it make leaves of prodigious size, but what is the result upon its fruit? Simply this, that each bunch becomes long, whip-like, with few berries set, and fewer still up to normal size. The vigour of the plant has, so to speak, used up what is requisite for the legitimate demands of the fruit, and in lieu of moderate growth and its proper maturity, we have growth following upon growth and ultimate injury and unfruitfulness. The vigorous young Cherry or Fig tree does not yield its fruit until a too superabundant growth has been checked and neutralised, excepting either be grown in a pot, when all this is checked and mastered. Shortly, therefore, whilst I would not pinch back aged or matured Vines too early—not, in fact, until the leaves show well, and the lateral becomes somewhat lengthy—on the contrary, I would check all younger vigorous shoots upon Vines about to fruit by stopping them at the very earliest possible moment—all intermediate growths to receive judicious treatment accordingly. *Wm. Earley.*

Viola Miss Beatrice Lloyd.—For a good perpetual flowering *Viola* I think this surpasses all I have yet seen both for colour, size of flower, and duration. The flowers are large, of good substance, and well formed, of a deep purple-maroon colour. This *Viola*, after a month's scorching sun, was flowering profusely in a mixed bed of *Calceolaria amplexicaule*, with a sprinkle of *Mignonette*, in the gardens at Langleybury, Herts. It is a decided acquisition. *J.*

Odontoglossum grande.—Among a number of spikes of this very fine *Orchid*, we have one of such gigantic proportions in comparison with all others I have ever seen, that I think its measurements worthy of being recorded. Height of spike from base of bulb, 26 inches; circumference of stem, 1½ inch; number of flowers, seven; diameter of a single bloom, measure taken without any straightening out of petals, 6½ inches. This plant is flowering in the cool-house, but was wintered in the Cattleya-house. *J. C. Spyers.*

Potatoes at Newry.—In reference to the Potato crop in this neighbourhood there is a pretty general complaint abroad that the Potatoes are too large, and that there are far too many of them, and that consequently the price is low. Excellent ones can be had retail for 4d. to 5d. per stone; and, not so very far away, they can be had in the fields for 1s. 6d. per cwt., and even at this rate the return will be good—the crop is so abnormally large, the ground is literally full of them. There is very little disease. It is becoming manifest that the Champion is not destined to set the Thames on fire. It grew to such enormous dimensions above ground, that people began to think the return would be at least 1 cwt. per stalk; but now they find that, after so much promise, the performance is not greater than that of their own older and more short-topped sorts, and that, moreover, the quality is not superior in any way to Skerry Blues and others, and that nothing like £10 per ton—the price paid for the seed—will be obtained for them; they are inclined to feel themselves a little sold. I have seen some *Magnum Bonum*s, planted very late by-the-bye: the tops of these grew nearly as tall as those of the Champion, which turned out a very good crop indeed of medium-sized tubers, the quality of which I considered superior to every Potato I ever ate. There is an excellent local Potato here called Chambers, in size, shape, productiveness, texture, and flavour, as near as two Peas to the old Fluke, but blue, hardy, and full: the Fluke itself does not succeed here. In addition to good crops of Potatoes, all the crops are good—in fact, farmers generally say that they do not remember such, or at least not for twenty years. I have heard of them threshing out as much as 36 cwt. of Oats per acre, and this, at 6s. per cwt., really means a fair return; but I am sorry to say that very many of them are far too dilatory about securing this most productive harvest. Plenty of Oats have been cut more than three weeks, and there they stand still in the fields. The fine weather has departed, and showery days are the rule. If we do get a fine bracing day they let it pass, hoping that to-morrow will be finer, and generally to-morrow is wet: and this is fairly characteristic of the average Irish farmer. *T. Smith.*

Begonias, Bedding.—I have never been a great advocate for *Begonias* as bedding plants, but I believe my distaste arises in great part from the fact that, as yet, I have never met with the success I had hoped for. A few days since I called upon my friend, Mr. Childs (head gardener at Garbrand Hall, Ewell), and after having viewed the really fine display of specimen plants, which, I may add, owe their superiority to his skillful management, my attention was directed towards three beds of *Begonias* which he has

planted out this season. My astonishment was great; and, indeed, at a first glance the thought occurred to me—*Begonia versus Scarlet Pelargonium*; but perhaps some veteran gardener will chide me for making such a bold statement, since none of us can do without our old pets, the *Pelargoniums*, particularly the new varieties, which are gaining such rapid strides in advance of the older ones. A short time previous to my seeing the beds in question our neighbourhood had been visited with severe thunderstorms and heavy falls of rain, which had destroyed nearly every *Pelargonium* bloom, yet at the same time the *Begonias* held up their heads as proudly as ever, as if in defiance to the weather. For my part I shall certainly go in for bedding *Begonias* now that I have seen such perfect specimens in Mrs. Torr's establishment. Mr. Childs informed me that he sowed the seed in the early part of January, and grew the plants on rapidly, under which treatment they make fine plants for bedding out at the proper season. *George Scott, Ewell Castle.*

Vanda Lowii.—A remarkable fact about this splendid *Vanda* is, that the one or more yellow flowers at the base of the many-flowered spike emit a very powerful odour, while none of the chocolate and white flowers are anything but slightly scented. The scent is peculiar, but not disagreeable. *J. C. Spyers, Burford Lodge, Dorling.*

The Potato Disease.—I have watched the Potato disease controversy going on in your pages with some interest, the more so as I claim to have been the first who advised, in your pages, all growers "to dig and store early," as a panacea against the effects of the disease. Indeed, so little was my advice then given believed in that I was accredited with fabricating a very indifferent pun on my own name, and was not considered (as I really was) at all sincere in the matter. However, I have lived to see many recommend a similar practice since. I have at this time a different purpose than merely raking up old stories, for I have been experimenting still further in this old path, and have arrived at results of some importance. It is not enough to dig and store early when once the disease has made its appearance, and here—even in contradiction to my former advice—I join issue with Mr. Fish, and say that during wet weather digging or haulm pulling is utterly useless after the disease has once shown itself. It would appear that the very sap or juices of the plant become infected with the malady. I know to my cost, in the loss of several bushels of Early Ashleaf which I dug immediately the disease showed itself, that we have here no cure. So soon as Potatoes are full grown, before the skins are set, and before the disease smites them, they may and can be dug and saved in safety. After the disease is apparent upon any it is then too late. [Not too late to save others not yet infected. Eds.] *William Earley, Ilford.*

Iris susiana.—I have read with interest Mr. Elwes' answer to "Inquirer" in your columns about *Iris susiana*. I can answer for it that one part of his recommendation is of great value. I always treat this plant after the fashion of a *Hyacinth*, lifting it quite out of the ground in July, and replanting it in September. It likes to be baked on the hottest shelf of a greenhouse, and to be kept out of the reach of all rain during the summer. Mr. Amos Perry, of Tottenham, put me up to this, and I have to thank him for magnificent blossoms, which, as a rule, are produced in April and May. *H. Ewbank, St. John's, Kyde.*

Mushrooms.—Seeing in the papers a short time since that Mushrooms were scarce in some parts of England, I beg to state that here, in this neighbourhood, from the middle of July to the middle of August, we had immense quantities of them in the fields, since which time they have stopped growing till the present week, where they are now springing up again in large quantities. I may state that we have had a dry summer until within the last fortnight, since which we have had large quantities of rain. *John S. Robins, Weston Mills, Plymouth, Sept. 20.*

Trap for Wasps and Flies.—The old saying, that "Prevention is better than cure," is most certainly applicable in this case, more especially to growers of fruit in quantity, who often puzzle their brains to know what is best to ward off the attacks of these pests. After the plague of these which we have this season experienced, the simple preventive to which I am about to allude will be welcomed by many. The trap in question consisted of two square handlights placed one above the other, the lower one being raised on four bricks, the whole forming, as it were, a hive. These were placed on the raised Vine border outside the house, with about half-a-dozen injured fruits in a ripe state to attract the attention of the invaders before reaching the house. Instead of entering the viney, they found their way into the handlights in question, and from them they never returned: thousands were taken

daily, and destroyed, with the aid of a little sulphur, each evening. On entering the vinery not a fly or wasp was to be seen, and very few were the occupants of the bottles suspended to the roof. This simple yet invaluable construction has, according to Mr. Smith, gr. to W. Jones Lloyd, Esq., of Langleybury, been the means of saving many a crop of Grapes and other fruits, and of destroying many thousands of wasps and flies of all descriptions annually. 7.

Fir Tree Oil.—In your issue of Sept. 18, you state that you hear of serious effects having been produced on the hands of some gardeners who have used the Fir tree oil. As manufacturer of the Fir tree oil, I beg to state that there is no poisonous ingredient in it, and it is perfectly harmless to the hand and skin when using. If your correspondents will look a little nearer home they may discover that the serious effects are produced by more natural causes. *E. G. Hughes, Manufacturer of Fir Tree Oil Insecticide, Manchester.*

Reports of Societies.

International Potato Show at the Crystal Palace: Sept. 22 and 23.—This was the sixth exhibition organised by the Potato Committee, and with much pleasure we record the fact of its being the best. At the first show a start was made with about 1000 dishes, and so steadily has the number increased that on this occasion some 2500 plates were required to stage the tubers contributed to the display. The number of entries has also increased to 450, and of exhibitors to about 100—sure signs of increasing prosperity and usefulness. The display was held in the eastern transept, and a word of praise is due to Mr. Head, the garden superintendent, for the admirable manner in which he carried out the floral decorations of the central table, which added much to the general effect, and gave the requisite amount of relief to the otherwise monotonously long lines of plates. As usual, too, a considerable amount of interest was added to the display by the contributions sent for exhibition by firms who make the Potato a speciality, such as Messrs. James Carter & Co., Messrs. Sutton & Sons, Messrs. Daniels Bros., Messrs. Harrison & Sons, Messrs. Webb & Sons, Messrs. C. Lee & Son, and Messrs. James Veitch & Sons, who also showed about eighty dishes of Apples; and an international touch was given by a collection of forty-seven varieties sent from Northern Prussia. As these and other matters are alluded to in another column, we need not here discuss them, but will proceed at once to the prize list.

TWENTY-FOUR VARIETIES, DISTINCT, NINE TUBERS OF EACH (OPEN).—The 1st prize in this class is looked upon by Potato fanciers as the Blue Riband of the exhibition, and this year was the sum of ten guineas, given by the President of the Committee, the Right Hon. the Lord Mayor, Sir F. Wyatt Truscott. Six prizes in all were offered, the lowest being one guinea, and for these there were sixteen competitors. The competition was a very close one between several of the collections; and the judges were some time before they had placed the awards to their own satisfaction. Eventually the 1st prize was awarded to Mr. R. Dean, of Ealing, whose collection, consisting of the following sorts, unmistakably bore the stamp of quality:—Snowflake, Beauty of Hebron, Climax, Vicar of Laleham, International, Triumph, Magnum Bonum, Manhattan, Schoolmaster, American Purple, Lord Mayor, a round white seedling; Heather Belle, Advance (Emerton), Mr. Bresee, a very handsome red kidney; Cosmopolitan (Dean), a seedling white kidney; Grampian, White Emperor, Early Ohio, Covent Garden Perfection, Radstock Beauty, Early Market, Garibaldi, Bedford Prolific, and Blanchard. The 2d and 3d prizes were given by Messrs. James Carter & Co., and were won by Mr. W. Ellington, West Row Gardens, Mildenhall; and Mr. John Reid, of Ayr—the former having a fine even lot, running a trifle larger all through than Mr. Dean's, including especially good samples of Blanchard, Porter's Excelsior, Manhattan, Mammoth Pearl, International, Early King, Trophy, Purple King, Woodstock Kidney, Breadfruit, Vicar of Laleham, Model, Magnum Bonum, and Covent Garden Perfection. Mr. Reid's tubers were even, clean, and good; so also were those staged by Mr. James Matthews, gr. to E. Twopeny, Esq., Sittingbourne, who won the 4th prize, given by Mr. C. Turner; and by Mr. R. West, gr. to J. R. Wigram, Esq., who secured the 5th prize, given by Mr. G. R. Bengough; and by Messrs. Lott & Hart, Whitehall Nursery, Faversham, who came in 6th.

EIGHTEEN VARIETIES, DISTINCT (OPEN TO GARDENERS ONLY).—In this class the six prizes were given by Messrs. Sutton & Sons, and were contested for by no less than twenty-eight competitors, and quality ran high throughout. The successful winner of the highest award was Mr. Crump, gr. to the Duke of Marlborough, Blenheim, who had good medium-sized, clean, and evenly matched tubers of

Porter's Excelsior, Triumph, International, Webb's Surprise, Schoolmaster, Snowflake, Grampian, Bedford Prolific, Woodstock Kidney, Vicar of Laleham, Rector of Woodstock, Extra Early Vermont, King of Potatoes, Blanchard, Beauty of Hebron, St. Patrick, a very smooth, long, white kidney; Radstock Beauty, and Mona's Pride. 2d, and very close up, Mr. J. Millen, gr., Hampstead Park, Newbury, with very fine samples of Covent Garden Perfection, Radstock Beauty, Vicar of Laleham, Magnum Bonum, Schoolmaster, Woodstock Kidney, Pride of Ontario, Grampian, Snowflake, Triumph, Porter's Excelsior, Defiance, Mona's Pride, Red Fluke, International, Blanchard, Washington, and Beauty of Hebron. 3d, Mr. J. M'Intyre, Woodside Gardens, Darlington; 4th, Mr. James Matthews; 5th, Mr. James Harper, Monaltree Gardens, Ballater, N.B.; 6th, Mr. W. Sedg.

TWELVE VARIETIES, DISTINCT (OPEN).—Another remarkably good class, in which the number of competitors was only one less than in the preceding one. The 1st prize, given by Mr. Alderman Hadley, one of the Vice-Presidents, was won by Mr. W. Kerr, of Dumfries, who staged a grand lot of tubers in this and other classes; his varieties in this instance being Beauty of Hebron, Triumph, Schoolmaster, Trophy, Magnum Bonum, Salmon Kidney, Mammoth Pearl, Grampian, Porter's Excelsior, Oneida, Pride of America, and Manhattan. 2d (prize given by Mr. J. Abbiss), Mr. G. Akhurst, gr. to the Rev. J. Braham, Faversham, with very superior samples of Late Rose, Schoolmaster, Manhattan, International, Triumph, Bresee's Prolific, Trophy, Early Goodrich, Beauty of Hebron, Early King, Beauty of Kent, and Climax. 3d (prize given by Mr. L. Fawell), Mr. T. Pickworth, Loughborough, with Vicar of Laleham, Pride of Ontario, Lady Gordon, a flat white kidney; Schoolmaster, Triumph, International, Oneida, Radstock Beauty, Magnum Bonum, and King of Flukes. 4th (prize given by Messrs. Kerr & Fotheringham, Dumfries), Mr. W. Crump, Blenheim; 5th, Mr. Jas. Millen.

SIX DISHES OF POTATOS, DISTINCT (OPEN).—Thirty-nine competitors staged the required number of dishes in this class, and the 1st prize, given by Messrs. H. & F. Sharpe, of Wisbech, was won by Mr. Kerr, of Dumfries, with a beautiful lot of medium size, consisting of Schoolmaster, Vicar of Laleham, Porter's Excelsior, Grampian, Pride of America, and Trophy. 2d (prize given by Messrs. Barr & Sugden), Mr. G. Akhurst, with Early Rose, International, Beauty of Kent, Schoolmaster, Brownlee's Superior, a long, red kidney; and Magnum Bonum. 3d (prize given by Mr. W. Holloway), Mr. R. Dean, with Magnum Bonum, Schoolmaster, American Purple, Triumph, Advancer, and International. 4th, Mr. Finlay, gr., Wroxton Abbey; 5th, Mr. H. Minchin, Hook Norton.

FOUR DISHES, DISTINCT VARIETIES, TWO COLOURED AND TWO WHITE (OPEN).—Twenty-eight competitors contested in this class, and the 1st prize (given by Mr. P. McKinlay) was won by Mr. F. Miller, gr. to J. T. Friend, Esq., Margate, with Vicar of Laleham, Blanchard, Yorkshire Hero, and Jackson's Improved. 2d (prize given by Mr. James Crute), Mr. James Millen, with Late Rose, Red Fluke, Magnum Bonum, and International. 3d, Mr. W. Kerr, with Triumph, Trophy, Pride of America, and Schoolmaster; 4th, Messrs. Lott & Hart, with Superior, Vicar of Laleham, Schoolmaster, and International.

FOUR DISHES, DISTINCT, NEW VARIETIES, in commerce, but not offered to the public before the season of 1879.—The whole of the prizes in this class were given by Messrs. Hooper & Co., Covent Garden, and twelve competitors entered the lists. As at first judged Mr. F. Miller was placed 1st with Pride of America, Woodstock Kidney, Beauty of Kent, and Vicar of Laleham; Mr. R. Dean 2d, with Avalanche, Woodstock Kidney, Beauty of Kent, and Vicar of Laleham; 3d, Mr. F. Matthews, with Pride of America, Woodstock Kidney, Radstock Beauty, and Beauty of Kent; and Mr. P. McKinlay 4th, with Matchless, Pride of America, Beauty of Kent, and Vicar of Laleham; but Mr. Matthews' dish of Radstock Beauty did not comply with the terms of the schedule, and Mr. McKinlay was placed 3d, and Mr. C. Ross, Welford Park, 4th.

TWO DISHES, DISTINCT, one round and one kidney.—Mr. W. Kerr again took the lead amongst twenty-nine competitors, with fine examples of Schoolmaster and Pride of America; 2d, Mr. Jas. Millen, with Blanchard and Magnum Bonum; 3d, Mr. J. Reid, with Climax and Magnum Bonum; 4th, Mr. R. Dean, with Blanchard and International Kidney. The prizes in this class were given by Amies' Chemical Manure Company.

BEST DISH OF ANY WHITE ROUND.—Mr. Kerr was here also to the front, Mr. R. West being 2d, and Mr. J. B. Hall, Gillingham, Kent, 3d—all showing Schoolmaster. There were twenty-four competitors, and Messrs. Daniels Bros., Norwich, were the donors of the prizes.

BEST DISH OF ANY COLOURED ROUND.—1st, Mr.

R. Dean, with Vicar of Laleham; 2d, Mr. F. Miller, with Red Emperor; and 3d, Mr. R. Ironside, Inglis-ton, Inverurie, with Grampian. Messrs. Harrison & Sons, of Leicester, gave these prizes, and the judges had to select the winning dishes from a collection of twenty-nine.

BEST DISH OF ANY WHITE KIDNEY.—1st, Mr. James Counce, Counce Grange, Garstang, Lancashire, with International; 2d, Mr. James Millen, with Myatt's Prolific Ashleaf; and 3d, Mr. R. Ironside, with International. Twenty-six dishes were staged, and Messrs. T. Gibbs & Co., Piccadilly, gave the prizes.

BEST DISH OF ANY COLOURED KIDNEY.—In this class Mr. R. Dean, who gave the prizes, won the 1st back with a fine sample of Mr. Bresee, a red kidney of handsome proportions; Mr. James Counce coming in 2d, and Mr. C. Osman, Sutton, 3d, with Fenn's Bountiful. There were twenty-five competitors.

BEST DISH OF MAGNUM BONUM.—Messrs. Sutton & Sons gave the prizes here, and no less than fifty-three dishes were staged. For the most part the samples were of the largest size rather than of the finest quality, and size carried the point in the judging—Mr. W. Kerr coming in 1st, Mr. Jas. Lye, gr. to the Hon. Mrs. Hay, Market Lavington, Wilts, 2d; and Mr. W. Ellington 3d. Taken altogether they were a rough lot.

BEST DISH OF SCHOOLMASTER.—Messrs. Webb & Sons, Wordsley, gave these prizes, and twenty-one competed for them. The 1st was taken by Mr. Kerr, with a grand sample—the finest dish of Potatoes, in fact, in the exhibition. Messrs. Lott & Hart were 2d, and Mr. H. Gibbs 3d.

BEST DISH OF WOODSTOCK KIDNEY.—Thirteen excellent samples were staged in this class, and the prizes went to Mr. C. W. Howard, Canterbury; Mr. H. Gibbs, Igham Court, near Sevenoaks; and Messrs. Lott & Hart, White Hill Nursery, Faversham, in the order named. Messrs. Sutton & Sons gave the prizes.

BEST DISH OF ANY NEW VARIETY, NOT IN COMMERCE.—Messrs. John Laing & Co. gave three prizes in this class, and twenty-one dishes were staged. The 1st prize was awarded to a white kidney named Wormleighton Seedling, a long kidney-shaped variety with white skin, and bearing a close resemblance to Magnum Bonum. It is described as a seedling from the Belgian Kidney x with Early Rose, and was exhibited by Mr. P. Mc Kinlay, who describes it as having a top dwarfier and quite distinct from Magnum Bonum. The 2d prize was taken by Mr. Dean, who had Lord Mayor, a large white flattish round, described as a second early, and a heavy cropper. This variety is a seedling from the Early Rose x with Early Market. Mr. C. Ross was there with Dux, a pretty round kind, exactly like Schoolmaster, and described as a seedling from Paterson's Victoria. There was a very handsome lot shown by Mr. Ironside, named Cromwell; this was reversing the old phrase of "Cromwell's Ironsides" to "Ironside's Cromwell." It was regarded by the judges as too much like King of Potatoes to merit an award. Mr. Lye, Market Lavington, had good samples of his Wiltshire Snowflake, a handsome pure white kind, having small flat tubers. Mr. R. Fenn exhibited a dish of his new red Sulhamstead Kidney and Berkshire Rose, both the product of an Anglo-American cross. From Mr. Millen came a very handsome long flat kidney with purple skin, and named Defiance. No history was given with this kind, but it is said to be the product of Irish saved seed. It is a great cropper, and a very handsome kind. Altogether this seedling class was not a good one, but none the less some fine kinds for the future might have been found amongst those staged.

The Autumn Show at Newcastle-upon-Tyne: Sept. 15 and 16.—The autumn exhibition of the Botanical and Horticultural Society of Durham, Northumberland, and Newcastle-upon-Tyne was held in the Town Hall and Corn Exchange, Newcastle-upon-Tyne, on September 15 and 16. As usual at this great Northern exhibition, the entries were very numerous, being no less than 1880, from 151 competitors. The cut flowers were numerous and exceedingly good, the Dahlias bearing off the palm for numbers and quality combined. In the leading class for twenty-four distinct, excluding fancies, there were seventeen competitors, occupying just 27 yards of table for this one class. In all a thousand blooms were staged. In the leading class Mr. H. Clark, Florist, Rodley, near Leeds, gained the 1st prize, with large, evenly matched, and well formed flowers, all good, the varieties being Prince Bismarck, Ethel Briton, Barnaby Rudge, Harry Walton, James Cocker, a fine variety; Constance, Clara, George Smith, John Keynes, Miss Bond, Criterion, David Saunders, Mrs. Eckford, Lord Chelmsford, Mr. J. C. Reid, Royal Queen, John Standish, Mrs. Harris, James Service, Tolson d'Or, John Greenaway, Charles Wyatt, Louisa Neate, and a seedling. Mr. J. W. Boston, nurseryman, Bedale, was 2d; Mr. E. Fletcher, Charleston, near Leeds, was 3d. Many other good stands were exhibited, well worthy of the prizes which some of them received.

There were twenty-six entries in the class for twelve show Dahlias in the amateur classes, many of the stands being very fine, although a few of them were marred by badly matched and over-blown flowers. Mr. J. Walker, Low Fell, gained the 1st prize; Mr. J. Oliver, gr. to the Earl of Ravensworth, the 2d; and Mr. William Spoon, of Smalwell, the 3d. Fancies were also fairly well shown, the leading stands being very good, the flowers of large size. Other exhibitors failed because they did not quite understand the definition of a fancy Dahlia. In the North as in the South, the dividing line between a fancy and a show Dahlia seems to be imperfectly understood. Indeed the wish has been strongly expressed that some one possessing the confidence of fanciers would take the matter up, and make it more clear for judges and exhibitors. It would be invidious to say whether the Hollyhocks or the Gladioli should be placed next in importance; certainly some of the stands of Hollyhocks exhibited were truly grand. In the open class for twenty-four cut blooms, Mr. J. Thompson & Son, Fenham, well deserved the 1st prize which was awarded to them, their flowers being larger than those of Mr. G. Rogerson, North Middleton, who was placed 2d, although his flowers were perhaps better formed. The varieties shown by Messrs. Thompson were Favourite, F. G. Dougall, Empress of India, J. Dunn, Grace Darling, Hercules, Mrs. Cunningham, Lord Salisbury, Cream of Roses, Edward Hine, Maggie Bain, Queen, of Yellows, and a seedling. There were numerous other stands and spikes of Hollyhocks shown, at least 400 blooms in all. Gladioli were also very fine, comprising the French raised varieties and seedlings from them in most part. The competition in the class for eighteen spikes was very close. In other classes the exhibitors were numerous, and their stands highly creditable. There were thirty-eight entries in all the classes, a contrast to the Crystal Palace show, where there were but two. The varieties in the best stand, from Mr. J. Gray, Newfield, Kilmarnock, were Horace Vernet, Grand Lilas, Orpheus, Marquis of Lothian, Anna, W. Cunningham, La Poussin, seedling, Camille, Benvenuto, Madame Desportes, Le Vésuve, seedling, Mrs. Finnie, and Didon. Numerous and good stands of Roses were also shown, making a fine feature at an autumn exhibition. For twenty-four Roses in not less than twelve varieties Messrs. R. Mack & Sons, The Nurseries, Catterick Bridge, were 1st with a fine stand. Asters, both globe and feathered, were numerous and very good, although the growers in the North are not quite up to Mr. Betteridge in quality. The African Margoldes were wonderfully fine, the stand from Mr. H. Sanderson, of Whalton, being of surpassing excellence; as much might be said of the French Margoldes, the flowers being large and beautifully marked. Mr. J. Cawthorn, of Whickham, gained the highest awards in two classes. Space cannot be afforded to enumerate the numerous other collections of cut flowers, except to say that the Carnations and Picotees with which Mr. R. Bentley, of 2, Prospect Place, gained the prizes in each of the principal classes, were wonderfully fine for the season. The beautiful Carnation Sarah Payne was very pure and well marked.

The display of fruit was large, the Grapes being particularly good. The collection of six bunches, with which Sir Wilfred Lawson's gardener, Mr. Hammond, gained the 1st prize in that class, reminded one of the great International Fruit Show at Edinburgh. His Mrs. Pince was large in bunch and berry, and well coloured for that variety. Black Alicante and Muscat of Alexandria were very fine. Mr. Ingram, gr. to the Duke of Northumberland, Alnwick Castle, was a good 2d; he had two bunches of Mrs. Pince, very fine, the others being well-finished fruit of Muscat of Alexandria and Black Hamburgh. In this class there were ten competitors, staging sixty bunches—a noble sight. In other classes of Grapes, Mr. R. Westcott, gr. to the Duke of Cleveland, Raby Castle, had the best Black Hamburgh Grapes; Mr. Hammond the best Black Alicante, jet black and beautifully finished. Mr. D. P. Bell, Clive House, gained the 1st prize for any black Grape with well-coloured Alnwick Seedling. Mr. Ingram had the best Muscat of Alexandria, and Mr. W. Laidlaw, gr. to Rev. J. Burdon, Castle Eden, the best Buckland Sweetwater; any other white variety, being Golden Queen, from Mr. Hammond. The heaviest bunch was a Gros Guillaume, from Mr. Laidlaw. There were seven entries for the collection of eight dishes of fruit, for which Mr. Ingram gained the 1st prize. He had a grand dish of Muscat of Alexandria, large in bunch and berry, and well coloured; fine late Duke Cherries, handsome Barrington Peaches, Colston Bassett Melon, Queen Pine, Golden Drop Plums, Moor Park Apricots, and Black Hamburgh Grapes. Mr. R. Westcott was 2d, with a good collection, in which the Black Hamburgh Grapes were well coloured. Three other exhibitors obtained prizes in the class. Peaches, Plums, and other hardy fruits were good and plentiful.

The dinner-table decorations, bouquets, and epergnes were great features in this exhibition. There were four exhibitors for "the most tastefully decorated dessert table." Mr. M. D. Thompson, Southill, was most successful in this class. He had three epergnes of the usual stereotyped form, but tastefully decorated with Lygodium scandens, white Water Lilies, white and coloured Phlox Drummondii, and Tacsonia. His fruit was Peaches, Muscat and Black Hamburgh Grapes, and Cherries. All the other tables were good in their way. Dinner-table plants, always a feature at country shows, were very nice. They were Pandanus Veitchii, Aralias, Cocos, and fine-leaved Dracenas. There were sixty-seven bouquets, twenty epergnes, and two dozen buttonhole bouquets. Some of the bouquets were most tastefully made, that from Mrs. Cramont, which gained the 1st prize in the A. division was very beautiful. It was composed of white Lapageria, Eucharis, Bouvardias, and three small

spikes of the deep blue Salvia patens. The bridal bouquets were composed mostly of white Lapagerias, Stephanotis, Eucharis, small white Tea Roses, and Tuberoses. The bridal bouquet in class A. was a fine one, beautifully arranged with white Asters, Bouvardias, and a spike or two of Odontoglossum Alexandrae. Mr. King, of Gateshead, also gained a 1st prize for a bouquet, in which the Salvia patens was again effective. Mr. W. Ison, of Sunderland, had a nicely arranged epergne, in which were a few Fern fronds bleached white, but the base was rather heavy. It was composed of Roses, Allamandas, and Dipladenias.

Amongst new flowers, Mr. Charles Turner, of Slough, gained a First-class Certificate for Dahlia Prince of Denmark, a well-formed flower, with petals of great substance, shaded purple and crimson. A First-class Certificate was also awarded to Mr. Jos. Oliver, gr. to the Earl of Ravensworth, Eslington Park, for Dahlia Countess of Ravensworth, a finely built flower of large size, blush tipped with rose-pink, and for Hollyhock Ringleader, a well-shaped large salmon-coloured flower; cut flowers, not spikes, were shown of it.

The Harborne and District Potato Exhibition:

Sept. 17 and 18.—This prosperous and most useful Society can be regarded as an offshoot of the Crystal Palace Exhibition, and commenced operations in 1879. So successful was the first exhibition that a much larger one was arranged for, and took place on the above date. It was held in the Masonic Hall, Harborne, which is so close to Birmingham as to be regarded as a suburb, although it is situate in another county. A goodly number of the residents of Harborne and its neighbourhood have taken up the cultivation of the Potato with much spirit; but to add to the interest of the exhibition, some leading prizes are offered, open to all comers. Over 1000 dishes were staged in two of the large rooms of the hall; the tables were neatly covered with green baize, and the tubers were set up in plates as at the Crystal Palace. Indeed it was an International Exhibition on a reduced scale. The arrangements were very good indeed, and the work of the judges was made pleasant in consequence. The average of quality was very good, though coarseness was present; but this will give place to quality in course of time.

The leading class was for twelve varieties of Potatoes, distinct, nine tubers of each, the 1st prize being awarded to Mr. L. Watson, gr. to W. Udall, Esq., and comprised remarkably good examples of International Kidney, Woodstock Kidney, Early Purple, Trophy, Pride of America, Blanchard, Radstock Beauty, Grampian, Beauty of Kent, Vicar of Laleham, and White Emperor; 2d, Mr. Charles Cox, with International Kidney, Magnum Bonum, Early Rose, Lapstone, Grampian, Porter's Excelsior, King Noble, Radstock Beauty, Blanchard, and Triumph; 3d, Mr. T. Horton. As a sign of the interest felt in the Potato, we may remark that some nine collections competed in this class.

In the class for six varieties Mr. Cox was 1st, with well finished tubers of Beauty of Hebron, Bresee's Peerless, Early Rose, International Kidney, Blanchard, and Porter's Excelsior; 2d, R. P. Yates, Esq., with Bresee's Prolific, Snowflake, Late Rose, Magnum Bonum, Schoolmaster, and Myatt's Ashleaf. An extra prize was awarded to Mr. Watson. Mr. Cox had the best four dishes, staging Red Emperor, International Kidney, Schoolmaster, and Beauty of Hebron. 2d, Mr. G. Branstone, with Magnum Bonum, International Kidney, Porter's Excelsior, and Schoolmaster. Extra prize, Mr. R. P. Yates. In the class for the best dish of any variety sent out in 1878-79, Mr. T. Horton was 1st with excellent examples of Beauty of Laleham; 2d, Mr. G. Branstone, with Beauty of Hebron. Beauty of Kent, Reading Abbey, Pride of America, and Centennial were also shown in this class.

In the amateurs' classes for six varieties of Potatoes—the term amateur comprehending a person not employing a gardener continuously—there was a good competition, as also in the classes for four and two dishes. In the larger class the best lot came from Mr. J. Salt, who had Magnum Bonum, Late Rose, and Schoolmaster, in good form; Mr. T. Horton being 2d. In this division there were classes for Magnum Bonum, International Kidney, Woodstock Kidney, Ashleaf Kidney, any white Kidney, Schoolmaster, and Scotch Champion. In the class for any white round, Paterson's Victoria was to the fore. In the class for round red, Triumph, Red-skinned Flourball and Red Regent; and in that for any red kidney, Trophy, Welsh Kidney, a distinct mottled red and white kidney; and Bountiful. There was also a class for the best dish of cooked Potatoes, which was a very interesting one, but the sorts were not named.

In addition there were some good special prizes. Messrs. Webb & Son offered prizes for Schoolmaster Potatoes, in which the competition was very good, some splendid tubers being shown; and also for six varieties of Potatoes, the best coming from Mr. F. Cooper, who had excellent examples of Magnum Bonum, Paterson's Victoria, Schoolmaster, Bresee's Prolific, Porter's Excelsior, and Snowflake. Special prizes offered by Messrs. Sutton & Sons for a dish of Magnum Bonum brought a remarkable competition, the best coming from Mr. J. R. Smith; Messrs. Cooper and Perkes being 2d and 3d. There was also a class for four dishes, the prizes being offered by Mr. T. B. Thomson, seedsman, 20, High Street, Birmingham; Mr. T. Towkes being 1st, with Magnum Bonum, Champion, Ashleaf and Schoolmaster; 2d, Mr. W. Phillips. Mr. Morris, seedsman, Harborne, offered special prizes for six dishes, Mr. W. Phillips being 1st with Late Rose, International Kidney, Myatt's Ashleaf, Schoolmaster, Scotch Champion, and Magnum Bonum; 2d, Mr. C. Winstone. In the class for the best dish of Covent Garden Perfection, several dishes of International Kidney were staged under this name, and

were disqualified in consequence; the best dish came from Mr. F. Denning. A special prize of a Silver Cup, given by W. Buckley, Esq., for the most meritorious collection, was awarded to Mr. Watson for his collection of twelve dishes in class A. A Silver Cup for the best two dishes of Scotch Champion and Magnum Bonum was awarded to Mr. T. Horton. Several other special and extra prizes were awarded—so good was the competition generally.

Special Commendations were awarded to Mr. R. H. Vertegans, Chad Valley Nursery; Mr. R. Dean, Ranelagh Road, Ealing; and to Mr. Blake, for collections of Potatoes. First-class Certificates of Merit were awarded to Messrs. Hooper & Co., Covent Garden, for some excellent examples of Beauty of Kent Potato—a very distinct pink round variety shown by Mr. R. Dean; and to Purple Victoria, from Mr. T. W. Vokes, Eastleigh, Southampton, like a Purple Emperor in appearance—said to be the result of a cross between Victoria and Fortyfold—handsome in shape, good in quality, and distinct in appearance.

Great credit is due to the committee for their excellent arrangements, and especially to the secretary, Mr. C. T. Blake, for his great exertions, which were well supported by Mr. G. Stacey and others.

Natural History.

THE GREEN WOODPECKER.—In all my rambles seeking after birds' nests, as a boy, I was a long time discovering the nesting-place of the green woodpecker. The subject exercised my mind and eye not a little. My early home was an old-fashioned farmhouse, thoroughly isolated, and surrounded at various distances by small detached woods, which were the home of the woodpecker. The loneliness suited her habit, and the woods supplied her wants. The house was situated in the midst of a large orchard, wherein stood an old decaying Apple tree, from which tree the tapping of these birds might be heard daily. They had bored several holes large enough for me to insert my hand, and I expected, some fine morning, to find an egg or two deposited at the bottom of one of these cavities, but I was still disappointed. I had watched for more than one season, but at the end I was always disappointed. For what other purpose, I argued, could these holes be made? They seemed so exactly suited to the requirements of nesting—so warm, dry, and secure; but, as the birds did not use them for that purpose, I concluded they knew best what they were about. They made them, I said, for the fun of the thing—for their own amusement—and I had given the riddle up. The solution came at last, in this way. I was strolling in one of my little woods, about half-a-mile from the house, and throwing my eyes around, when I caught sight of a hole bored direct into the body of a smooth-barked soft-wooded tree that ran tapering from the ground without branch or limb for many feet upwards. I was at the base in a minute, and, giving a blow or two with my hand, out glided the occupant—a green woodpecker—and as she silently stole away I concluded that such behaviour looked very suspicious. I began to climb, and was soon facing the hole; but I could not hold on to fathom the bottom. What was to be done?—for I felt sure the eggs I so much coveted were within. I descended, and at once returned to the house, and, selecting a ladder, which after much puffing and blowing I dragged into the wood, placed it against the tree. The bird had returned, and again she silently stole away. So, throwing my jacket on to the ground, and tucking up my shirt-sleeves, I was very soon at the top of the ladder, which I then discovered was not too long. I had to stand on one foot on the top of the left rail, and grasping the tree with one hand and arm, I just succeeded in reaching the bottom of the hole with my right hand, and there I found my long-looked for and much-desired treasure—four milk-white eggs—the first of the kind I had ever seen! It was nothing now to descend from the nest with the eggs in my mouth (my pockets were in my jacket below); so, closing my lips on the prize, I descended in safety, and hurried away home to show what I had done. This was the only woodpecker's nest I ever found—if nest it may be called, as there was nothing more than the chippings of the wood at the bottom.

I have at different times opened these birds that had been foolishly shot, and in all have found the horse-ant to be their chief food. The country people here in East Sussex call the bird the "gala bird," or, writing phonetically, the "galley bird." I am afraid this species of woodpecker is becoming comparatively rare; for, although we have as much woodland as ever, and I am often in the fields and covers and large woods, I rarely now hear her laugh, or see her in her

labouring flight. She is a shy bird, and difficult to approach, seldom giving a chance for a shot, unless caught by surprise. But I suppose it must be the tyranny of the gun that is driving her away, as I have too often seen her, among other culprits, nailed to the door of a barn, the victims of a senseless suspicion—declared guilty, when "Not proven" should have been the verdict.

My Apple tree stood on ground that sloped away to the east, and the old fellow had followed the incline, and had got so much out of the perpendicular that I could run half-way up the trunk. A large hollow limb threw itself out in exactly the opposite direction, and almost in a line with the ground beneath. In this hollow arm a pair of great tits built their nest every year, and I ruthlessly robbed them of their eggs (pretty little delicate pink-spotted gems), until my hand thickened so much by growth that I could not gain admission to their chamber. After such treatment, I have always been surprised that they could so persistently sustain an attachment for the place, as I thought I never allowed them the time nor the opportunity that all animated nature yearns for—the pleasure of rearing its young. I look back now at this as one of the most wanton acts of my life; and if I may be allowed a bit of sentiment, I would fain fancy that the tom-tit (to give him his familiar name), whenever we meet, gives me a wide berth and a look of suspicion. I have, however, for years endeavoured to make some compensation, and I hope a reconciliation has been arrived at, as this winter he has been one among the many visitors that have been driven by stress of weather to seek a few crumbs, and other tit-bits, that have regularly been put out on my breakfast-room window-sill. Hunger, before now, has bridged over many a seemingly impassable gulf, and sympathy, and the rendering of some useful service, has re-established and resealed many a riven friendship. *E.*

Notices of Books.

Anatomical and Physiological Atlas of Botany, for Use in Schools and Colleges. By Dr. Arnold Dodel-Port and Carolina Dodel-Port. Handbook to Parts I., II., III. Translated and Edited by D. M'Alpine. W. & A. K. Johnstone.

Some time ago, when noticing the publication of the German edition of this work, we took occasion to allude to its great merits. We are, therefore, specially pleased to find that this valuable series of plates has found an English publisher. This being the case there is no reason on that score why this excellent set of illustrations should not be met with in all the better schools and colleges. The illustrations are admirable in themselves—as nearly facsimiles of the objects represented as they could well be without any straining after artistic effect or any slavish submission to conventional rules. Moreover, they are so well selected as to illustrate very remarkably, so far as they go, the present state of botanical science. The size of the plates is 35 by 25 inches, and it is intended that they should appear in parts, each containing six plates. The plates have been selected and executed by Dr. and Mrs. Dodel-Port with the assistance of several of the leading botanists in Germany. "The objects chosen for representation are taken from all classes of the natural system, from the lowest Algæ and Fungi up to the most developed Dicotyledon, and, as the life-history as well as the structure and functions of typical forms are given without undue preference for any one division, the atlas may be used at any stage of study and in any branch of botanical science." Each plate is in itself a complete lesson, and a teacher might, with very little preparation, be enabled, by the aid of the handbook, to understand the plate and explain it to his pupils. The plates are not numbered or arranged in any way, but each is complete in itself, and thus the pupil may study them in what order he pleases; if his bent be physiological he will occupy himself chiefly with the physiological or anatomical plates, if he require to know the construction of particular classes—Ferns or fungi, for instance—he will turn to the plates illustrative of those orders, and by the aid of the handbooks issued with the plates and of some modern textbook, he will acquire, with comparative facility, the leading facts of the subject. Thus equipped, he will be in a position to grasp the facts and ideas of modern botany, and be greatly helped in his attempt to become

himself a worker in botanical science, and not a mere recipient of other person's statements. In speaking highly, as we are bound to do, of these illustrations, we would not have it assumed that they will supply the place of actual personal observation and research. But as a help and a guide to practical work nothing can be better than these plates. Moreover, they will be very serviceable to those intelligent students who desire to know the general scope and tendencies of modern biological science without entering into detail. The first plate we come to illustrates the tendency, if we may so speak, of the whole series. It is devoted to the illustration of the flower of a common *Salvia*, with all the parts clearly made visible, and their relative positions accurately shown. A few years since the practice was to give all these "dry bones," and to intimate that their form and arrangement were such, that the plant belonged to "*Didymia Gymnospermia*," or to the natural order "*Labiate*," as the case might be. Now the dry bones are made to live, the machine is shown in action, that wonderful and beautiful series of parts are shown to have special uses, special movements, to be moreover in many cases dependent for the successful realisation of their object on corresponding movements and adaptations in insects, &c. Thus, in the case of this *Salvia* we have shown not only the structure of the flower, which is curious and beautiful by itself, but which becomes far more so when the mechanism of the whole is made patent as in these drawings. In the case of the lower plants in particular, not only is their structure shown, but their functions are illustrated, and the "story of their life traced from its simplest beginning" to its complete development.

A New and Easy Method of Studying British Wild Flowers by Natural Analysis; being a Complete Series of Illustrations of their Natural Orders and Genera Analytically Arranged. By Frederick A. Messer. Bogue.

This consists of a series of small analytical figures and diagrams illustrative of particular botanical terms as applied to the classification of plants. They are just such as a zealous pupil would construct for himself to illustrate his course of reading, or as memoranda of the dissection of a flower when time or opportunity fail for fuller and more complete description or illustration. In the present instance they are arranged opposite to letterpress, conveying the same information by means of words. It occurs to us that it would have been far better to have retained the words as they are, and illustrated them, not by conventional figures, such as most of these are, but by actual representations of the flowers as seen in plane and in vertical and transverse sections. Mr. Messer's figures were no doubt very serviceable to himself, but we question whether other people will have patience enough to work with them. As we have said, it is far better that each student should make his own diagrams, and the ground-plans furnished in most modern text-books will enable him to do so with a little practice easily and satisfactorily.

Variorum.

THE INDIA-RUBBER AND GUTTA-PERCHA INDUSTRIES.—In the *Journal of the Society of Arts* the Cantor Lectures, which were delivered some months since by Mr. BOLAS, on the india-rubber and gutta-percha industries, are now being published. The introductory lectures treat of the history and sources of india-rubber, and proceed to details of the preparation of the substance for the European markets, and the manufacture and manipulation into the various kinds of rubber, such as hard rubber and vulcanised rubber known in trade. It is, however, in the first part of the subject that we are more particularly interested. We are told that the earliest account of caoutchouc reached Europe some 500 years ago—the first visit of COLUMBUS to Hayti having brought to light the fact that the natives of that island were in the habit of making playing-balls from an elastic gum; about 250 years later TORQUEMADA described the Mexican Indians as not only making playing-balls of india-rubber, but also helmets, shoes, and waterproof articles. Samples of india-rubber appear, however, not to have reached Europe until a long time after the above date. Little, indeed, seems to have been known at all about it till LA CONDOMINE, the French naturalist, communicated a paper on the sub-

ject to the Academy of Sciences at Paris. His communication referred to the Para source, or that derived from the Heveas, which, he says, was used for making torches which were 2 feet long and 1½ inch in diameter, burning for twelve hours. "Soon after LA CONDOMINE'S communication to the Academy, samples of india-rubber frequently reached Europe, and scientific men began to make investigations regarding this remarkable body. Between 1760 and 1770 we find FRESNEU and MACQUER studying the subject, and the last-named investigator made tubes and other articles of caoutchouc by dissolving it in ether and coating moulds with the solution, so that a solid skin of caoutchouc should remain adherent to the mould on the evaporation of the solvent. From this time until the end of the eighteenth century the india-rubber industry may be considered to have been undergoing its period of gestation, and to have been born with the dawn of the present century. Among the first of the important patents regarding the utilisation of caoutchouc is that granted in 1823 to CHARLES MACINTOSH for dissolving the substance in coal-oil, or coal-naphtha, and the use of this solution as a waterproofing agent." One of the best accounts we remember having read is given of the collection and preparation of rubber from the Heveas in their native forests. A series of cuts the lecturer describes as being made through the bark, and shells or clay vessels placed beneath to receive the milky juice. When sufficient has been collected the operation of drying is performed, as follows:—"A kind of wooden bar, thinly covered over with clay, is dipped into a pail filled with the juice, and the bar thus coated is held over a fire fed with certain wild nuts [usually described as the fruits of a *Maximiliana* or *Attalea*], which in burning gives off abundance of aromatic smoke." A kind of short chimney, or funnel, is fixed over the fire to concentrate the smoke and conduct it upwards. As soon as the first layer of juice has become completely indurated, the bar is again dipped, and the drying operation over the smoke repeated, layer after layer being thus dried on the bar till a thick deposit of rubber of nearly 1 inch is attained. A knife-cut is now made in the bottle or biscuit of caoutchouc thus obtained, so that it can be removed from the wooden bar and exposed to the air to become still further indurated. Para caoutchouc prepared in this way has a fragrant aromatic odour. The residues of juice left in the various vessels, the scrapings of the incisions, together with other materials, are made into rough balls known in trade as Negro-head. The methods of tapping the trees, and drying the juice, are well illustrated by woodcuts, which Mr. BOLAS acknowledges as being derived from FIGUIER'S *Merveilles de l'Industrie*. Regarding the botanical sources of rubber other than those of *Hevea brasiliensis*, in Para, and *Ficus elastica* in India, we cannot speak so satisfactorily; this last-named plant is said to grow freely in Madagascar, and thus it would be supposed to produce Madagascar caoutchouc, whereas the bulk of the Madagascar supplies are supposed to be derived from a species of *Vahia*. Again, *Urceola elastica* is described as growing "abundantly in Madagascar, Borneo, Singapore, Sumatra, Penang, and other places, and yields a considerable amount of caoutchouc of very good quality."



LONDON: Barometer.—During the week ending Saturday, September 18, in the vicinity of the metropolis, the reading of the barometer at the level of the sea increased from 29.54 inches at the beginning of the week to 29.71 inches by the morning of the 12th, decreased to 29.66 inches by the evening of the same day, increased to 29.85 inches by the evening of the 13th, decreased to 29.16 inches by the early morning hours of the 15th, increased to 29.92 inches by the evening of the 17th, decreased to 29.68 inches by noon on the 18th, and increased to 29.79 inches by the end of the week. The mean reading for the week at sea level was 29.63 inches, being 0.30 inch below that of the preceding week, and 0.42 inch below the average.

Temperature.—The highest temperatures of the air

observed by day varied from 69° on the 12th to 60½° on the 14th and 15th; the mean value for the week was 64°. The lowest temperatures of the air observed by night varied from 46° on the 16th and 46½° on the 14th, to 51° on the 12th; the mean value for the week was 48½°. The mean daily range of temperature in the week was 15½°, the greatest range in the day being 18½° on the 16th, and the least 11° on the 15th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—12th, 59°, + 1°.4; 13th, 56°.4, — 1°; 14th, 53°.6, — 3°.6; 15th, 53°.6, — 3°.5; 16th, 55°, — 1°.9; 17th, 56°, — 0°.6; 18th, 54°, — 2°.4. The mean temperature of the air for the week was 55°.4, being 1°.9 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 132° on the 12th and 18th, and 120° on the 13th; on the 14th the reading did not rise above 102°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 40½° on the 17th, 41½° on the 14th, and 41½° on the 16th; the mean of the seven lowest readings was 43½°.

Wind.—The direction of the wind was S.W., S.E., and N.E., and its strength moderately strong.

The weather during the week was frequently fine and bright, but generally dull, cool, and very wet.

A thunderstorm occurred on the 13th.

Rain.—Rain fell on six days during the week; the falls on the first three days were very heavy, viz., 12th, 0.53 inch; 13th, 0.46 inch; and 14th, 0.92 inch. The total fall in the week was 2.64 inches.

ENGLAND: Temperature.—During the week ending Saturday, Sept. 18, the highest temperatures of the air observed by day were above 70° at Cambridge, Birmingham, Nottingham, and Sheffield, and below 66° at Plymouth, Bristol, Leicester, Wolverhampton, and Liverpool; the mean value from all stations was 67½°. The lowest temperatures of the air observed by night were below 46° at London, Leicester, Cambridge, Wolverhampton, Nottingham, Sheffield, and Hull, and above 49° at Plymouth, Bristol, and Birmingham; the average value from all places was 47½°. The extreme range of temperature in the week was above 26° at both Nottingham and Sheffield, and below 16° at both Plymouth and Bristol; the mean range of temperature from all stations was 20½°.

The mean of the seven high day temperatures was above 66° at both Cambridge and Birmingham, and below 62° at Leicester, Wolverhampton, and Liverpool; the mean from all places was 63½°. The mean of the seven low night temperatures was below 49° at London, Cambridge, Wolverhampton, and Hull; and above 52° at Truro, Plymouth, Bristol, and Sunderland; the general mean from all stations was 51°. The mean daily range of temperature in the week was above 15° at London, Cambridge, and Birmingham, and below 10° at Liverpool; the mean daily range from all places was 12½°.

The mean temperature of the air for the week from all stations was 56°, being the same as the value for the corresponding week in 1879. The mean temperature was above 57° at Truro and Birmingham, and below 55° at Leicester, Wolverhampton, Liverpool and Hull.

Rain.—The falls of rain were very heavy everywhere, and caused destructive floods at many places. It fell on every day in the week at most places, and at some stations on the 12th, 13th, 14th and 15th; the falls exceeded 1 inch. At Hull 1.42 inch fell on the 14th, at Sheffield 1.18 inch on the 15th, at Nottingham 1.07 inch on the 13th, at Birmingham 1.55 on the 15th, and at Leicester 1.25 inch on the 12th, and 1.46 inch on the 14th. The total falls in the week were the heaviest at Birmingham, 4.35 inches; Leicester, 4.28 inches; Nottingham, 3.61 inches; Sheffield, 3.57 inches; Leeds, 3.27 inches; Bristol, 3.02 inches; and at Brighton, London (Blackheath), Hull, Bradford, and Sunderland about 2½ inches were measured; at Cambridge and Liverpool the fall was 1½ inch. The average fall over the country was 2½ inches.

SCOTLAND: Temperature.—During the week ending Saturday, September 18, the highest temperatures of the air observed by day varied from 66½° at Leith to 64½° at Aberdeen and Greenock; the general mean from all places was 65½°. The lowest temperatures of the air observed by night varied from 40° at both Paisley and Perth, to 46° at Greenock; the general mean from all stations was 42½°. The mean range of temperature from all places was 23°.

The mean temperature of the air for the week from all stations was 54½°, being ½° higher than the value for the corresponding week in 1879. The mean temperature was above 57½° at Perth, and below 52° at Paisley.

Rain.—Rain fell to the amount of 2 inches at Dundee, Aberdeen, and Leith, whilst at Paisley ¾ inch fell; the average fall over the country was an inch and six-tenths.

DUBLIN.—The highest temperature of the air was 65½°, the lowest 43°, the extreme range 22½°, the mean 54°, and the fall of rain 1.08 inch.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, SEPT. 23, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.					HYGROMETRIC DEDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 28 Years.	Highest.	Lowest.	Range.	Mean for Day.	Departure from Average of 60 Years.	Dew Point.	Degree of Humidity, Sat. = 100.		
Sept.	In.	In.	°	°	°	°	°	°	E.N.E.	In.	
16	29.44	—0.42	64.4	46.0	18.4	55.0	—1.0	51.7	89	N.N.E.	0.04
17	29.69	—0.16	64.9	47.7	17.2	54.0	—0.5	51.3	85	NNW	0.00
18	29.56	—0.28	62.0	48.0	14.0	54.0	—2.4	50.0	86	S.W.	0.40
19	29.55	—0.28	56.5	45.5	11.0	49.8	—6.3	45.3	85	WSW	0.17
20	29.71	—0.12	62.0	49.5	12.5	51.1	—4.7	42.7	73	WSW	0.00
21	29.77	—0.03	58.0	45.4	12.6	51.1	—4.4	49.3	94	W.	0.05
22	29.83	+0.04	70.5	47.7	22.8	58.0	+2.7	55.0	89	WSW	0.00
Mean	29.65	—0.18	62.6	45.8	16.8	53.6	—2.5	49.3	86	W. S.W.	sum 0.66

Sept. 16.—Dull, with little rain in morning. Fine rest of day. Cloudless, but misty at night.
— 17.—A fine day, rather cloudy and cool. Overcast at night.
— 18.—Very dull, with frequent heavy rain till 1 P.M. Generally fine after. Beautifully clear at night. Cold. Strong wind.
— 19.—Generally dull this evening, then cloudless. Rain fell till noon. Windy. Cold.
— 20.—A fine day, partially cloudy. Cool. Strong wind. Overcast at night.
— 21.—A dull, overcast day. Cool. Thin rain fell till 2 P.M. Very dark from 3 to 4 P.M.
— 22.—A fine bright day, rather cloudy at times. Warmer. Overcast at night.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

ITALIAN HYACINTH.—A correspondent asks if the white Italian Hyacinth is different from the white Roman Hyacinth. Can any of our readers tell him? We have never before heard of the Italian.

Answers to Correspondents.

BOOKS: Constant Reader. The best you can have is Mr. Shaw's *The London Market Gardens*, published at 37, Southampton Street, W.C.

DISEASED APPLES: D. B. Your Apples are affected with Oidium fructigenum, which is common on Plums and Pears also, and often grows in a concentric manner. It also occurs in the United States. Please to pack in thin paper—not in cotton wool, which often makes such matters difficult if not impossible to recognise. *M. J. B.*

DISEASED PEAR TREES: Diss. The cause of the bad state of the young shoots is very clear; it does not depend either on insects or fungi. The wood of three years' growth is strongly cankered, and as in some cases the diseased bark is half covered with Lichens, the canker may have been of earlier origin. It is quite impossible that foliage from such a cankered shoot should be healthy. The wonder is that there was sufficient supply of sap to produce foliage at all. *M. J. B.*

ERRATUM.—At p. 375, col. 5, for "Salvia," read "Salvinia."

INSECTS: J. W. B. We cannot tell what insect is eating the leaves of your Coleus unless you send us one for identification.—*W. A. W.* Thanks for the broad-leaved Willow galls. They are distinct from the galls on the long-leaved Willow, formed by a sawfly (*Nematius intercus*), and are described by Hartig under the name of *N. gallarum*. Each gall is inhabited by a single twenty-footed larva. *I. O. W.*

NAMES OF FRUIT: W. Francis. Your fruits are unknown to us.—*M. P. J.* and *T. G.* The two Apples sent are both Cellini.—*J. W.* Plum: Mitchelson's. The Pear was somewhat decayed on receipt. It is one of the Scotch varieties, quite unknown in the South; may probably be Auch Chisel, but we are not sure.—*A. H. S.* Next week.

NAMES OF PLANTS: J. Marshall. *Crinum augustum*.—*W. J. Walton.* *Apios tuberosa*.—*S. C. B.* *Mandevilla suaveolens*.—*P. Davidson* *Leonitis leonurus*.—*W. D.* 1. *Blechnum occidentale*; 2. *Gymnogramma tartarea*; 3. *Onychium japonicum*; 4. *Adiantum hispidulum*; 5. *Coccoloba platyclada*; 6. *Pleopeltis Billardieri*.—*W. J. H.* 1. *Cerastium tomentosum*; 2. *C. Biebersteini*; 3. *Konigia maritima variegata*.—*R. P.* 1. *Euphorbia Lathyris*; 2. *Verbascum nigrum*; 3. *Monarda mollis*.—*C. W. D.* *Chrysocoma Lino-*

syris.—*R. S.* *Lycium barbarum*. We have no information as to the properties of the fruits, but as they belong to a poisonous family, we recommend caution. From the taste we should not suppose any one would care to eat enough to get poisoned.—*W. G. C.*, & *S.* *Polygonum cuspidatum*.

RHYNCHOSPERMUM JASMINOIDES: A. B. This plant flowers readily enough under greenhouse treatment. It should be potted in rough soil, well drained, in which peat-earth preponderates, and the season's growth should be well ripened by exposure under glass. It will then flower at the proper season.

ROCKWORK: Reader. We cannot advise you as to the quantity of soil and rock required, as that would depend on the style adopted, and somewhat on the available material; but we should certainly advise you to make the rockwork first, and plant your bulbs and Ferns afterwards.

SCILLA MARITIMA: A. Scott. We have found these do best potted in sandy loam, well drained, using rather large pots. They produce their leaves and flower-spikes at different seasons. The leaves should be encouraged to grow and be carefully ripened off, the pots standing in the full sun in a greenhouse. When the bulbs have sufficient strength they will push up the flower-stems after the decadence of the foliage. They are not showy.

VINE BORDER: R. W. The Vine border with a concreted bottom, but no drainage material, is quite a mistake. There should have been a foot thick of rough, rubbly matter beneath the soil. The drain along the front will do some good, but you had better face the difficulty of remaking the border at once. Begin at one end, and carefully lift and protect the roots of one Vine, clear out the soil, lay in 8 or 10 inches of coarse brick rubbish, and on this a layer of turf, grass downwards; add the deficient old mortar rubbish and a few half-inch bones to the soil, or to fresh soil, if this is not fit to use again, and make up the border to a higher level, replanting the Vines carefully as you proceed.

CATALOGUES RECEIVED.—Harrison & Sons (Leicester) Catalogue of Selected Dutch and other Flower Bulbs. —George Cooling & Son (Bath), Bulb List.—J. B. A. Deleuil (Marseilles), Special Offer of Amaryllis, Begonias, and Succulent Plants, &c.—Peter de Cock (Meirelbeke, Ghent), Wholesale Trade List of Plants for Winter Blooming.—E. G. Henderson & Son (Maida Vale, W.), Catalogue of Dutch Bulbs and other Bulbous Flower Roots from all Parts of the World.—G. E. Elliott (97, Bradford Road, Huddersfield), Select List of Dutch Bulbs and other Flower Roots, Roses, &c.

COMMUNICATIONS RECEIVED.—J. D.—J. A.—A. M.—R. P.—E. G. H.—S. & S.—W. A. W.—C. N. M.—J. C. F.—E. J.—H. E. W.—T. H.—J. N.—W. A. M.—D. T. F.—W. M.—W. B.—T. B. L.—W. T. D.—O. G. D.—J. V. & S. (next week).—B. D.—C. L.—J. R.—O. M.—J. N.—S. P. O.—H. W. T.—H. C.—J. T. B.—W. M.—J. I. L.—T. P. Coomber.—W. D.—B. H.

Markets.

COVENT GARDEN, September 23.

Peaches are now getting short, good samples making high prices. We have no alteration to quote in other goods. Consignments from the Continent are short, Pears especially making high prices. Kent Cobs esser. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	.. 2 0 5 0	Melons, each	.. 2 0 3 0
Cobs, per lb.	.. 1 6 —	Peaches, per doz.	.. 6 0 12 0
Filberts, per lb.	.. 1 6 —	Pears, per dozen	.. 1 6 2 6
Grapes, per lb.	.. 0 6 4 0	Pine-apples, per lb.	.. 1 6 4 0
Lemons, per 100	.. 6 0 10 0	Plums, ½-sieve	.. 2 0 4 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe, per doz.	.. 3 0 4 0	Horse Radish, p. bun.	4 0 —
Aubergines, per doz.	3 0 —	Lettuces, Cabbage, per doz.	.. 0 6 1 6
Beans, French, p. lb.	0 6 —	Mint, green, bunch.	0 4 —
Beet, per doz.	.. 1 6 2 6	Mushrooms, p. bask.	1 6 2 0
Cabbages, per doz.	.. 1 0 2 0	Onions, per bushel.	5 0 —
Carrots, new, bunch	0 4 0 6	— Spring, per bun.	0 6 —
Cauliflowers, English, each	.. 0 3 0 6	Parsley, per bunch.	0 4 —
Celery, per bundle	.. 1 6 2 0	Radishes, per bun.	0 2 —
Chilis, per 100	.. 3 0 —	Small salad, pun.	0 4 —
Cucumbers, per doz.	6 0 9 0	Spinach, per bushel	4 6 —
Endive, per 2 doz.	.. 1 6 3 0	Tomatoes, per lb.	.. 0 9 1 0
Garlic, per lb.	.. 1 0 —	Turnips, new, bunch	0 4 —
Herbs, per bunch	0 2 0 4	Vegt. Marrows, doz.	2 0 —

POTATOS.—Kent Regents, 80s. to 105s.; Champions, 80s. to 95s.; Early Rose 60s. to 80s.

Prices for cut flowers, and plants in pots, remain about the same as last week:—

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	.. 3 0 6 0	Evergreens, in var., per dozen	.. 6 0 18 0
Begonias, per doz.	.. 4 0 12 0	Ferns, in variety, per dozen	.. 4 0 18 0
Bouvardias, per doz.	12 0 24 0	Ficus elasticus, each	1 6 7 6
Chrysanth., per doz.	6 0 12 0	Foliage Plants, various, each	.. 2 0 10 6
Cockscombs, p. doz.	3 0 6 0	Fuchsias, per dozen	3 0 9 0
Coleus, per dozen	.. 3 0 9 0	Lilium auratum, doz.	18 0 48 0
Cyperus, per dozen	4 0 9 0	— various, per doz.	0 18 0
Dracena terminalis	30 0 60 0	Myrtles, per doz.	.. 6 0 12 0
— viridis, per doz.	12 0 24 0	Palms in var., each	2 6 2 0
Erica gracilis, per dozen	.. 12 0 18 0	Rhodanthe, per doz.	6 0 9 0
— caiffra, per doz.	18 0 —	Solanums, per dozen	6 0 18 0
Euonymus, various, per dozen	.. 6 0 18 0		

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3-0 6	Heliotropes, 12 sp.	0 6-1 0
Asters, 12 bunches	0 6-0 0	Mignonette, 12 bun.	2 0-6 0
Bouvardias, per bun.	1 0-4 0	Pelargoniums, 12	
Calceolarias, p. bunch	0 9-1 0	sprays	0 6-1 0
Camellias, per dozen	3 0-0 0	Phlox, 12 bunches	6 0-12 0
Carnations, 12 bun.	3 0-0 0	Primula, double, per	
Dahlia, 12 bunches	3 0-0 0	bunch	1 0-1 6
Eucharis, per doz.	3 0-0 0	Roses (indoor), doz.	1 0-6 0
Feverfew, 12 bun.	1 4 0-0 0	— outdoor, 12 bun.	3 0-9 0
Forget-me-not, 12		Stephanotis, 12 spr.	3 0-6 0
bunches	3 0-0 0	Tuberose, 12 bun.	1 0-3 0
Gardenias, 12 blms.	3 0-6 0	Tuberose, per dozen	1 0-2 0
Gladioli, 12 spikes	1 0-3 0		

SEEDS.

LONDON: Sept. 22.—The seed market to-day showed no material alteration. Of late the rainfall has been in excess of the requirements, which somewhat hinders sowing operations. On account of this bad weather, a rather firmer feeling as regards Clover seeds manifests itself. Some quantity of good seed, moreover, is wanted just now to fill export orders. Italian Ryegrass continues to harden in value. For Trefoil there is no sale. Winter Tares are held for stiffer rates: the supply has slackened off, and the demand increased. It is thought now that the Ground Game Bill has been passed that more Vetches will in the future be sown, especially in those districts which are overrun with game. Finest Ryegrass seed realises 40s. per quarter. Stocks are still limited. A considerable quantity of new white Mustard seed has, during the last few days, been bought by the manufacturers at about 12s. 6d. per bushel. The new French Millet to hand this week being handsome and cheap sells freely. Some exceedingly fine new Haricot Beans have just arrived here. The trade for blue Peas exhibits signs of improvement. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

The supply of home-grown Wheat at Mark Lane on Monday was by no means extensive, and an advance of 1s. per quarter was established, chiefly on the better qualities. Foreign Wheat improved about 1s. per quarter. The supply of Barley offering was very moderate. There was not much sale for maling produce, but grinding descriptions were rather firmer. Malt was dull, with a downward tendency. Indian Corn sold at the currency of Monday se'nnight. Oats were in steady consumptive request at former prices. Beans were scarce, and were held at extreme rates, but Peas sold slowly at late prices. Flour was firm, and no material alteration in prices was quoted.—On Wednesday there was not much demand for Wheat either English or foreign, but the tone was firm. The best new English white Wheat may be quoted at from 43s. to 45s. per quarter. Barley was dull at about late rates. Malt attracted very little attention. Oats were steady, while Maize, without being fast, was fully as dear. Beans supported previous values. Peas moved off very slowly. Flour was quiet, but steady in price.—Average prices of corn for the week ending Sept. 18:—Wheat, 39s. 11d.; Barley, 33s. 5d.; Oats, 20s. 7d. For the corresponding period last year:—Wheat, 47s. 4d.; Barley, 43s. 2d.; Oats, 22s. 11d.

CATTLE.

At Copenhagen Fields on Monday trade in beasts was heavy, and on the average prices were not quite so good as last noted. There were a few more sheep than on Monday last, but they were wanted; choicest qualities were readily disposed of at fully late rates, while inferior were with difficulty sold at our quotations. The lamb trade may be said to be closed for the season. Calves sold about the same as last. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 6s.; sheep, 5s. to 5s. 8d., and 6s. 4d. to 6s. 6d.; pigs, 4s. to 4s. 10d.—Trade was dull on Thursday. Both beasts and sheep moved off heavily, and only the best breeds maintained the above-quoted prices, other qualities being lower to sell. Calves were steady, and pigs firm.

HAY.

Tuesday's Whitechapel Market report states that there was a large supply, and trade was flat.—Prime Clover, 100s. to 134s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 106s.; inferior, 30s. to 70s.; and straw, 30s. to 43s. per load.—On Thursday the good supply of hay and straw on sale met with a rather better trade, at Tuesday's quotations.—Cumberland Market quotations:—Superior meadow hay, 105s. to 112s.; inferior, 40s. to 84s.; superior Clover, 126s. to 135s.; inferior, 80s. to 105s.; and straw, 36s. to 42s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that good supplies are on sale, and trade somewhat slow, at the subjoined currency:—Kent Regents, 90s. to 110s.; Essex, ditto, 70s. to 90s.; Scotch, ditto, 80s. to 100s.; Jersey kidneys, 110s. to 120s.; Champions, 70s. per ton.—Last week's imports into London included 10,096 bags from Hamburg, 18 sacks from St. Nazaire, 45 tons from Cherbourg, 45 tons from Barfleur, 415 bags from Harlingen, and 78 bags from Bremen.

COALS.

The following are the quotations current at market during the week:—Ravensworth West Hartley, 14s. 3d.; Walls End—Hetton, 16s. and 17s.; Hetton Lyons, 14s. 6d. and 15s. 6d.; Hawthorns, 14s. 9d. and 15s. 9d.; Lambtons, 15s. 6d. and 16s. 6d.; Wear, 14s. 6d. and 15s. 6d.; South Hetton, 17s.; Chilton Tees, 15s. and 16s.; Tees, 15s. 9d.; Original Hartlepool, 16s.; Radford Navigation, 16s.

To the Trade.

HYACINTHS, Early White Roman; NARCISSUS, Paper White.

HURST AND SON beg to say they have received new consignments of the above. Very good samples. 152, Houndsditch, London, E.C.

BROOM SEED, White Portugal, just harvested. The undersigned has a quantity to offer, price on demand.

FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

STRAWBERRY PLANTS, in small pots for planting, and in 6-inch pots for forcing. FRANCIS R. KINGHORN has a splendid lot of these. Price and LIST of sorts on application. Sheen Nurseries, Richmond, Surrey.

To the Trade.

THE LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh, can supply several thousands of BOUARDIAS, Red and White; CYCLAMENS, GREVILLE ROBUSTA, POINSETTIA, EPIPHYLUMS, FERNS, DRACENAS, &c., in nice young plants. Special offers on application.

A B C Bulb Guide for 1880.

THOMAS S. WARE will have much pleasure in posting to all applicants the above new, esteemed, and most useful CATALOGUE, which contains complete collections of Hyacinths, Crocus, Tulips, Lilliums, Narcissus, Gladioli, &c.; Climbing Plants, Bamboos, Aquatics, &c.; also a selection of Hardy Perennials adapted for Autumn Planting. Hale Farm Nurseries, Tottenham, London.

To the Trade.

HYACINTHS, named, double; DAFFODILS, NARCISSUS, Double White and Poeticus. Special low offer of the above on application. GEORGE REID, Seed Merchant, 20, Castle Street, Long Acre, London, W.C.

W. AND J. BROWN offer BIRCH, 7 to 8 feet, 8s. per 100; 8 to 10 feet, 16s. per 100; Huntingdon ELMS, 10 to 12 feet, 20s. per 100; 10 to 12 feet, 30s. per 100; SYCAMORE, 6 to 8 feet, 10s. per 100; 8 to 10 feet, 12s. per 100; Black Italian POPLARS, 6 to 8 feet, 8s. per 100; well rooted and strong well furnished CHRISTMAS TREES, 2 to 3 feet, 8s. per 1000; 3 to 4 feet, 10s. per 1000. For delivery in November. Must be sold, as the ground is wanted. Nurserymen, Stamford.

SPECIAL TRADE OFFER

of FOREST TREE SEEDLINGS, &c.
APPLE, Crabs, 1-yr., very fine, 3s. 6d. per 100
PEARS, Stocks, 1-yr., very fine, 4s. per 100
ACACIA, 1-yr., fine, 2s. per 1000
ALDER, 1-yr., fine, 2s. 6d.; 2-yr., fine, 5s. per 1000
ASH, 1-yr., fine, 2s.; 2-yr., fine, 4s. per 1000
BEECH, 1-yr., very fine, 3s. per 1000
BIRCH, 1-yr., 3s.; 2-yr., 5s. per 1000
BRIER, Sweet, 1-yr., 4s. per 1000
BROOM, 1-yr., strong, 2s. 6d. per 1000
CHESTNUT, Horse, 2-yr., 7s. 6d. per 1000
 Spanish, 1-yr., 4s. 6d.; 2-yr., 7s. 6d. per 1000
ELM, Scotch, 1-yr., fine, 3s. 6d.; 2-yr., fine, 6s. per 1000
HAZEL, 2-yr., drilled, 9 to 14 inches, 10s. per 1000
HOLLY, 1-yr., good, 3s. 6d.; 2-yr., good, 6s. per 1000
LABURNUM, 1-yr., extra strong, 3s. per 1000
OAK, 1-yr., fine, 4s. 6d.; 2-yr., fine, drilled, 7s. 6d. per 1000
SYCAMORE, 1-yr., fine, 3s.; 2-yr., 5s. per 1000
THORN, or QUICK, 1-yr., 3s.; 2-yr., fine, 5s. per 1000
PINE, Austrian, 1-yr., 2s.; 2-yr., 5s. per 1000
 Corsican, 1-yr., 2s. 6d.; 2-yr., 5s. per 1000
LARCH, 1-yr., very fine, 4s. 9d. per 1000; 2-yr., with leaders, 6s. per 1000, or 42s. per 100,000
PINE, Finaster, 1-yr., 2s. 6d. per 1000
FIR, Scots, true Native, 2-yr., scarce, 6s.; 2-yr., 2-yr., 9 to 15 inches, 17s. 6d. per 1000
SPRUCE, Norway, 2-yr., 1s. 6d.; 3-yr., 2s. 6d. per 1000
JUNIPER, 3-yr., 6 to 12 inches, 10s. per 1000.
Samples of any of the above per post free.

We can also offer a splendid general stock of transplanted NURSERY STUFF, including Larches, 2½ to 3½ feet; Scots Fir and Spruce, 9 to 15 inches; Austrian Pine, Finaster Pine, and nearly all kinds of Hardwoods, and will be glad to send samples and quote prices to intending buyers.

PETER S. ROBERTSON & CO., TRINITY NURSERIES, EDINBURGH.

SEVEN THOUSAND CARNATIONS,

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Pure White and highly Clove-scented.

In various sizes, specially prepared for winter blooming, 6s., 9s., 12s., 18s., 24s. and 30s. per dozen.

Sample Plants sent on application. Special prices quoted per 100 or 1000.

HEATH AND SON, Florists, Cheltenham.

CABBAGE PLANTS—CABBAGE PLANTS.

Now Ready for Autumn Planting.

W. VIRGO can now supply, in any quantity, very good, extra strong-grown, healthy Plants, of the following, for spring use, which cannot be equalled for sorts and growth. Seed from the very best stock:—Early Battersea, Early Enfield Market, Nonpareil, Sugarloaf, Wheeler's Imperial, Red Pickling, and Robinson's Champion Drumhead. All the above delivered free on rail at 3s. per 1000. Brown Cos, Hardy Green Cos, and Tom Thumb LETTUCE, at 4s. per 1000.

N.B.—Samples forwarded if required. Womersley Nurseries, near Guildford, Surrey.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.

Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each. Fresh SPHAGNUM, 10s. 6d. per bag. WALKER AND CO., Farnborough Station, Hants.

FIBRE REFUSE, for Gardens, Potting, &c. 4 bushels for 1s., bag included. Orders by post punctually attended to.—G. HARDING, 23, Stepney Green, E.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,

3d. per bushel; 100 for 25s.; truck (loose, 250 bushels), 20s.; 4-bushel bags, 4d. each. LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 15s. per ton. BLACK FIBROUS PEAT, 1s. per sack, 5 sacks 25s.; 12 for 40s., or 45s. per ton; sacks, 4d. each. COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 20s. per ton; in 1 cwt. bags, 4d. each. YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel. SPHAGNUM MOSS, 8s. 6d. per sack. Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

12, Castle Street, Endell Street, Long Acre, London, W.C.

Superior Bagshot Peat

BROWN or BLACK FIBROUS PEAT, of the finest quality, for Rhododendrons, Azaleas, Orchids, Ferns, &c. Price £4 4s. per 6 tons, loaded on trucks at Camberley Station, South-Western Railway. Address, W. TARRY, "Golden Farmer," Farnborough Station.

COCOA-NUT FIBRE REFUSE,

as supplied to all the Royal Gardens of Europe, useful at all seasons, invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and insects. Bags (about 4-bushels), per bag 1s., 15 bags 12s., 30 bags 20s. (all bags included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 250 bushels), free on rail, 25s. Terms cash with order.

CHUBB, ROUND AND CO.,

Fibre Works, Westferry Road, Millwall, London, E.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, 20s.; 4s. bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, free on rail, £1 3s. J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

Reduction of Prices.

COCOA-NUT FIBRE REFUSE.—As supplied to all the Royal Gardens and principal Nurserymen. Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; a destroyer of Slugs and Insects. Sold in bags, about 4 bushels, at 9d. per bag. Orders for 15 bags, 10s.; 30 bags, 17s.; 100 bags for 50s. (bags included). Delivered free to any Station in London. Van-loads at the Works, 2s. Ditto, delivered by our vans within 5 miles, 8s. Railway-trucks filled at 18s., 2 trucks for 30s., free to any Station in London. Terms Cash. Post-office Orders payable at West Ferry Road. GEO. WHITLEY, Janet Street, West Ferry Road, Millwall, E.

The Best Qualities of Fine and Coarse SILVER SAND, PEAT and LOAM.

SILVER SAND, fine, 10s. per ton; coarse, 11s. per ton. PEAT, 8s., 10s. and 13s. per cubic yard. LOAM, 10s. and 12s. per cubic yard, on rail, by truckloads. Horticultural Price List and further particulars on application to WILLIAM SHORT, Horticultural Material Merchant, Redhill, Surrey.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).



THE CHEAPEST and BEST of all INSECTICIDES. Sold by all Seedsmen and Chemists. Bottles, 1s. 6d., 2s. 6d. and 4s. 6d.; Gallons, 12s. 6d.; Casks, 11s. per gallon.

Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester. London: HOOPER AND CO., Covent Garden, W.C. Dublin: TAIT AND CO., Seedsman, Capel Street.

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All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description. RAFFIA FIBRE, NETTING, and TIFFANY. TARPULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

ARCHANGEL and ST. PETERSBURG MATS, RAFFIA FIBRE, &c.

New arrivals just to hand from our Agents. For Wholesale Prices, apply to MAREDAZ AND FISHER, James Street, Covent Garden.

ANDERSON'S RUSSIA MATS,

For COVERING, TYING, and PACKING, are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

MATS, RAFFIA for TYING, TRAINING STICKS and LABELS,

Bamboo Canes, Virgin Cork, &c.

C. J. BLACKKITH AND CO., COX'S QUAY, LOWER THAMES STREET, LONDON.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

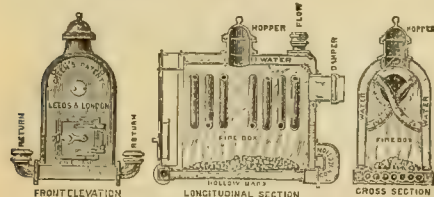
GREEN'S PATENT WROUGHT-IRON HOT-WATER BOILERS,

With Tubes or Shelves, and Hollow or Ordinary Cast-iron Grate Bars.

SADDLE BOILERS,
With WATERWAY BACKS and WELDED BOILERS, Specially adapted for Heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

They are the neatest, cheapest, most effective and durable of any extant.

The Tubular ones are remarkable for their great Heating Power, Slow Combustion, and the length of time the Fire will Burn without requiring attention.



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THOMAS GREEN & SON (Limited),
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Greenhouses.
H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E. Good substantially made GREENHOUSES, Glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. Estimates given for wood or iron.

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½d. per lb.—all colours. Improved Zinc White Paint, 4½d. per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

Oil Paint No Longer Necessary.
HILL AND SMITH'S BLACK VARNISH, for Preserving Ironwork, Wood, or Stone.
(Registered Trade Mark.)



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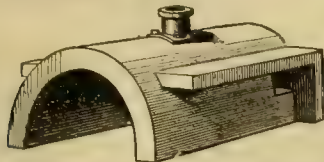
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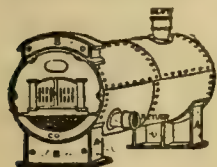
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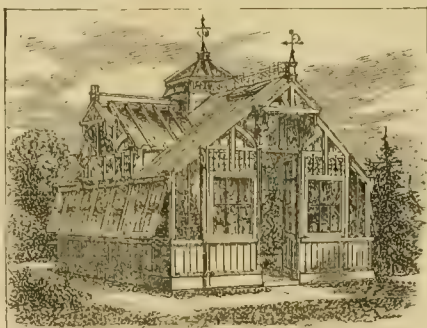
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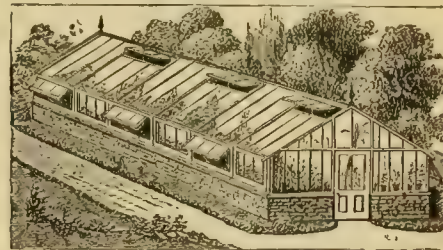
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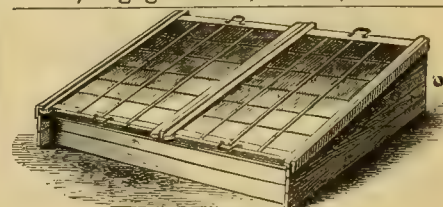


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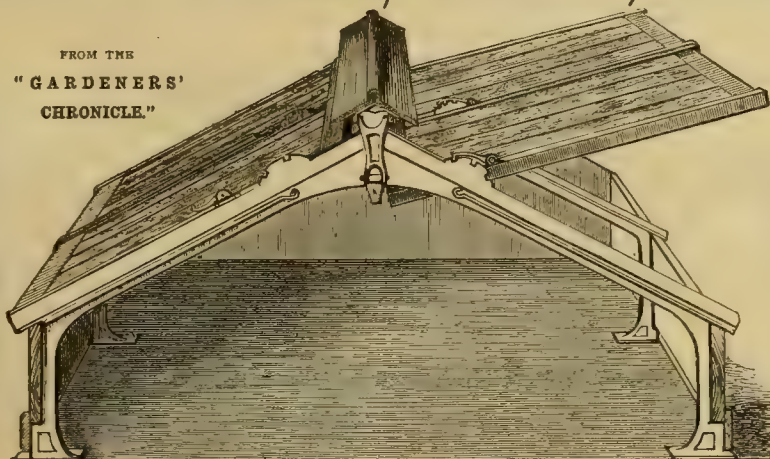
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For 1881.

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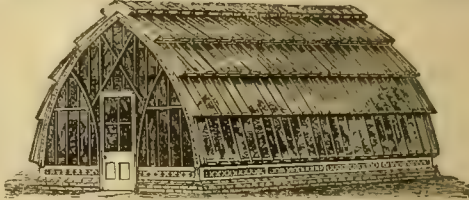
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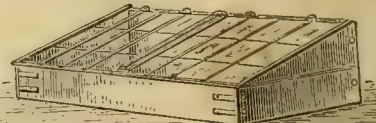
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NOTICE.—Will be published with the "Gardeners' Chronicle" for October 16, a Double-page Coloured Plate of the POET'S NARCISSUS.

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H. LANE AND SON, Nurserymen, Berkhamstead, Herts., can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

CAMELLIAS, INDIAN AZALEAS.—A fine Stock of Budded Plants of the above now ready. Also of PALMS, FERNS, Ficus elastica, variegated Aralia Sieboldi, Dracena terminalis, camellia, and others for table and general decoration; Ghent and Mollis AZALEAS SPIRÆAS, TUBEROUS BEGONIAS and GLOXINIAS by thousands, &c.; the whole, as usual, at very moderate prices. Special offer on application.
A. VAN GEERT, Continental Nurseries, Ghent, Belgium.

Notice of Removal.
AMIES' CHEMICAL MANURE COMPANY (LIMITED).
HEREBY GIVE NOTICE that they have REMOVED from 79, Mark Lane, to more extensive and convenient Offices, at 75, Mark Lane, London, E.C.

Vines—Vines—Vines.
J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

Strawberries.
CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice.
The Royal Nurseries, Slough.

STRAWBERRY RUNNERS,
strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

CHRYSTANTHEMUMS.—Early Flowering Section.—Splendid bushy stuff, in 48's, in bloom or in bud, all colours, by the dozen, 100, or 1000. Price moderate. Best early white for cutting. Snowflake, 24s. per dozen.
WATSON AND SONS, Marlborough Nursery, 57, Halliford Street, Islington, N.

A. M. C. JONGKINDT CONINCK
begs to offer a large stock of
VERY SOUND, HOME-GROWN LILUM AURATUM.
Prices on application.
Dedemsvaart, near Zwolle, Netherlands.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the "Gardeners' Chronicle" the Editors say: "Gardeners should take notice of this."
Two Cuttings, post-free, for 1s. 2d.
One Plant, post-free, 1s. 6d.
The Home for Flowers, Swanley, Kent.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

THE MOST SUPERB ROSES
that money can buy.
Dwarfs, very strong and healthy, 2s. per dozen, 75s. per 100.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)
Descriptive CATALOGUES on application. Address
CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

NEW ROSES in Pots.—Tea and Noisette ROSES in Pots.—CLEMATIS in Pots.
INFALLIBLE MILDEW COMPOSITION.
Special LISTS, with full particulars, now ready, gratis and post-free.
EWING AND CO., EATON, NORWICH.

Christmas Roses.
BUDDENBORG BROS., BULB GROWERS, Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

WANTED, CUTTINGS OF VESUVIUS GERANIUM.—Please state lowest price per 100 to D. CRUICKSHANK, Friern Park Nursery, North Finchley.

WANTED, STEPHANOTIS, GARDENIAS, CAMELLIAS, and other CHOICE FLOWERS.—Letters and Consignments to W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WANTED, English GRAPES and FRUIT of all kinds, suitable for Sale in Smithfield Market, Manchester. Good prices realised, and prompt cash. Moderate commission.
DORAN AND SON, Salford, Manchester.

50,000 Dwarf Brier Stocks.
C. FENNER, NURSERYMAN, Sunninghill, Berks, has the above to offer—1-yr., extra fine, and well rooted. Price on application.

Double White Primulas.
HEATH AND SON'S stock of the above is well established stuff, in 4 and 5-inch pots, and will make grand plants for winter blooming. 10s. per dozen, 75s. per 100; extra selected, 12s. and 15s. per dozen, 90s. and 110s. per 100.
Florists, Cheltenham.

PRIMULAS and CINERARIAS, prize strain,
strong plants, 2s. 6d. per dozen, free by post.
J. GEO. HILL (late Scott), The Royal Seed Stores, Yeovil.

Deutzia gracilis.
WILLIAM FLETCHER has a fine stock of the above to offer, fine bushy plants, with from 10 to 20 branches, price 21s. per 100, 10s. per 100.
Ottershaw Nurseries, Chertsey.

Bulbs, Orchids, &c.
THE NEW PLANT and BULB COMPANY
beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other choice flowering Bulbs. Carriage free. Our very large consignment of the above bulbs is now received, which for quality and quantity is unequalled. Early orders are respectfully solicited.
Descriptive and Priced CATALOGUE free on application.
DICKSON AND ROBINSON, 12, Old Millgate, Manchester.

To the Trade.
HYACINTHS, named, double; DAFFODILS, NARCISSUS, Double White and Poeticus. Special low offer of the above on application.
GEORGE REID, Seed Merchant, 20, Castle Street, Long Acre, London, W.C.

Bulbous Flower Roots.
FIRST QUALITY, CARRIAGE FREE.
JAMES DICKSON AND SONS have received, in the finest possible condition, their first large annual consignment. Priced CATALOGUE post-free.
108, Eastgate Street, Chester.

Dutch Bulbs.
C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to
Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, Crutched Friars, London, E.C.

EVERGREEN HEDGES, in great variety,
very cheap.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.
SWEET BAYS.—Splendid bushy stuff, 1 to 1½, 1½ to 2, and 2½ to 3 feet; also good standards, 5 to 6 feet, with heads 2½ feet through. Price on application.
W. M. FILLINGER, The Nurseries, Chestow, Mon.

SEEDLING THORNS.—The finest in the Trade. Price and particulars on application. Also transplanted of various sizes.
RODGER Mc CLELLAND AND CO., 64, Hill Street, Newry.

COLCHIC LAURELS.
One Thousand, 3 to 4 feet, fine, a bargain.
KERR AND FOTHERINGHAM, Nurserymen, Dumfries, N.B.

To the Trade.
GREEN HOLLIES.—1-yr. Seedlings, fine; also 2-yr. bedded Hollies, healthy good rooted stuff, 4 to 6 inches and 6 to 9 inches. Price and terms on application to
C. WHITEHOUSE, Brereton Nurseries, Kugeley.

BROOM SEED, White Portugal, just
harvested. The undersigned has a quantity to offer, price on demand.
FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

EWING AND CO.'S Magnificent Collection
of SPECIMEN CLEMATIS is NOW in FULL BLOOM. The Nurseries are open to the Public on Week-days. CATALOGUES of Clematises, Roses and General Nursery Stock gratis and post-free.
The Royal Norfolk Nurseries, Eaton, near Norwich.

CAULIFLOWER SEEDS.—Haage's Dwarf Erfurt, true, 3ss. per lb.; Veitch's Autumn Giant, 10s. per lb. Fresh Seeds of LATANIA HORNBONA, PANDANUS UTILIS, &c., just arrived from Brazil. Lowest prices on application to
C. POMRENCKE, Seedsman, Altona, Hamburgh.

CABBAGE PLANTS for Sale, at the noted
Elm Farm, Barnes, Surrey.
Early and Selected Stock, by the rod or acre.

Hyacinths in Pots.
POTS made expressly for HYACINTHS can be supplied by
J. MATTHEWS, Royal Pottery, Weston-super-Mare, Price List free.

SALES BY AUCTION.

Every Monday.

SALES OF DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE AND MORRIS will sell at the Mart, on MONDAY NEXT, and every following Monday, at half-past 12 o'clock precisely, extensive consignments of first-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS from Holland, in lots to suit all buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Lea Bridge Nurseries, Leyton, E.

TENTH ANNUAL TRADE SALE.
MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to sell by AUCTION, on the Premises as above, on TUESDAY, October 5, at 11 o'clock precisely, 20,000 winter-blooming HEATHS, remarkably well grown, and including 8000 hymenalis, and large quantities of Wilmoreana, gracilis, and many other varieties; 1500 unusually fine CYCLAMEN PERSICUM, 1000 GENISTA FRAGRANS, a quantity of well-grown Tea-scented and Noisette ROSES in pots, LAPAGERIA ALBA and ROSEA, and Azaleas, full of bloom-buds; 1000 CHRYSANTHEMUMS, 300 Marchal Niel ROSES in pots, from 7 to 10 feet; several hundreds of fine strong plants AMPELOPSIS VEITCHII, and other stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Lee, S.E.

TENTH GREAT SALE OF WINTER-BLOOMING HEATHS, by order of Mr. B. Maller, who has not sufficient room to house this large stock.

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, on the Premises, the Burnt Ash Nursery, Lee, S.E., on FRIDAY NEXT, October 8, at 11 o'clock precisely, in consequence of the large number of lots, 12,000 WINTER-FLOWERING HEATHS, which for superior growth and profusion of bloom are unsurpassed in the trade, including several thousands of Erica hymenalis, and large quantities of other varieties; also GENISTAS, CYCLAMEN, ADIANTUM CUNEATUM, BOUVDARIAS, and well-berried SOLANUMS, in large numbers; AZALEAS, ROSES, and other Miscellaneous Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Brixton, S.W.

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, on the Premises, the Nursery, Loughborough Park, Brixton, S.W., on TUESDAY and WEDNESDAY, October 12 and 13, at 12 o'clock precisely, by order of Messrs. Ponsford & Son, a large quantity of NURSERY STOCK, in healthy and thriving condition, including an assortment of Evergreen and Deciduous Shrubs for border planting, 5000 Limes, 1000 Planes, 3000 Aucubas, 2000 Ivies of sorts, 3000 Eucalyptus of sorts, 2000 Hardy Climbers, 2000 Standard and Trained Fruit Trees, 2000 Mulberries, recently transplanted. Also the SURPLUS STOCK of STOVE and GREENHOUSE PLANTS, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Frindsbury, near Rochester, Kent.

UNRESERVED SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Miss Beadle, who is giving up the business, to sell by AUCTION on the Premises, The Bell Street Nurseries, Frindsbury, about a mile from Strood and Rochester Bridge Stations, on WEDNESDAY, October 13, at 12 o'clock, the well-grown, NURSERY STOCK, in good condition for removal, including 5000 Coniferae and Evergreen Shrubs, an assortment of Ornamental and Forest Trees, 3000 Ash, 5000 Privet, 5000 Gooseberries and Currants, 1200 Fruit Trees, 15,000 strong Quicks, and other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. THE NURSERY TO LET. Particulars and terms of the Auctioneers.

Lower Norwood, S.E.—Fifth Annual Sale.

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, on the Premises, the Castle Nursery, Lower Norwood, S.E., near the Lower Norwood Station, on FRIDAY, October 15, at 12 o'clock, by order of Mr. James, a carefully selected Assortment of Valuable ESTABLISHED ORCHIDS, in splendid condition, and for the most part showing flower; also a quantity of young and free-growing STOVE and GREENHOUSE PLANTS, EXOTIC FERNS, CAMELLIAS, AZALEAS, and other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY, during October, at half-past 12 o'clock precisely each day, consignments of DUTCH BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

Cool Orchids, in fine condition, just arrived from COLOMBIA.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, October 7, at half-past 12 o'clock precisely, a fine lot of COOL ORCHIDS, just arrived from Colombia in fine condition, consisting of Odontoglossum Pescatorei, O. novum majus, O. triumphans, Ada aurantiaca, Angulosa Clowesi, Odontoglossum Alexandriae, &c.

May be viewed the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, October 7, at half-past 12 o'clock precisely, a Collection of ESTABLISHED ORCHIDS, the property of a gentleman giving up their culture, consisting of Odontoglossums, Masdevallias, Cattleyas, Oncidiums, Lælias, Dendrobiums, Cypripediums, &c., including most of the known varieties.

May be viewed the morning of Sale, and Catalogues had.

Bulbs and Plants.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, October 6, at half-past 12 o'clock precisely, choice Double and Single HYACINTHS of different sorts and colours, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULUS, SNOWDROPS, Early Roman HYACINTHS, and other BULBS, from well-known Farms in Holland, lotted to suit all buyers; Ornamental STOVE and GREENHOUSE PLANTS, Hardy Herbaceous BORDER PLANTS, consignments of BULBS and PLANTS from India and Germany, English-grown Bulbs of LILIUM KRAMEI, and 100 Plants of a new Double TROPEOLUM.

May be viewed the morning of Sale, and Catalogues had.

Priory Nursery, Warwick.

GREAT CLEARANCE SALE of about 400 LOTS of NURSERY STOCK.

MR. F. C. LEE has received instructions to sell by AUCTION, Without Reserve, on MONDAY, October 4 (sale to commence at 11 o'clock), on the above Nursery, the whole of the NURSERY STOCK, comprising specimens of Thuja aurea, gigantea, and Lobbi, Picea excelsa; and Nordmanniana, Araucaria imbricata, Cedrus Deodara and Libani, Arbor-vitæ and Cupressus, in great variety; English and Irish Yew, all ranging from 2 to 6 feet; 2000 Green Hollies, from 2 to 6 feet; Common and Portugal Laurels; Rhododendrons, Tree Box, Privet, &c.; Standard, Trained, and Pyramid Fruit Trees of Appricots, Peaches, Pears, Plums, and Apples, of all sizes, in fine condition; Greenhouse Plants, Ferns, &c.

May be viewed. Catalogues to be had at the Nursery, or of the Auctioneer, 22, Jury Street, Warwick.

N.B.—Intending Purchasers are invited to inspect the Stock, which is in good condition. A reasonable time allowed to remove the Trees.

Rawcliffe Lodge, Langside, near Glasgow.

SALE of the whole COLLECTION of RARE and VALUABLE PLANTS, including a magnificent assortment of ORCHIDS, selected with the greatest care and discretion by the late A. B. Stewart, Esq., of Rawcliffe Lodge and Asnog Hall, during the last ten years, whose abilities and taste as a horticulturist were so well known and appreciated throughout Britain.

MESSRS. HUTCHINSON AND DIXON

have been favoured with instructions to offer the above, without reserve, on the Premises, Rawcliffe Lodge, on WEDNESDAY, October 6, and following days, commencing each day at 11 o'clock, A.M.; and they are confident that such a Collection, for variety and rarity, combined with a perfect state of cultivation, has never before been offered for public competition in this country.

Amongst the ORCHIDS, which occupy three large houses, will be found a number of the most valuable specimens, such as Aerides affine superbum, Vanda tricolor, Dalkethia var. (in flower); Vanda Lowii (the finest plant in the country), several large Vanda suavis, large number of Phalaenopsis in perfect order, now grown in sweltering heat; Anacochilus, such as has not been seen in this country for many years; Angraecums, Calanthes in quantity; Cattleya exoniensis, a large specimen of the finest variety; true Cattleya labiata, large specimen; and many other rare kinds; six specimen Crelogyne cristata, the largest and best Collection of Cypripediums that has yet been sold by auction, over thirty varieties, many specimen size; and a number of very rare Dendrobiums, Lælias, Oncidiums, and Odontoglossums in quantity, especially Odontoglossum Alexandriae of the very finest varieties. Amongst Pitcher-plants, the rare Nepenthes sanguinea, with pitchers holding more than a pint of water—a magnificent specimen; Nepenthes Veitchii—an extra large specimen; N. Raflesiensis—very fine pitchers, holding a pint of water. Unequalled specimens of Azaleas and Heaths. Amongst Heaths, three large Specimen Marnockiana, the finest Erica Tricentia to be found, amula, ventricosa, &c., equally good. Azalea Duchesse de Nassau, Criterion, &c., extraordinary plants. Amongst Foliage Plants, many rare specimens in Palms, &c., such as Phoenix rupicola, Cocos Weddelliana, Crotons, Stove Flowering Plants, Greenhouse Flowering Plants, in quantity; Camellias, Nerines, many fine Ferns, Todeas, &c.

The Collection being so well known at all the principal Exhibitions during the last nine years, it is unnecessary to particularise further the many numerous and rare specimens, which will be fully described by Catalogue in course of preparation.

The plants can be seen by those who are known to Mr. Todd, Gardener; or by application to the Auctioneers, who will grant cards of admission by applying at the "Mart," West Nile Street, Glasgow.

Penkhull Nurseries, Stoke-upon-Trent.

In the occupation of Mr. Thomas Kent, Jun.

Under a Bill of Sale, and a Distress for Rent.

TO GENTLEMEN, NURSERYMEN, GARDENERS, FARMERS, CORN MERCHANTS, STRAW-DEALERS, and OTHERS.

MR. THOMAS STUBBS has been directed by the Holder of the Bill of Sale and Landlord, to sell by AUCTION, upon the above Premises, on WEDNESDAY and THURSDAY, October 6 and 7, and following day if necessary, at 12 o'clock each day, the whole of the NURSERY STOCK, IMPLEMENTS, HORSES, CARTS, FARM PRODUCE, &c., comprising:—

NURSERY STOCK.—Hollies, Green and Variegated; Yews, Aucubas, Laurels, Cedars, Box, &c.; Forest Trees, 150,000 Thorn Quicks, Fruit Trees, Raspberry Canes, Stove Plants, Greenhouse Plants, consisting of Azaleas and Camellias, well budded; Heaths, Epacris, Genistas, Primulas, Chrysanthemums, Tea Roses (in pots), Spiræa japonica, Flower Pots, &c. **HORSES and IMPLEMENTS**.—1 aged Mare, "Betsy"; 1 aged Mare, "Jewel"; 1 Grey Pony, 2 Carts with Gearing, 2 Sets of Gears, Set of Chain Gears, Swing Cart, Pony Trap, Set of Harness, 1 Set of Pony Harness, Swing Plough, Mowing and Reaping Machine, Scuffle, Set of Chain Harrows, Drill Harrows, Cultivator, Ziz-zag Harrows, &c.

FARM PRODUCE.—50 Bags of Wheat, 60 Bags of Oats, 20 Tons of Wheat Straw, 15 Tons of Oat Straw, Stack of Hay, about 5 tons; Stack of Vetches, about 14 tons.

The whole may be viewed on Monday and Tuesday, October 4 and 5. Catalogues at the Auctioneer's Office, Wolfe Street, Stoke-upon-Trent.

King's Newton, Derby.

3½ ACRES OF 3-YEAR OLD TRANSPLANTED QUICKS.

MESSRS. OLIVER, NEWBOLD, AND OLIVER respectfully give notice that they are instructed to sell by AUCTION, on THURSDAY, October 14, about 2,500,000 3-yr.-old Transplanted QUICKS, in lots of from 300 to 40,000 each, now growing on 3½ acres of land.

To view, apply to the Auctioneers, or to Mr. PASS, Farmer, King's Newton.

Aldenhay Abbey, Watford, Herts.

3 miles from the Watford Station on the London and North-Western Railway, and 3 miles from Radlett on the Midland Railway.

A fine COLLECTION of STOVE and GREENHOUSE PLANTS.

MESSRS. HUMBERT AND SONS will sell by AUCTION, by direction of Charles Durham, Esq., on the Premises, at Aldenhay Abbey, on WEDNESDAY and THURSDAY, October 6 and 7, at 12 o'clock precisely each day, comprising splendid specimen STOVE and GREENHOUSE PLANTS and FERNS (some of them 10 feet and 12 feet high), consisting of Chamaerops Fortunei, Phoenix dactylifera, Scaevola elegans, Alsophila excelsa, Cyathea dealbata, Dicksonia squarrosa, Dicksonia antarctica, Cycas revoluta, Rhysochloa jasmoides, Bougainvillea glabra, Crelogyne cristata, Crotons, &c.; also Azaleas, Camellias, Ericas, Adiantum farleyense, Davallia Mooreana, Gymnogramma chrysophylla, Genetyllis, Eriostemon, Statice, &c., a fine lot of Calanthe Veitchii; also Primulas, Chrysanthemums, Liliums, Anemones, Cyclamens, Cinerarias, Geraniums, Achimenes, Ferns, Deutzias, Spiræas, &c., hardy and half-hardy Bedding Plants for stock; also GARDEN TOOLS and FITTINGS.

May be viewed two days preceding the sale. Catalogues may be had (free by post) of Messrs. HUMBERT AND SONS, Land Agents and Surveyors, Watford, Herts, and 88, St. James's Street, London, S.W.

Bedford.

IMPORTANT SALE OF VALUABLE and WELL-GROWN NURSERY STOCK, the land being required for building purposes, the property of Mr. Sheppard.

MR. H. PULLEY will sell by AUCTION, on the premises of Mr. Sheppard, the Nurseries, Union Street, Bedford, on TUESDAY, October 19, and two following days, at 10 for 11 o'clock precisely each day, the valuable NURSERY STOCK, consisting of upwards of 9,000 Evergreen and Deciduous Flowering Shrubs, 2000 large Handsome and variegated Box Trees, 1500 Aucuba japonica, and some male varieties; 300 Standard and Ornamental Trees, 500 Climbing and other Roses, 2400 Raspberry Canes, 8000 Strawberry Plants, 200 Fruit Trees, 6,000 Plants in Pots, consisting of Chrysanthemums, Ferns, and Pelargoniums; a quantity of Hardy Phloxes, Roots of Pampas-grass, &c.

May be viewed one week prior to Sale. Catalogues may be had on the Premises, and of the Auctioneer, Bedford.

The late Mr. John Verschaffelt.

THE NURSERY at LEDEBERG,

near Ghent, lately conducted by

MR. JEAN NUYTENS VERSCHAFFELT,

IS FOR SALE,

ON ADVANTAGEOUS TERMS,

And with Special Facilities for Payment to a Suitable Purchaser.

Apply to

MADAME NUYTENS VERSCHAFFELT,

CHAUSSÉE DE BRUXELLES, 134.

LEDEBERG LEZ GAND, BELGIUM.

Desirable Opening in the Wholesale Seed Trade.

TO BE DISPOSED OF, the Good-will of a first-class going BUSINESS, carried on successfully for many years, together with the Stock-in-Trade, which is moderate. Grass Seed-cleaning Machinery of best construction, with Steam-power for working same, and applicable to other purposes, such as hoisting, &c. The Premises, which are commodious and convenient, to be Let on Lease or otherwise, as may be arranged. Apply to Messrs. J. AND J. MILLIGAN, 13, George Street, Edinburgh.

TO BE LET, from Michaelmas 1880, direct from the landlord, Old-established NURSERY GROUNDS of about 1 acre, adjoining the market town of Hemel Hempstead, with convenient House and Shop facing the main thoroughfare. Rent, £42. For orders to view, &c., apply to SMITH AND ROBINSON, Estate Agents, Hemel Hempstead.

TO LET, a Range of GREENHOUSES, with one or more Acres of Ground, for 7 or 14 years. Close to station. Immediate possession.

J. EMBLETON, Suffolk House, New Hampton.

Singularly Advantageous Opening to Gentlemen FARMERS or HORTICULTURISTS.

TO BE LET, for a term (in consequence of the recent death of the Proprietor) AN UNIQUE ESTATE (with railway access to Birmingham and the North), consisting of about 240 Acres, all scientifically drained and roaded, and of which 150 Acres have been planted with thousands of the choicest Pear, Apple, and Plum Trees, chiefly the earliest and latest keeping dessert species, the intermediate spaces with innumerable Gooseberry and Currant Trees. The remaining 90 Acres were intended by the proprietor to be used as Nursery Ground, and particularly for the raising of Filbert and other Fruit Trees for sale (a most lucrative business), and for the production of general Garden produce, as well as Straw and Roots for the horses employed, &c.; but it may be used as ordinary Farm Land, if the taker prefers, and up to 150 Acres of sound and good Farm Land adjoining (if wished) added thereto in the same lease. Labourers' Cottages, Sheds for packing and storing Fruit, a Manager's Residence, Farm Buildings, Barns and Yards, are already arranged, and either an ordinary Farm-house, or a Residence, suitable for a magistrate or county gentleman (who desires to unite pleasure and profitable occupation) will be included in the Lease. The air is most salubrious, the scenery charming, the roads excellent. For many years a connection with Birmingham, Manchester, Leeds, and Liverpool, for the sale of the produce, has been opened up, and will be handed over without payment to the Lessee. It is not, therefore, too much to assert that, with energy and sufficient superintendence, a rapid fortune may be confidently hoped for.

Address, for further particulars, to Messrs. NEW PRANCE AND GARRARD, Solicitors, Evesham.

Island of Guernsey.

TO BE SOLD, A GARDEN, VINERIES, and GROUNDS, containing about 2½ acres, in the parish of St. Peter Port, and within a short distance of the town. The Vineries are in all 270 feet long, stocked with the choicest Vines, on which there are now about 300 lb. of fruit. The Garden was laid out about four years ago. There are upwards of 300 young Fruit Trees, including nearly 100 of the famous Chaumontelle Pears. There is a Nursery of about 7000 young Vines, and about 10,000 strong Asparagus plants. The land is held in fee, not subject to any Rent, and the taxes are nominal. One-third of the Purchase Money may be left outstanding. Apply to T. GODFREY CAREY, Esq., Advocate, Court Place, Guernsey.

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THE CASTLEFORD BURIAL BOARD Require DESIGNS, with Plans and Estimates, for the LAYING-OUT of their New CEMETERY GROUND (containing about 4 acres), to be sent in on or before 1st day of December next. A Premium of £15 will be paid for the one selected and approved by the said Board. Particulars may be obtained on application to

Mr. F. CRABTREE, Clerk and Registrar.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN AND ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.

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GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, and warranted free from Phylloxera, Oidium, and all Disease. Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.

Descriptive Price List for rd. stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

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SPECIAL OFFER.
BEECH, Common, 3 to 4 feet, 21s. per 1000.
CHESTNUT, Horse, 7 to 8 feet, 15s. per 100.
ASH, Mountain, 6 to 7 feet, 10s.; 8 to 9 feet, 25s.; and 10 to 12 feet, 30s. per 100.
OAK, Turkey, 4 to 5 feet, 21s. per 1000. 12 feet, 30s. per 100.
Scarlet, 7 to 8 feet, 30s.; and 8 to 9 feet, 50s. per 100.
POPLAR, Black Italian, 7 to 8 ft., 20s.; 8 to 10 ft., 30s. per 100.
PINES, Weymouth, 5 to 6 feet, 20s.; 7 to 8 feet, 30s. per 100.
And a large number of DECIDUOUS, ORNAMENTAL FLOWERING TREES and SHRUBS, CONIFERS, and AMERICAN PLANTS, at very low prices. All are well grown with very fibrous roots. Samples can be had before purchasing. FREDERICK STREET, Heathside Nurseries, near Bagshot, Surrey.

To the Trade Only.

DOUBLE FRENCH RANUNCULUS.
LEONARD ROOZEN AND SONS' superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)
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To the Trade.

DUTCH BULBS at DUTCH PRICES.—White Garden LILIES, 12s. 6d. per 100; Winter ACONITES, 12s. 6d. per 100; ANEMONE FULGENS, 15s. per 100; single French ANEMONES, 30s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to SANDER and CO., Seed Growers, St. Albans.

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LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps. RICHARD SMITH AND CO., Nurserymen, Worcester.

PINUS PINEA, producing the Edible Pine Nuts, and a very ornamental hardy tree. Nice plants in pots, or any quantity from the border. Two small plants sent as sample for 1s.

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STRAWBERRIES. The best sorts for Forcing.
V. H. DE THURY, } Strong plants, all well rooted,
SIR JOSEPH PAXTON, } in small pots, prepared for forcing, 10s. per 100.
Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1000. Package free. Extra plants for carriage. Cash from unknown correspondents.
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BEAUTIFUL FLOWERS FOR WINTER & SPRING WEBBS' CHOICE COLLECTIONS OF HYACINTHS, CROCUS, TULIPS, NARCISSUS, &c.,



Contain liberal assortments of the finest varieties.

Price, 10s. 6d., 15s., 21s., 42s., 63s., and 105s. each.

Orders of 20s. value, Carriage Free.
5 per cent. discount for cash.

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For 1880,

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The Queen's Seedsmen,

WORDSLEY, STOURBRIDGE.

CABBAGE PLANTS—CABBAGE PLANTS.

Now Ready for AUTUMN PLANTING.

W. VIRGO can now supply, in any quantity, very good, extra strong-growing, healthy Plants, of the following, for spring use, which cannot be equalled for sorts and growth. Seed from the very best stock:—Early Battersea, Early Enfield Market, Nonpareil, Sugarloaf, Wheeler's Imperial, Red Pickling, and Robinson's Champion Drumhead. All the above delivered free on rail at 3s. per 1000. Brown Cos, Hardy Green Cos, and Tom Thumb LETTUCE, at 4s. per 1000.

N.B.—Samples forwarded if required.
Womersley Nurseries, near Guildford, Surrey.

KING'S BULBS are THE BEST.

KING'S

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TWENTY CHOICE HYACINTHS, by name, for Pots or Glasses, 10s. 6d. carriage paid.

CROCUS, Large Yellow, 2s. per 100.

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SNOWDROPS, Single or Double, 2s. 6d. per 100.

And all other Bulbs at moderate prices.

JOHN K. KING,

Seed Grower to H.M. the Queen and H.R.H. the Prince of Wales,
COGGESHALL, ESSEX.

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MR. COOPER having succeeded to the whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.
Calcut Gardens, near Reading, Berks.

Twelfth Edition.

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Yellow Crocus.

H. CANNELL has many thousands of the above to offer cheap.
The Home for Flowers, Swanley, Kent.

CINERARIAS, 1s. 6d. per dozen; PRIMULAS, 2s. per dozen; CHRYSANTHEMUMS, 2s. 6d. for twelve vars.; twelve vars. good ZONAL GERANIUMS, 2s.—special prices given for old plants of ditto; 100 CUTTINGS, Zonals, in 25 or 50 vars., 5s. All other kinds of Geraniums cheap. Any of the above post-free for Post-office Order payable to

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FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.

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A B C Bulb Guide for 1880.

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To the Trade.

THE LAWSON SEED and NURSERY COMPANY (Limited), Edinburgh, can supply several thousands of BOUVARDIAS, Red and White; CYCLAMENS, GREVILLEA ROBUSTA, POINSETTIAS, EPIPHYLLUMS, FERNS, DRACÆNAS, &c., in nice young plants. Special offers on application.

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TO INTENDING PLANTERS.

On account of the approaching expiration of the Lease of a portion of "The Fulham Nurseries,"
OSBORN AND SONS are prepared to offer, at exceptionally low prices (as the ground must be cleared), a quantity of Ornamental Evergreen and Deciduous TREES and SHRUBS, also Large Specimen Plants of RHODODENDRONS and Hardy American AZALEAS. The Fulham Nurseries, London, S.W.

W. AND J. BROWN offer BIRCH, 7 to

8 feet, 8s. per 100; 8 to 10 feet, 16s. per 100; Huntingdon ELMS, 8 to 10 feet, 20s. per 100; 10 to 12 feet, 30s. per 100; SYCAMORE, 6 to 8 feet, 20s. per 100; 8 to 10 feet, 12s. per 100; Black Italian POPLARS, 6 to 8 feet, 8s. per 100; well rooted and strong well furnished CHRISTMAS TREES, 2 to 3 feet, 80s. per 100; 3 to 4 feet, 10s. per 100. For delivery in November. Must be sold, as the ground is wanted. Nurserymen, Stamford.

To the Trade.

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H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application. Seed Growing Establishment, Wisbech.

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PANCRATIUM ROTATUM.—A most useful plant for cutting for bouquets, or any other decoration. It produces snowy-white flowers, in clusters of nine to twelve, on stiff, erect scapes, deliciously fragrant and extremely elegant. Two guineas per dozen.

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G. BRAID has much pleasure in stating that he is now sending out the following:—**DECORATOR.**—First-class Certificate Royal Horticultural Society. White; purple spot. A mass of bloom. 7s. 6d. **DEFIANCE.**—First-class Certificate Royal Horticultural Society. The most brilliant scarlet; maroon spot on upper petals. Free and of good form. 10s. 6d.

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Although not certificated, still one of the best. 5s.

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The usual Discount to the Trade.

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NEW CATALOGUE for AUTUMN, 1880,

OF THE BEST

PLANTS, TREES, BULBS, ROSES, &c.,

REQUIRED FOR

Garden or Conservatory Decoration,

Post-free.

The prices are much lower than goods of the same first-class quality are usually offered at. Comparison and inspection of stock invited. For names and description see Catalogue.

ALL OUR SELECTION.

BULBS for GARDEN.

The most showy and finest sorts, specially selected for the purpose.

	s. d.	Per doz.	s. d.	Per 100.
HYACINTHS, in separate colours ..	3	0	21	0
ANEMONE, finest mixed ..	0	6	3	6
CROCUS ..	0	6	15	6d. to 2
RANUNCULUS ..	0	6	3	0
TULIPS ..	1	0	7	0

BULBS for CONSERVATORY.

Will produce a beautiful display at about two-thirds of the usual cost.

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HYACINTHS, 12 fine named sorts ..	5	0	40	0
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" Roman ..	2	6	18	0
ANEMONE, finest named ..	1	0	7	0
CROCUS, finest named ..	15	6d. to 2	0	0
RANUNCULUS ..	15	0	3	0
TULIPS, finest named ..	15	0	3	0

For prices and description of Dutch, French, and Miscellaneous Bulbs, in great variety, see Catalogue.

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About 100,000 now ready of the best and finest plants for the Spring Garden, including the best Show and Fancy Pansies, Violas, the newest and most showy varieties; Daistes, of all colours; Polyanthus, Sweet William, Canterbury Bells, Wall-flowers, Arabis, Aubrietia, Silenes, the finest Double and Single Primroses, Hepaticas, Sweet Violets, Alyssum, Cheiranthus of sorts, Christmas Roses, Iberis, Forget-me-Not, including the new variety "elegantissima," Sedums, Saxifragas, &c. All in good plants, to stand the winter and produce a fine spring display. For prices, &c., see Catalogue.

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A stock of many thousands of good plants, in good named varieties, and at low prices, including fine Double Pyrethrums, Potentillas, Delphiniums, Pæonias, Antirrhinums, Phloxes, Pansies, Show and Fancy; Carnations, Picotees, Pinks, fine Polyanthus to name, Double Primroses, and about 500 species and varieties of the finest Herbaceous Plants in cultivation for garden decoration. For List of sorts, prices, &c., see Catalogue.

WINTER-BLOOMING PLANTS for INDOOR.

A large stock of fine, well-grown plants of Bouvardias, Cyclamens, Solanums, Camellias, Azaleas, Ericas, Epacris, Primulas, Cinerarias, &c.; also of the finest plants and roots procurable for forcing, Spirea japonica, Spirea palmata, Lily of the Valley, Dielytra, Deutzia, Azalea Mollis, Ghent Azaleas, Rhododendrons set with buds, Kalmias, Andromedas, &c.; a large stock of the best Stove and Greenhouse Plants, in robust health, perfectly clean and very cheap.

DWARF ROSES.—A fine lot of well-grown plants of the leading varieties.

FRUIT TREES.—Apples, Pears, Plums, Cherries, &c., well-grown and splendidly rooted.

STRAWBERRY PLANTS.—A Collection of Sixty Varieties, true to name, good plants and cheap.

CONIFERS.—&c.—Pretty pyramidal plants of the best varieties, for winter bedding.

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OLDFIELD NURSERY, ALTRINCHAM.

THE LARGEST ROSE GARDENS IN ENGLAND.

CRANSTON'S NURSERIES.

(ESTABLISHED 1785.)

New Rose Catalogue for 1880-81,

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Awarded over 60 First Prizes for Rose Blooms this season.

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CH. VUYLSTEKE,

NURSERYMAN,

LOOCHRISTI, near GHENT, BELGIUM,

Begg to call attention to his exquisite

STOCK of PLANTS,

Offered at Extra Low Prices,

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AZALEA INDICA, AZALEA MOLLIS,

CAMELLIAS, HARDY GHENT AZALEAS,

KALMIA LATIFOLIA,

PALMS, FERNS, FICUS, AMARYLLIS,

SPIRÆAS, &c.,

As detailed in his CATALOGUE, which
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Messrs R. SILBERRAD and SON,

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CARTERS' HOME-GROWN SEEDS.—

Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit. CARTERS, the Queen's Seedsmen, High Holborn, London.

STRAWBERRIES IN POTS.

Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s per 100; in small pots, 12s per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock.

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

VEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

" Golden, many thousands, 3, 4, 5 to 10 feet high.

" Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

" laurifolia, myrtifolia, Scottica, Hodgson's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

" Golden Queen, 4, 5, 6 to 10 feet high.

" Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

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LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

" DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER-AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently transplanted.

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Specially Cheap Offer of

FINE SPECIMEN CONIFERS, &c.—

Splendid specimen Thuiopsis dolabrata, borealis, aurea; Cupressus, Austrian Pine, and about 1000 other Conifers, &c., from 4 to 9 feet. Choice Dwarf ROSES, sample dozen 4s. 6d. 200,000 fine transplanted QUICKS, from 12s. 6d. to 30s. per 1000. Fine SPRUCE FIR, 2 to 4 feet.

W. GROVE, St. Owen's Nursery, Hereford.

Seakale—Seakale.

RHUBARB and ASPARAGUS for Forcing. The best house in the Trade. Also DUTCH BULBS and FLOWER ROOTS.

H. THORNTON and CO. (late A. Dancer),

NURSERYMEN and SEEDSMEN, Fulham, London, S.W.

HYACINTHS, TULIPS, CROCUS, and other BULBS of the very best quality. Priced CATALOGUES free on application.

N.B. We make the Growing of Seakale a specialty, so that intending purchasers may depend upon being supplied with the very best that can possibly be procured in the Trade.

To insure their being supplied, we beg that our customers may give their orders early, to prevent disappointment, as we are continually receiving orders from all parts, and will be strictly executed in rotation.

Best MILLTRACK MUSHROOM SPAWN. MATS,

very good for covering Mushroom Beds, 25s per 100.

Dancer's Nurseries, Fulham, S.W.

To the Trade.

OSBORN and SONS are now booking

Orders for Forcing Roots of SEAKALE, of which they possess this season a very fine stock. Price on application. Early Orders solicited.

The Fulham Nurseries, London, S.W.

CEDRUS DEODARA, for Avenues, Lawns,

Shrubberies, or Woods. Handsome plants, 10 feet high,

30s per dozen, 210s per 100.

RICHARD SMITH and CO., Nurserymen, Worcester.

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W. and J. BIRKENHEAD, Fern Nursery,

LOGUE of FERNS for 1880 is now ready, consisting of

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"SPECIAL LIST of FERNS," free on application.

CABBAGE PLANTS.—Very fine stocks of

Enfield Market and Rainham. Apply to

Mr. T. DAVIES, Tangley, near Guildford.

A PERFECT HOLLY HEDGE may

eventually be formed by planting two Hollies and six

Quick in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.

Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

RICHARD SMITH and CO., Nurserymen, Worcester.

FOR SALE, a fine ARAUCARIA

EXCELSA, 25 feet high, well furnished to the bottom.

The plant is in a large tub, 3 feet by 2 feet deep. Apply to

A. WEBB, Kellham Gardens, Newark, Notts.

J. MALLER, Brunswick Nursery, Tottenham,

begs to inform the Trade that he has still many thou-

sands of unsurpassed SOLANUMS, ERICAS of sorts,

BOUARDIAS, POINSETTIAS, Double PRIMULAS,

EUPHORBIAS, and the usual assortment of Winter-blooming

Plants. Prices (which are low for cash) on application.

The Nursery adjoins the White Hart Lane Station, Great

Eastern Railway. An inspection respectfully invited.

Azaleas, Camellias, Palms, &c.

A. D'HAENE, NURSERYMAN, Ghent,

Belgium.—Special LIST, with full particulars, now

ready. Sent gratis and post-free on application.

FICUS ELASTICA, strong healthy plants,

from 1 to 2 feet; also DRACENA INDIVISA

LINEATA, splendid plants for Table Decoration. Price on

application to

J. K. ANGUS, Gardener, &c., Oulton, near Leeds.

CLEMATIS for BEDDING and

CLIMBING.—JACKMANNI, strong plants, 12s. per

dozen; other varieties, 12s., 18s., and 24s. per dozen.

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RICHARD SMITH and CO., Nurserymen, Worcester.

STRAWBERRY PLANTS, in small pots

for Planting, and in 6-inch pots for Forcing. FRANCIS

R. KINGHORN has a splendid lot of these. Price and

LIST of sorts on application.

Sheen Nurseries, Richmond, Surrey.

CAMELLIAS for Sale, pure white (crimped

edges), rose, red, blush, &c.; height, 9 feet, 6 feet, 4 feet,

3 feet. Ten in number.

Miss LISTER, Hall Gate, Doncaster.

THUJA AUREA, T. ELEGANTISSIMA,

T. SEMPER AUREA, T. ELLWANGERIANA,

JUNIPERUS CHINENSIS, THUJA LOBBII, CUPRES-

SUS ERECTA VIRIDIS, &c., beautiful round bushes, 12 to

20 inches high, 40s. per 100.

W. JACKSON, Bakedown, near Kildrinstree.

RICHARD SMITH & CO.
WORCESTER

TWO HUNDRED THOUSAND HERBA-

CEOUS and ALPINE PLANTS, for Borders, Rockwork,

&c. See Descriptive LIST, giving colour, height, time of

flowering &c., free by post for one penny stamp.

R. S. & Co.'s selection of 100 good showy varieties, for 25s.

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(JOHN WILLS, Limited).

Central Offices: Warwick House, 142 and 144, Regent Street, W.;
and 29, 30 and 31, Warwick Street, W.

The Company having made large purchases from the leading Bulb Gardens of Holland and France, are now prepared to supply HYACINTHS, TULIPS, NARCISSI, CROCUSES, and all other BULBS for Autumn Planting, at low prices, and with a large discount to Shareholders; Non-shareholders will be treated with on the most liberal terms.

The Company also supplies all kinds of NEW and RARE PLANTS, Ferns, Fine Foliaged and New Holland Plants, Standard and Dwarf Roses, and all kinds of Fruit and Forest Trees, Evergreens, &c., GARDEN SEEDS for Autumn Sowing, FARM SEEDS, HARDY PLANTS for Winter and Spring Gardening, PLANTS for FORCING, &c., MUSHROOM SPAWN, and all kinds of GARDEN IMPLEMENTS and REQUISITES, at the lowest prices.

FRUIT, BOUQUETS, FESTIVE and MEMORIAL WREATHS, FLORAL CROSSES, DRIED FLOWERS, &c., sent to all parts of the country on receipt of letter or telegram.

The General Manager may be consulted as to the re-arrangement of Gardens, Laying-out of Grounds, and General Landscape Work, also for the Erection of Conservatories, Greenhouses, Forcing Houses, &c., and will attend at any part of the country for these purposes.

Catalogues on application. Early Orders are respectfully solicited.

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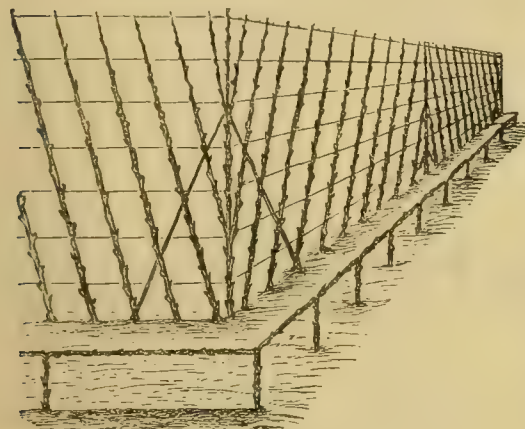
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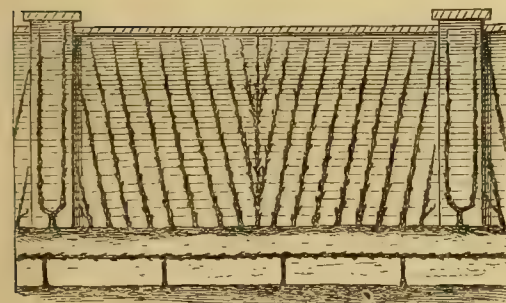
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- 25 " Single, mixed
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SPECIAL NOTICE.

THE

GARDENERS' CHRONICLE

For SATURDAY, October 16, will contain a

DOUBLE-PAGE COLOURED PLATE (18 IN. BY 13 IN.),

From a Painting by FITCH, representing

THE POET'S NARCISSUS.

(A Plate of DAFFODILS will be Published in due course, the two forming a Pair.)

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APPLICATIONS FOR SPACE SHOULD BE SENT IN AS EARLY AS POSSIBLE.

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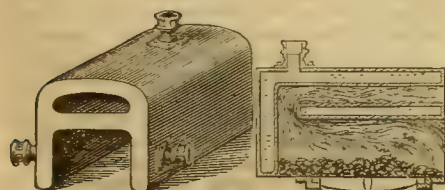
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"The Hyacinths which I had from you last year were excellent."—Mr. James McIntyre,
Gardener to the Right Hon. Viscount Valentia, Blislington Park.



"The Bulbs I had from you are now in splendid flower."—Mrs. Morris, The Priory, Wrexham.

We have again this season personally inspected the Bulb Farms of Holland, and have also made careful trials of the finest varieties of Hyacinths in our own grounds. The varieties included in the following Collections cannot be equalled.

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100 in	100 very choice sorts	..	..	..	..	£4 4 0
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Gratis and post-free on application.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.



THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 2, 1880.

WARKWORTH.

WARKWORTH CASTLE stands high upon a point of land where the Coquet empties itself into the sea. The river in its windings almost encircles the Castle in its course. The central tower of the ruin is conspicuous for many miles along the Northumbrian coast. It was built by the son of Hotspur, the restored earl who won back the family honours, which had lapsed for a short time, and became one of the greatest members of the Percy family. Some rooms in the great tower were furnished by a late duke, and here the descendants of the second earl, just mentioned, are fond of spending an hour after driving down from Alnwick, eight miles, for the most part through their own good corn land. With the exception of a few breaks in the contiguity of the ownership, on the occasion of confiscations and beheadings, Warkworth has belonged to the Percies since Edward III. granted it to Henry Percy, the second lord, as a reward for military services. In days when the crown of England was tossed amid continual bloodshed from king to claimant, and from York to Lancaster, occasional high treason was not easy to avoid. Warkworth was once lost on an occasion of this kind, when the Percies committed treason purely from misadventure, Henry IV. becoming king of England by virtue of the same offence.

Most unfortunately for the Percies their card was "out-trumped." It was a trying time for them. Warkworth and Prudhoe were seized and confiscated, and Harry Hotspur killed at Shrewsbury. Such misfortunes have several times happened to the Percy family, but either from interest or from merit they have always been repaired. Warkworth, like Prudhoe, has contributed a title to the family.

The chief interest of Warkworth, however, centres, not in the hard facts of its history, but in its Hermitage, and in the romance which a scene in Shakespeare's *Henry IV.* has attached to this stronghold. It is a particularly well-preserved Hermitage. To reach it the keeper in charge of the Castle embarked us in a boat, and rowed us half-a-mile up the stream of the Coquet, a winding river with wooded banks, and one of the best rivers in England, our guide informed us, for "bull trout" and salmon. On landing we walked along the river cliff to the Hermitage. In forming this retreat several small rooms were hewn out of the sandstone rock, a task probably performed by the hermit's own hand, and rendered easy from the softness of the stone when newly cut. Like Goldsmith's "gentle hermit of the dale," the recluse of Warkworth slaked his thirst with "water from the spring." We passed it and found it dry, its source having failed several years ago, drained apparently by some distant coal mines.

The rooms, entered from the river-side by rude stone steps, consist of a chapel arched and

ornamented by an untutored hand, with an altar at the east end and an altar tomb near it. The figures of a lady and her lover are here, most rudely carved; yet rude though they be, one of them has immortalised the name. The former figure is that of Isabel of Widdington, the other one is that of the repentant hermit, her lover. Their story has been told by Bishop Percy, author of *Percy's Reliques*, and of the well-known ballad, "The Hermit of Warkworth." It runs thus: Bertram, a gallant youth, loved Isabel of Widdington, the daughter of a neighbouring lord, whose castle on the coast could be seen from Warkworth towers. Desiring renown for the object of her affections, she bade him prove his love, "where sharpest blows are tried," and sent him a helmet to protect his skull. The helmet reached him at Alnwick, during dinner, when the wine was flowing; and when the guests heard the purport of the message they raised a shout. Lord Percy at once appointed a day for marching against the Scots and trying the head-gear. In the fight that soon ensued Bertram was wounded, and Isabel, setting out to nurse him, was carried off. He recovered, went with his brother to set her free, killed his unfortunate companion by mistake, and lost his Isabel, who was also slain in error; hence the Hermitage, and his life-long grief, and hence these lines in the veracious ballad:—

"Beside the altar rose a tomb,
All in the living stone;
On which a young and beauteous maid,
In goodly sculpture shone." (!)

Mr. Hartshorne, the antiquarian, disputes the truth of the poetic narrative, yet who would exchange it? He says that the probable founder of the Hermitage was Henry Percy, fifth Lord of Alnwick, who caused the excavations to be made on the death of his wife, Mary Plantagenet, that he might there retire sometimes to assuage his grief in religious solitude.

The River Coquet has been the subject of many verses in celebration of its scenery and other features. The following old angling song is one of the best of the jovial rhymes upon the merits of the river:—

"The Coquet for ever; the Coquet for aye!
The Coquet, the king of the stream and the brae:
From his high mountain throne to his bed in the sea,
Oh! where shall we find such a river as he?
Then blessings be on him, and long may he glide,
The fisherman's home and the fisherman's pride;
From Harden's green hill to old Warkworth sae grey,
The Coquet for ever! the Coquet for aye!"

The Coquet rises among the wilds of Thirlmoor, flows by Rothbury, whose beauty, the pride of Northumberland, it bears upon its banks—and what would Rothbury be without its glen, cut by the river, and its timber which is watered by it? Passing Sir William Armstrong's house of Craggside, it confers on it a lovely prospect, and then by a winding sylvan course it reaches the old Castle and town of Warkworth, and empties into the sea at Amble immediately below.

Most of the beauty of Northumberland is born upon its rivers, and the stern moorlands are rendered charming by the addition of a streak of verdure and graceful foliage, such as the Coquet boasts from source to mouth. The woods of the Coquet are famous for Blackberries, which should be picked before they are spoiled by the frosts of autumn. According to an old proverb, "The devil goes into the Blackberries on Michaelmas Day." Coquet Island, a prominent little patch 16 acres in extent, off the coast, was an early refuge of monks, even from the time of St. Cuthbert. It was a place of danger much exposed, guarded by a small fortress and afterwards by a lighthouse, which was kept by a brother of Grace Darling. It was in coming here to visit him that the heroine

caught her last illness. The island belongs to the Duke of Northumberland. White Angola rabbits were introduced upon it by one of the Dukes, and the rabbit breeders of Norfolk, or other sandy spots too poor for any kind of cattle except "coney," may like to know that the white-skinned foreign rabbits soon became acclimatised in spite of the rigour of the climate and the scanty vegetation. Persons now living can remember when the Duke's twelve bailiffs each wore a white waistcoat made of Angola rabbit-skins and presented by their employer. H. E.

New Garden Plants.

HIPPEASTRUM (ASCHAMIA) ANDREANUM,
*Baker, n. sp.**

This is a fine new species of *Hippeastrum* of the *Aschamia* group, which inhabits the Central Cordilleras of New Grenada at an elevation of from 2000 to 2500 metres above sea level. It was discovered by M. André in his travels in 1876 on the borders of one of the affluents of the Rio Cauca, and has recently been introduced by him alive into Europe. Of familiar species its alliance is with *Leopoldii*, *miniaturum* and *reginæ*. It comes nearest the latter, but differs entirely in the colour of its flowers, which are pale red with faint streaks of brighter red, and in the shape of its perianth-segments, which are much narrower than in *reginæ*, and narrowed gradually from above the middle to the base.

Bulb ovoid, 4–4½ inches in diameter, copiously proliferous, with brownish-grey tunics. Leaves lorate, produced at a different time to the flowers, which in the present specimens were produced in August. Peduncle 10–15 inches long, brownish-violet, slightly two-edged. Umbel 4–6 flowered; spathe-valves two, rose-red, lanceolate, or ovate-lanceolate, 1½–2 inches long; pedicels 1–1½ inch long, each subtended by a long filiform membranous bract. Ovary oblong-trigynous, ½–¾ inch long. Perianth 3–4 inches long, regularly funnel-shaped, tube very short, not coronulate at the throat; segments oblanceolate, oblong acute, ¼–¾ inch broad three-quarters of the way up, narrowed gradually from above the middle to the base, pale red, with streaks of brighter red, the keel faint and inconspicuous as regards colouring. Stamens 1–1½ inch shorter than the perianth-segments. Style a little shorter than the perianth segments; stigma capitate. *J. G. Baker.*

DIPCADI (TRICHARIS) BALFOURII, *Baker, n. sp.†*

This is a fine large new species of *Dipcad*, discovered by Dr. Isaac Balfour in his recent exploration of the island of Socotra. We received bulbs at Kew in spring, and Mr. Watson has successfully flowered one of them this autumn. The affinity of the species is with the well-known *D. serotinum* of the Mediterranean region (*Bot. Mag.*, tab. 859), but the stature and characters readily distinguish it.

Bulb ovoid, 1½–1¾ inch diameter; tunics greenish-white. Leaves 3–4, synanthous, ensiform, suberect, about a foot long, bright green, firm in texture, acute, ¾–1 inch broad, deeply channelled all down the face. Scape green, terete, 2–3 feet long. Raceme laxly 10–12 flowered, 6–9 inches long; pedicels ascending, ¼–½ inch long; bracts lanceolate, shorter than the lower, larger than the upper pedicels. Perianth greenish-yellow, nearly an inch long; tube oblong, ½ inch in diameter; outer segments oblong, falcate, twice as long as the tube, inner segments gamophyllous all the way below the patulous ovate tip. Anthers sessile at the throat of the tube of the inner perianth-segments, linear, yellowish, ½ inch long. Ovary sessile, oblong, as long as the entire style, which reaches up to the top of the tube formed by the inner perianth-segments. *J. G. Baker.*

* *Hippeastrum (Aschamia) Andreanum*, Baker, n. sp.—Bulbo magno ovoideo prolifero, tunicis griseo-brunneis; foliis loratis hysterranthiis; pedunculo subpedali leviter ancipito; umbellis 4–6 floris; spathe valvis parvis rubellis; pedicellis 1–1½ uncialibus; perianthi regulariter infundibularis 3–4 pollicaris tubo brevissimo fauce laud coronulato, segmentis oblanceolato-oblongis acutis unguiculatis subconformibus pallide rubellis striis saturatioribus percursis; staminibus limbo distincte brevioribus; stylo limbo vix breviori; stigmatibus capitato. *J. G. Baker.*

† *Dipcad (Tricharis) Balfourii*, Baker, n. sp.—Bulbo ovoideo tunicis albo-viridibus; foliis 3–4 synanthiis ensiformibus erectis subpedalis facie profunde canaliculatis; scapo tereti stricto 2–3 pedali; racemo laxo 10–12 floro; pedicellis flore 2–3 plo brevioribus; bracteis lanceolatis; perianthi flavo-viridulo vix pollicari, tubo oblongo, segmentis exterioribus oblongis falcatis tubo duplo longioribus, segmentis interioribus parvis ovatis patulis; antheris sessilibus; ovario oblongo sessili stylo æquilongo. *J. G. Baker.*

ASPARAGUS CULTURE.

ASPARAGUS thrives best in a deep light loam resting on a porous subsoil. It will grow luxuriantly in such soil without much trouble being taken in preparing it, as all that it is necessary to do in the way of preparation is to properly drain and enrich it with rotten dung to the depth of about 3 feet. Plantations when made in such naturally favourable quarters produce crops more satisfactorily from the first, and continue in good bearing order for a longer period of time than they do in soils which have been artificially prepared over a cold tenacious subsoil. Cold clayey soils such as we have to contend with here are very unsuitable to the successful culture of Asparagus, and more especially so in districts like this, where the rainfall is considerably above the average. It will not succeed well for any length of time in soils of this nature, even if it is perfectly drained and deeply cultivated, for during wet seasons and in winter many of the thick fleshy roots rot, and the plants are so injured in consequence that their growth becomes more stunted and weaker each year, until they ultimately dwindle and die. We have had some trouble in establishing a satisfactory plantation, but mastered the difficulty by persevering in collecting in the rubbish-yard, all garden refuse, both from the pleasure-grounds and kitchen garden, also rubbish from the wood-yard, which was charred, and any other suitable material we could get command of. This was thrown in a heap as collected, and turned occasionally to hasten decomposition. In turning for the last time a quantity of rotten-dung and leaf-soil was mixed with it. When sufficiently rotted we took the first opportunity, when the ground was slightly frozen at the commencement of winter, to wheel it to the site where the plantation was to be made, which had been previously prepared for its reception in the following manner:—3 feet in depth of the soil was taken out over the whole surface, and the bottom beds drained 1 foot deeper, with 3-inch tile-drains placed 5 feet apart, with about 9 inches of broken bricks over them. At planting time in the spring the soil had consolidated; its surface was then turned over, made level, and planted with one-year-old plants of our own raising, which have done remarkably well, and have every appearance of continuing to do so. A dry time should be selected for planting Asparagus; when the young plants have made growths about 2 inches in length great care should be taken in lifting them not to damage the roots, which should be carefully spread out in planting, and if they are covered with leaf-soil mixed with sand or any other light compost, the plants will start freely, and be greatly benefited thereby. Plenty of room should also be allowed if superior quality is expected—3 feet between the rows is none too much. *T. Coomber, Hendre Gardens, Monmouth.*

WIMBLEDON HOUSE.

WHEN visiting the above a short time since, I was struck with many well-grown examples both indoors and out. Of the former, Grapes of various kinds had been remarkably good, including Black Alicante, largely berried and well finished; Foster's Seedling, Lady Downe's, and Madresfield Court, all well done. Some houses of Royal George Peach had also borne a large crop, from some of the specimens of which twenty-four dozen had been gathered for three successive seasons. Of the Brunswick Fig an immense crop was apparent, being also continually collected as soon as fit for use.

Among Orchids, of which a large collection is here grown, and which were looking most healthy, I noted some good examples of *Phalaenopsis delicatissima* and *P. Schilleriana*; these were looking most vigorous, and had made fine growth. *Cœlogyne cristata*, of which too much cannot be said for its usefulness and beauty as a winter-flowering Orchid, had made fine bulbs; this is largely grown. *Saccabium Blumei majus*, from Moulmein, had three fine spikes of flower well open upon it. *Cypripedium Sedeni*, of which a quantity of plants are grown, was making a fine display with its rosy-lilac and white flowers; this is also a most useful and free-flowering Orchid. *Ionopsis paniculata* is looking well, as also is *Oncidium Lanceanum*, which latter had made fine leaves. *Pleione maculata*, from the mountains of Khasia, was also flowering. *Oncidium Barkeri* and

Odontoglossum Roerlii were looking remarkably well, as also were a host of others, all alike good. A goodly batch of *Nepenthes* have made fine growth and large pitchers. *Milamanda Hendersoni* was flowering freely from the roof of one of the stoves, and in another house *Plumbago rosea* was growing most luxuriantly, promising to make a fine display of bloom later on.

In the outdoor departments large preparation is being made with both fruiting and flowering plants; of the former, Strawberries are largely grown, and are promising well; of the latter Persian Lilac, *Syringa persica*—of which there are some fine bushes from 3 to 4 feet through—were looking most vigorous, and promise to flower at every point, when they will present a very gay appearance. *Richardia æthiopica*, of which something like 1000 plants in 8-inch pots are grown, were looking stout and robust. To a great extent the old style of bedding is adopted at this establishment, and forms a very pleasing feature, noticeable among it being the centre of a large convex bed filled with *Lobelia Queen Victoria*, which, with its deep scarlet flowers, looked simply charming. This is one of the best autumn flowering bedding plants with which I am acquainted. A fine old specimen of *Catalpa syriacifolia* was flowering freely beside the large lake; and growing on the lawn is a remarkably fine specimen of *Salisburia adiantifolia*, which covers a considerable area. A long walk is called the Wellingtonia Walk, with which trees it is planted on either side; many of them, being well furnished, formed good examples. A thickly planted line of Hollies, extending along the back line of the Wellingtonias, is growing luxuriantly.

Situate in these grounds is a large and picturesquely arranged grotto, the interior of which is formed of shells of all descriptions; this, when the door is closed upon it, presents as many bronzy hues as may be seen when oil has been spilt upon water. On the shores of the lake may be seen an endless variety of waterfowl, many of which are exceedingly rare. The deer park also has its complement of nice young stock, and roaming in one of the meadows were a singularly interesting flock of Ashantee sheep. 7.

ROYAL BOTANIC GARDENS, REGENT'S PARK.

WATER PLANTS.—The Sacred Bean (*Nelumbium speciosum*) is now in flower and in fruit in the Victoria-house, Royal Botanic Gardens, Regent's Park, its bloom-stalks rising from 3 to 4 feet out of the water. *Pontederia azurea*, the blue-flowered Pontederia, is also in flower; it is of procumbent habit and free growth, the stout flower-stems, which are short, rising from the axils of the leaves, which lie prostrate on the surface of the water. *Nymphaea cyanea*, with light blue flowers, is also flowering freely.

PLUMBAGO CAPENSIS.—This in the large conservatory is very striking; it is trained to one of the perpendicular supports of the roof, and on either side between the spans, where a space some 30 feet long on either side is one mass of its lovely blue flowers.

ONCIDIUM ORNITHORHYNCHUM.—This exceedingly pretty species is now in flower, and in a mass is most attractive; the flowers, which are of a pale rose, are very numerous and fragrant. Flowering also in the same house is *Cypripedium longifolium*.

LAGERSTRÖMIA INDICA.—An old-fashioned East Indian shrub, with large panicles of pinkish semi-double flowers; the individual flowers closely resemble those of *Lychnis viscaria* fl.-pl., and in the large trusses of bloom are very effective. If this could be made to flower in small pots, say 5-inch, surely it would be a most useful plant!

LINUM FRIGYNUM.—This is also of East Indian origin, of shrubby habit, but of shorter growth, the stems more slender. It is a plant seldom seen in good condition, probably owing to the severe attacks from red-spider, to which it is subject. A goodly batch is looking better than usual here, and flowering profusely. One thing not altogether in its favour is its never making any great show at one time; the flowers are yellow and large in proportion to those of the remainder of the genus.

Foreign Correspondence.

VINE CULTURE IN SICILY.—The following extracts from Mr. Consul Rose's "Further Report on the Phylloxera in Sicily" are of interest, as detailing the mode of culture of the Vine in that island, and as affording a suggestion as to the slow progress of the disaster there as compared with other countries. In Sicily the Vine is generally propagated by cuttings from Vines of a twelvemonth's growth, from 1 to 2 metres in length. At the base of each cutting is placed a small shoot of two years' growth, which serves no other purpose than to guard the circle of the buds at the base of the cutting. The soil is either entirely dug up loose to the depth of a metre or more, or it is dug up in breadths in which the Vine is planted, leaving untouched the space between each breadth. The ground being thus prepared, the cuttings are planted in the month of December, a space of 1.50 metre to 1.80 metre intervening between each plant. They are planted either with a spade or with a long iron piercer or borer (*verrina*), the latter being the method more commonly adopted. To plant the cuttings in the former manner, a trench to the depth of 80 centimetres or more is dug, into which are put two cuttings, placed in the manner represented in the accompanying rough sketch (fig. 79), after which the trench is filled up with earth. By the latter method the ground is bored to the depth of 1.50 metre, and into the hole thus made is introduced the cutting, its base coming into contact with the firm earth. By both methods the plant puts out roots to the extent of 1 metre or more, and to force the Vine to take deeper root, and that it may feel less the

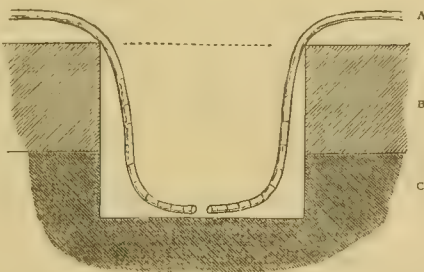


FIG. 79.—SKETCH, SHOWING MODE OF PLANTING VINE CUTTINGS IN SICILY.

A, Cuttings; B, Light soil; C, Heavy soil.

effects of the continued dry season, namely, from May to September, the first, second, and sometimes the third tier of the upper roots are constantly cut off during the third and fourth year following the planting. For the first five years the Sicilian Vine grower's care is devoted to strengthening and invigorating his Vines, after which time he turns his attention to the production of the fruit. There are various methods of pruning the Vine practised in the island, but the principal ones and more generally employed are two. In one, the lower branches are lopped off, the Vine being made to take the aspect of a small tree, about half a metre to 1 metre high, and for its support each tree is provided with two or three stakes, each stake supporting a branch. In the other the Vine is similarly treated, with this difference, that it is only allowed to grow to the height of 40 to 60 centimetres, and has but one stake to support its branches, which are never more than two. At Riesi the Vines are cultivated as described in the first instance. At the approach of the rainy season trenches are dug round the Vines for the collection of water, in order that the roots may have the full benefit of the moisture. Three times in the year the land is dug up—deeply in February, and more superficially in May and August, especially so in this last month. In May the trenches are filled, and in August the land is grubbed up.

From the above short account, in which I have endeavoured to convey an idea of the manner in which the Vine is cultivated in Sicily, it will be seen that if the ravages of the Phylloxera have been less rapid at Riesi than in France, the reason may be attributed to the practice adopted in the culture of the Vine, in allowing it ample space for the development of its roots, and to the distance which is preserved between the Vines at the time of planting, rather than to any special properties of the Vine or nature of the soil.

Advantage is doubtless derived from the use of the trenches, which are kept open round the plants during the rainy season, and which impede the progress of the disease. Nevertheless, Vines once attacked have never been known to recover, but invariably perish, and if not in four years, as is the case in France, certainly in seven or eight.

The disease is evidently spreading, and should the large wine-producing districts in the western part of the island become infested, which does not seem improbable after what has so recently happened in the province of Messina, the loss to the country would be most serious. *Robert J. Rose, Palermo, Sept. 9.*

MARKET PELARGONIUMS.

SOME time since I promised to furnish you with an account of the leading sorts of Pelargoniums that have been grown for Covent Garden Market during the past twenty-two years; this will take us back to 1858. The sorts then grown, and for two or three years ensuing, were Gauntlet, Alba multiflora; these were for early work, making their appearance in market at the end of February, followed closely by Colleyanum, Washington, Clio, Bloomsbury (Pamplin), Speculum, Mundi, Parson's Perpetual, *alias* Queen of February, and Robert Bruce. The later sorts were Coronation, Hebe, Village Maid, Bianca—this a fine white of good form, and should not have been discarded—I have not seen it for years, and it is probably lost; La Reine, or Ninon de l'Enclos, May Duke, and Phyllis. I am unable to give the raisers of the kinds named, but doubtless the well known names of Gaines, Catleugh, or Dennis, could be attached to some of them. The French sorts were James Odier, Gustave Odier, and Dr. André, all acquisitions, and then much appreciated; the latter is still grown, but principally for cutting purposes: the blooms of this kind now, as then, making a better price than any other sort; the flowers as now produced appear to me to be deficient in the fine rosy tint of former days: it may be termed a characteristic sort, for it yet stands alone in its distinctive qualities. Forget-me-not and Carlos, both show sorts and good market as well as good exhibition varieties—and what collection then staged was without them? The latter, as an attractive show flower, in my opinion, has not been superseded. These are, I believe, all the sorts of any note grown at that time, and the growers of them could almost be counted on one's fingers, and I think with the material then at hand their productions would bear favourable comparison with the results of the present time. I doubt if Gauntlet would be grown now to surpass, if equal, the plants sent to market by Messrs. F. & A. Smith; the same remark is equally applicable to the Clios of Mr. Woodroffe. Rollison's Unique was also at this time largely grown, and met with a ready sale; I fancy it would make a poor financial return to a market grower now.

Messrs. Hayes now introduce a sort named Albion, evidently raised from Alba multiflora and Bianca, having the growth and habit of the former with the bloom of the latter, but larger trusses; this speedily took first rank as an early blooming white. A little later on multiflora (F. & A. Smith) is brought in, a small rosy-flowered, very free early blooming variety, and was largely grown for some years. Crimson King, I think sent out by Mr. Turner, is now introduced, and would then be termed a second early, a decided improvement on Robert Bruce, and was a leading sort for some years. Blanche Fleur (Wheeler), exhibited by Messrs. Braid, and awarded a First-class Certificate, and distributed by Mr. Cutbush, Highgate, appeared in market about this time, and was thought by some of the older growers to be Russel's Ann, but rather than verify their opinion I should confute it, for how so good a sort as this is could have been neglected, or, as Russel's Ann, all but lost, and at a time when there was a paucity of good sorts, I cannot comprehend; however, as Blanche Fleur with some, and as Russel's Ann with others, it was grown in quantity and is yet seen in market occasionally. Virginia, almost a pure white, was also grown but not much esteemed.

We now come to Alma, raised by that eccentric but respected individual, Mr. Dennis, and sent out by him in plants and seed as Dennis' Magnificent Alma, an appropriate term too, for as a market plant from April onwards it had then no rival, but like some other good sorts it has been discarded. I think it would now be difficult to obtain true, as innumer-

able seedlings were raised from it by many growers, and most of them had one or more improved Almas, but all were inferior to the parent; I fear in the confusion that the real gem was lost: any one having the original sort need not hesitate about growing it in quantity for market, for it would still meet with a ready sale, and its reinstatement would be welcomed by some of the older growers. I have seen this sort bedded out with good effect. Belle Blanche (Shoult), a seedling I should imagine from Bianca and Phyllis, was a first-class sort, and soon became very popular. It was perhaps better known as Shoult's White, and could be had in good form from early in April to the end of the season, and it has been grown extensively up to very recently. I may say that it maintained its position as a market favourite for a longer period than any other Pelargonium; it may now be placed among other good sorts that are discarded. Monte Christo: I am ignorant of the origin of this sort, it was first brought into market in quantity by Mr. R. Clarke; the colour of this kind being quite a novelty, and having also large trusses and being an early and free bloomer, it attained a standing in the front rank. It may yet be seen in market, and, but for its sportive proclivities, it would still be grown in quantity; it has a tendency to produce abortive flowers somewhat resembling catkins of the Willow, also pale pink flowers, minus the rich velvety blotch, and frequently all the blooms on a plant are produced so that it is then almost worthless.

Pescatore, Madame Heine, and Gloire de Bellevue, three French sorts, were subsequently in favour, and for some few years were grown largely. Napoleon III., also of French origin, a very dark small flowered sort, was first brought into market by Messrs. Hayes, and sold readily for a season or two, but then dropped into obscurity. Market Maid (Kendall) was for a few years patronised. Refulgens is now introduced by Messrs. Hayes, and, as I believe, one of Mr. Beck's rejected seedlings; however, it was welcomed in Covent Garden, and was then the brightest coloured Pelargonium that had been seen there: it was a standard sort for many years, and may be seen occasionally now. Painted Lady, a good pretty free-flowering sort, now made its appearance, and was in favour for some years; I am unacquainted with its origin. Madame Corbay, a pretty French variety, was now grown; Pliny, also of French origin, was introduced very soon after the foregoing, and being an improvement superseded it: this was first brought into market by Mr. Sweet, and was an especial favourite for two or three years. Mons. Corbay, also from across the Channel, was first brought into market by Mr. Pearce; it was predicted that this sort would displace Dr. André, which it somewhat resembles, but it failed to oust that old favourite. Amazon and Magnet, both show high-coloured sorts, I think distributed by Mr. Turner, were popular for a season or two, but being too shy of bloom for market work were discarded; but there is evidence in some of the ensuing introductions that these two sorts were selected for seeding purposes.

La Vésuve, originating from the Continent, was first brought into market in quantity by Mr. Wetherill, and for two seasons seemed destined to outstrip all other favourites, but as rapidly as it had risen in favour so speedily did it descend into oblivion. Brilliant, said to be of French origin, and also known as Lord Raglan, was introduced into market by Messrs. Breffit; this was at that time a great acquisition, having a fine bold high-coloured flower, borne in large trusses, and being a strong but tall grower it maintained a favourable position for some years: I have not seen it the last few seasons, and conclude that it is now finally dismissed.

We are now favoured with quite a distinct sort, and one that may be almost taken as the type of the present race of market Pelargoniums—a short sturdy grower, very free, compact in truss, of good size. I allude to the one called William Bull, I presume of Continental origin, and first brought into market in quantity by Mr. Wm. Lee; it was very popular and might be designated as the principal market sort for some years. Several varieties of recent introduction may be traced to this kind. Archimedes, a very pretty free-flowering sort and good grower, but having the defects of Monte Christo, i.e., a liability to produce abortive flowers, its growth was discontinued. Grand Duchess, a French sort of considerable merit, was then brought to notice, and met with much patronage, being largely grown and much appreciated by buyers; eventually its growth was dis-

continued in favour of later introductions: I believe the correct name of this kind is Grande Duchesse Stephanie. Names are very apt to get curtailed in market, even the generic appellation is too lengthy for many market folk, and by them is abbreviated into—I am ignorant of the correct orthography of the word—but it is pronounced Pelly's.

Rob Roy (Foster) was first brought into market by Mr. Sweet; it made but slow progress to favour, and never reached an eminent position, the public patronage respecting this sort being very variable: the last two or three seasons it seems to be more appreciated than formerly—it is still grown, though not to any great extent. Madame Thibaut, a French sort, of lilac colour, and strong coarse grower, met with little favour either from growers or buyers. Caractacus, another lilac flower, and very pretty: this I imagine was an English show flower, and was introduced into market by Mr. Page; its merits were then duly recognised, but for some unaccountable reason growers discontinued its culture. I think it was deserving of a better fate; I have not seen it for some years, but should be pleased to see it reintroduced—we have nothing of its colour now. Fireman, Acme of Perfection, and Integrity, sorts raised by W. & A. Brown, the latter a seedling from Wm. Bull, secured and held a prominent position for several seasons; in its decadence it appeared to lose its former vigour and freedom of bloom, and was considered as worn out. It was, however, staged in good form in two or three collections at the late Pelargonium show. I also saw recently at a local flower show a plant of this sort in a 32-pot, with all the vigour and quantity of bloom of its infancy, and such bloom that I had seldom seen produced by this kind. I became the possessor of this plant, and intend giving it another trial.

Whetstone Hero (Davis) now makes its appearance, and quickly became established as a favourite, and for several years it was, I believe, in the hands of every Pelargonium grower for market; consequently, it was produced in considerable quantity. It is still grown, though to a limited extent. This sort, and Wm. Bull, I consider, are the progenitors of several of the best decorative sorts of the present day. William Davis (Davis), a very pretty and good selling sort, very free bloomer, but tall grower, and liable to lose its leaves in winter; but for this fault it would be grown more extensively. Mrs. Lewis Lloyd and Mrs. Bradshaw, both distributed by Messrs. Jackson & Son, were first brought into market by Mr. Anderson, and soon became very popular. The latter sort still puts in an appearance in limited quantity, the former seems to be quite discarded, yet when it flowers freely what an effective sort it is. It was always sought after by buyers, but was very capricious in its blooming functions, but for this failing it would still be a leading sort. W. Brown, Hendon.

(To be continued.)

NURSERY NOTES.

MESSRS. CRIPPS & SON'S, TUNBRIDGE WELLS.—This old-established firm, so long in repute for its many fine introductions and well-grown specimens generally, is most pleasantly situated on the rising ground at the outskirts of the above town.

The nurseries are fronted by a conservatory, in which are goodly examples of Tree Ferns, a huge trunk of *Cycas revoluta* occupying the centre, the existence of which can be traced over a period of 100 years. Connected with the early career of Mr. Cripps may be mentioned *Fuschia Venus Victrix*, which he introduced, and which was for some years a prominent member of its genus. The nurseries, which cover an area, with a small farm attached, of 150 acres, are for the most part planted with choice Conifers, evergreen and deciduous shrubs, and weeping deciduous forest trees.

Lapageria alba is a marked feature here, and is growing most luxuriantly, having been in flower for upwards of three months, and from it six to seven dozen blooms have been daily gathered, and it is still flowering profusely. The plants in question are not in what may be termed at first sight favourable situations, having been planted under the stage surrounding the house, thus evincing a desire for shade and moisture; the rods which it has thrown up from its base are of large proportions, many being the size of an ordinary lead-pencil, and others nearly double that size. The growth it has this season made is simply marvellous, the longest measures

18 feet, and it has some twenty-five fine flower-buds upon it; a finer shoot than this would be worth recording. Small plants of this are grown in quantity, and are looking equally well. Of *L. rosea* hundreds are grown in various sizes, together with many large plants, in the same luxuriance. Of hybrids that are not yet proved there are quantities everywhere. In this house, on a shelf near the glass, is the variegated form of the Cornish Moneywort, *Sibthorpia europea* fol. var., and which makes a most unique hanging plant. In another house *Funkia grandiflora* has had fine spikes of bloom. For cut purposes its pure white flowers are most acceptable.

In another house *Eulalia argentea* fol. var., mixed with scarlet and other Pelargoniums, is looking most graceful: few grasses can equal this, and none surpass it—its tall, gracefully pendent foliage adapting it for so many purposes; and suspended from the roof is *Tropæolum Crippsii*, of the Lobbianum section, with yellow flowers and scarlet lines: this is a very free flowering variety. *Paullinia thalictrifolia* on a shelf is very attractive with its Fern-like foliage. *Poinsettias* in another house are sturdy and vigorous. *Cordylina indivisa*, which is seldom seen in anything like specimen form, is here in good healthy, well-furnished examples. *Carnation Souvenir de la Malmaison*, with its gigantic flowers some time past, is propagated in a method which is most simple and sure, viz., that of "nicking" the cuttings with a sharp knife, and loosely binding them up with sphagnum moss, into which they root readily. Growing under the stage of one of the houses, in pans, is a fine batch of *Trichomanes radicans*, evidently enjoying the damp and shade they receive. *Clematis indivisa lobata*, which is so useful for the white flowers, which it produces in abundance in the winter months, is very largely represented in a clean and healthy batch. Another house is occupied with *Clematis* in variety in a small state, and *Ampelopsis Veitchii*, of which latter some 20,000 are grown. This unique plant is most suitably adapted for covering walls, rustic huts, and like places.

In cold frames are goodly examples of *Todea pellucida* and *T. africana*; also the Tunbridge Fern—*Hymenophyllum tunbridgense*—of which there are some 400 nice plants. This little gem sells readily to the many visitors of the place, many taking it away as a *souvenir* of their visit. *Clematis* are extensively grown generally, [and for them this nursery has long been famous, having been the means of many new and useful varieties being introduced. Great attention is still paid, and continuous crossings effected with many good results. The major portion of the stock, of which there are many thousands, were at the time of my visit past their best; many good seedlings, however, still remained of the *C. lanuginosa* type, among which were several of good shape and substance, with a variety of colour, all of which are carefully and severally marked for further trial. *C. viticella rubra grandiflora* was producing in abundance its bright claret-coloured flowers, also the well-known *C. Jackmanni* and *C. rubra violacea*, both of which are well known for their continuous flowering qualities, which render them invaluable for bedding and other purposes. The specimens had, by their appearance, been one mass of bloom. Of new seedling *Clematis* one is especially worthy of notice, it being the result of a cross between the old sweet-scented *Clematis flammula* and *C. viticella rubra*. The flowers are of a reddish-pink on the exterior, and lighter on the interior, with a whiter based petal. This hybrid has no connection with Miss Bateman, as stated at p. 369 of vol. xiv., and which belongs to *C. patens*. "This error might sadly mislead those who do not sufficiently know *Clematis*." It need scarcely be said that this plant is a decided acquisition, and will be largely grown when it is ready to be placed before the public.

In the specimen border I noticed some large and well furnished examples of *Cryptomeria japonica*, some of these being 30 feet high; in this border at intervals were planted *Sedum spectabile*, whose intoxicating influence over bees and moths seems most remarkable. *Picea Pinsapo* seems to have suffered more than any evergreen shrub. *Abies excelsa* *Fine-donensis* is largely represented, and doing well, as also are *Picea Nordmanniana* and *P. nobilis*; these two latter are represented in both large and small plants, which are equally vigorous. *Cupressus Lawsoniana lutea* will, when known, become an invaluable plant for specimen planting, its continuous golden foliage standing winter and sum-

mer alike. *Thuja Ellwangeriana nana* is a distinct variety of dwarf habit. Of *Wellingtonias*, a goodly quarter was fully occupied with nice young plants, averaging from 3 to 7 feet high; *Retinospora filicoides* is a most distinct and graceful plant; *Thujopsis dolabrata*, of which there are fine specimens planted in lines, are looking healthy and well. *Rubus laciniatus* is without doubt the finest of the Blackberries; it has formed a complete pyramid some 7 feet high, the lateral prostrate branches covering a space of from 12 to 14 feet; this variety, for large and delicious fruit, far surpasses the famous Kittatiny, of which lately much comment has been made in horticultural papers.

A large collection of hardy Heaths is grown here. Among these I noted *Menziesia polifolia* and its white variety, *Erica vulgaris pygmaea*, *E. vulgaris rubra* and *alba*, *E. vulgaris Alportii*, and others; fine specimens of *Abies cephalonica* and *A. Douglasii*—these are planted in lines and look exceedingly attractive, as also does *Thujopsis dolabrata robusta*, which is more compact, conical, and robust, and a decided improvement on the typical form. Cedars are grown largely, many of the well-furnished bits reaching the height of 14 feet.

Grown in quantity here also are great varieties of hardy deciduous fine-foliaged plants, of which the different hues and shades of colouring are simply marvellous. Little I think can be known at present of the beauties of these when grouped together. Of Tulip trees there are two remarkably good varieties—*Liriodendron tulipiferum aureo-marginatum*, and *L. t. medio-pictum*, the former having a distinct marginal line, and the latter a large yellow blotch in centre of each leaf. These variegations are permanent, the one never assuming the others character, the leaf character being alike distinct. *Catalpa syringifolia aurea* is also a good and distinct foliage-plant. In large, well-coloured specimens this is unique. *Sambucus nigra aurea* cannot be planted too largely where effective shrubberies are required.

Of the different forms of Oak two especially are noteworthy, viz., *Quercus concordia*, the gold-leaved variety; and *Q. atropurpurea*, the Purple Oak—this latter is a most effective plant. The gold-leaved form of our English Elm, *Ulmus campestris aurea*, is also a conspicuous plant. *Acer atropurpureum*, the dark-leaved Japanese Maple, is a decided acquisition among hardy deciduous trees, and should be in every collection. The Purple Beech, *Fagus castaneæfolia purpurea*, and the Purple Birch, *Betula foliis-purpureis*, are alike good.

Hundreds of other plants are to be found here, this nursery being especially rich in *Coniferae* of all descriptions. Evergreen shrubs are also abundant, as are also many deciduous weeping trees.

MESSRS. BARR & SUGDEN, TOOTING.—*Liliums* have been very fine during the summer, and many still continue flowering. Among these I noticed lately several fine beds of *L. superbum*, one mass of bloom. This is without doubt a very fine Lily, and one for autumn work which cannot be too freely used. The several varieties of *L. speciosum* are well represented, comprising *L. speciosum album*, *roseum*, *rubrum*, and the beautiful white-flowered *L. speciosum Kretzeri*. Of *L. auratum* many fine beds had ceased flowering, and many more were just opening their flowers. *L. tigrinum fl. pleno* were at their best, several beds of them presenting a very gay appearance. *L. longiflorum Wilsoni*, one of the best of this section, had been exceedingly fine, a few flowers just remaining. *Colchicums* were just opening; there were several thousands of buds ready to expand. Among these were *C. variegatum*, *C. autumnale*, *C. striatum*, *C. album*, *C. roseum*, *C. atropurpureum*. The miniature-flowered *Leucojum*, *L. autumnale*, was, from amidst its grassy foliage, flowering freely. *Tigridias*, having had a good morning's sun, were very fine, as also were the endless variety of annuals, to which great attention is paid. Among these I noted the *Asters*, of which there was an excellent strain. *Zinnias* were also good. Great improvements continue to be made in *Phlox Drummondii*, which comprises almost every shade of colour; and the pretty *Anomatheca cruenta* was producing its numerous scarlet flowers, spotted with crimson, in abundance. *J.*

THE LATE HURRICANE IN JAMAICA.—We learn from Mr. Morris that his department suffered very severely during the late hurricane. The Castleton Gardens, the *Cinchona* plantations, and the old Botanic Garden at Bath, have lost most valuable trees, and the effects will be felt for some years,

LANCASHIRE GARDENS.

I WAS much pleased to read at p. 357 of the *Gardeners' Chronicle* an account of a working collier's garden. There are not many amongst this class of workmen who have the means, even if they possess the ability, to grow stove and greenhouse plants; at the same time this does not prevent the Lancashire working men from following gardening pursuits with a zeal far too uncommon elsewhere. In a run through a part of Lancashire last week I was privileged to see the gardens of several working men of very limited means indeed, and was very much pleased with the examples of culture, especially in vegetables and hardy flowers. In many districts fruit trees, with the exception of Gooseberries, do not give satisfactory results, owing to the contaminated state of the atmosphere, charged as it is with deleterious gases. Vegetables, especially Onions and Celery, are made a specialty, and the quality of the produce obtained under very adverse and depressing circumstances would do credit to our best professional gardeners.

About Rochdale, Middleton, and the neighbouring towns, the mill operatives vie with each other to produce the best examples in a given period. It is well known that autumn sown Onions of certain varieties can be grown to a very large size, but here it is imperative that the Onions should be raised from seeds sown the same year that they are exhibited. On Saturday, September 11, an exhibition of white and red Onions was held at the house of Mr. George Heywood, Swan Inn, Old Hall Street, Middleton, and attracted a large number of visitors. About thirty competitors appeared, and the Onions, for size and general appearance, have not been equalled for several years. There were ten prizes for red Onions, and as many for white. The red Onions seem to be merely a good strain of the Blood-red, and many gardeners will be surprised to learn that single Onions of this kind have been grown to the weight of 36 oz., after the roots and top have been removed. On this occasion a very handsome specimen from Job Siddall, Crab Lane, Blackley, gained the first prize; its weight was 32 oz. John Jackson had one which weighed 24 oz., the third prize going to James Fallows, of Stakehill, for one of 21 oz.; the other seven competitors coming in with smaller Onions. In white Onions 19½ oz. was the heaviest, and the smallest 8½ oz. William Bellis had the first prize in this class.

At an exhibition of flowers, fruits, and vegetables, held at Middleton, also on Saturday, the Celery exhibited was very fine indeed, and the prizes consisted of various useful articles, the first prize being half a load of flour. This was gained by Thomas Kay, of Stakehill. There were in all a series of thirty-three prizes. Three heads of Celery has been grown to weigh over 40 lb. The system of growing the principal varieties of vegetables is rather different from that practised in most other places. The Celery and Onions are allowed plenty of space between each plant, and none of the exhibition Celery is earthed up. They grow it on level beds of deep rich soil, and blanch it by tying it round with several sheets of thick brown paper. James Fallows was good enough to show me his Celery and Onions, and uncovered a head of Celery to show how well and cleanly it was blanched. All the leaves of the Onions are carefully supported by being tied to trellis-work; not one of them must suffer injury. Watering is done very carefully, as too much causes the Onions to burst, and the Celery to become pithy. I found nearly all the Celery plants in Fallows' garden not only of very large size, but of the best quality.

Amongst flowers, the Auricula is the most popular at present, and it is grown very well indeed; many growers have several hundreds of plants, some as many as fifteen hundred, including seedlings.

In John Goodier's garden, Stakehill Lodge, I saw a collection of Roses, and better cultivated Roses one could not wish to see. They had been cut down to the ground with the severe frost of last winter, but the protection of manure had saved the base of the plants, assiduous attention having done the rest. There was no trace of mildew, orange fungus, or of any insect pests that prey upon the Rose. Indeed it is worthy of record that although the Rose succeeds badly at the usual time of the summer bloom in this district, the autumn bloom is better, and the growth cleaner, than in the best gardens in the South of England. About the middle of September I saw handfuls of beautiful

Roses that had been cut in Mr. Barlow's garden at Stakehill House, better, indeed, than could be cut from the same plants in July. Their freedom from mildew we felt inclined to attribute to the sulphurous gases in the atmosphere.

At Ashton-under-Lyne I had also the privilege of looking over Thomas Mellor's garden. Tom is a great enthusiast, and manages to grow florists' flowers to perfection. When his Tulips are in at the right time he generally stands high on the prize-list at the National Exhibition at Manchester. The beds are now in preparation for planting. The soil has been ridged up, leaving the beds high in the centre to throw the wet to the sides. Some of the beds to be planted with Tulips are at present furnished with *Asters*, which are planted immediately the Tulips are taken up, and they succeed well in the rich soil. The Auricula is also well grown in this garden, the owner being an adept at propagating the more difficult varieties. His stock of John Simonite is the envy of the Northern florists. The old variety, Ringleader, grows like a weed; and of the choice varieties, such as Smiling Beauty, Alex. Meiklejohn, George Lightbody, Prince of Greens, &c., are to be seen in good plants. One thing I noticed with surprise, and that was to see all the plants in the open air, where they had been all the summer. They had been exposed to a most excessive rainfall, but were being removed under glass on September 21. I fancy that most of the Northern growers use larger pots than they need to do for some of the varieties. Such varieties as Robert Trail, C. J. Perry, Ellen Lancaster, Sophie Dumaresque, Mrs. Smith, and some others, will do in large pots, but Alex. Meiklejohn, John Waterston, Anna, and others of this type, should not be potted into such large pots as I saw them potted into in several places. The Auricula aphid is getting far too common, but the general impression seems to be that it does little or no harm to the plants. One grower quaintly remarked "that it lodged on the plants, but did not board there." Certainly it does not kill any plants, and those who say it does must be labouring under a mistake.

It was pleasing, too, to observe that nearly all the fanciers were raisers of seedlings. Mr. Mellor had several hundreds; all the seeds were the produce of flowers crossed in an intelligent manner, the result being that many good flowers have been produced, and of such quality that in a few years most of the old stagers will be replaced. Of course Taylor's Glory, Colonel Taylor, George Lightbody, Lancashire Hero, &c., will for many years be grown, but the second and third-rate flowers are now replaced.

The spirit of rivalry is fostered amongst the operatives by the numerous exhibitions that are held; and, as far as I could see, the art of gardening had a firmer hold upon the affections of the people than dog racing or pigeon flying; and it is much to be desiderated that in other counties the same taste for gardening pursuits should be fostered and encouraged. *J. Douglas, Ilford.*

PICEA AJANENSIS.

OF this beautiful Spruce Fir, *Abies ajanensis* of some English gardens, but known in many under the name of *Abies Alcockiana*, we have already spoken at some length (see *Gardeners' Chronicle*, Feb. 14, 1880). We there traced its history, endeavoured to unravel its synonymy, and to clear up the doubts and discrepancies which had arisen in connection with it. It is one of the most beautiful and hardy of the flat-leaved Spruces, and, on that account alone, we might be excused for reverting to it; but there are other grounds which induce us to call attention more prominently than we did before to the plant, namely, to correct an error into which we fell in our previous article, and to which our attention has been drawn by Dr. Engelmann. The illustrations at figs. 81, 82 will serve to indicate more clearly than our description could do the difference in the position of the leaves on the upper and lower surfaces respectively of the lateral branches. On the upper surface the leaves are appressed to the branch, and lie nearly parallel to it, or at only a slight angle, while on the under surface of the side branches the leaves are given off nearly at right angles to the branch.

Now as to the error: in our former note we described the leaves on the side branches as "dark shining green, three-ribbed, and with few stomates on the upper surface, glaucous and one-ribbed beneath, with 4-6

lines of stomata on each side of the midrib," and we went on to describe the resin canals as above the palisade cells, and immediately beneath the green surface of the leaf.

The error here consisted in describing things as they appear to be, instead of as they really are. The appearance is indeed as we described it, but appearances are misleading. To make the matter plain, we must refer once more to the leaves on the leader shoot, and to those on the side branches.

On the leader shoots the leaves are not much if at all twisted at the base, but are erect, and pressed up against the stem, the glaucous or blue surface being next to the stem. (See fig. 80.) This surface is more or less concave, and is abundantly provided with stomata. On tracing the line of the midrib it may be seen to traverse the whole length of this surface to the very point, or even to be prolonged beyond it into a mucro. The green surface of the leaf is away from the axis, convex, marked with three ridges in the furrows between which and the midrib are the resin canals, one on each side. The midrib does not extend quite to the extreme tip, but stops short at some little distance from it, the end of the leaf ending in a flattened, somewhat rhomb-shaped surface.

It is clear, then, from this, that the glaucous surface of the leaves on the leader shoots is really the



FIG. 80.—*PICEA AJANENSIS*: PORTION OF SHOOT AND LEAVES.

upper or the inner, and the green surface the lower or outer.

On the side branches there are, as it were, two sets of leaves, the one on the lower surface of the branch spreading more or less horizontally, as we have said; the other, on the upper side of the branch, more or less parallel to it. Both sets of leaves are so placed that their glaucous surface faces downwards towards the ground, the green surface in the contrary direction. On examining more closely it will be seen that the leaves on the upper side (those which are parallel with the direction of the branch) are not twisted at the base and have the glaucous surface looking toward the branch in exactly the same position as those on the leader shoot. The leaves on the lower surface, on the contrary, are twisted at the base, and their glaucous surface, instead of looking upwards, looks downwards. It is clear, then, that the glaucous blue surface of the leaf is really organically the upper surface, the green surface the lower. We are so accustomed to see the lower surface of the leaf glaucous and the upper surface green, that it is difficult at first to realise that in this Silver Fir the case is reversed.

The stomata are most abundant on the glaucous side in each case, and the resin canals and palisade cells are nearest to the apparent upper, or real lower, green side. If the lateral branch be held in a vertical position, like a leader shoot, the true position of the leaves may be seen at a glance, and it will be at once recognised that the glaucous surface in this plant is next the branch or axis and therefore upper.

Now and then a small shoot may be met with springing vertically upwards from one of the side branches, in the direction of a leader shoot. In that case the leaves are not appressed but radiate on all sides from the axis, and the glaucous surface is in every case the upper.

The confusion then has arisen from the fact that in *P. ajanensis*, contrary to what is generally (but not universally) the case, the glaucous surface is the true upper surface, and that the green surface with the palisade cells is truly lowermost. The resin canals are, as they always are, on the lower surface (fig. 84), though they appear to be in this plant on the upper.

The palisade cells are always nearest to the green surface, indeed it is to them that the green colour

GENTIANA ORNATA, Wall., *Bot. Mag.*, t. 6514.—A small species, with numerous decumbent, slender stems, small ovate-lanceolate leaves, and terminal cylindrical flowers, with short spreading blue stellate limb. Himalayas. Edinburgh Botanic Garden.

HELICHRYSUM FRIGIDUM, Willd., *Bot. Mag.*, t. 6515.—Herbaceous perennial, with numerous slender decumbent stems, small, crowded, linear-oblong, hairy leaves and terminal flower-heads, surrounded by several rows of white bracts. Native of Corsica. Messrs. Backhouse.

LACENA SPECTABILIS, Rchb. f., *Bot. Mag.*, t. 6516.—A rare Orchid, with oblong-ovoid pseudobulbs, elliptic leaves, racemes many flowered, and pendulous from the base of the pseudobulb. Flowers galeate,



FIG. 81.—*PICEA AJANENSIS*: UPPER SURFACE OF BRANCH.

is due, and in them the resin is probably secreted which finds its way into the adjacent canals. *M. T. M.*

PLANT PORTRAITS.

AZALEA ROSAEFLORA, *Floral Mag.*, t. 418.—The same as *A. Rollissoni*, a Japanese variety, with small salmon-red flowers, like those of a double *Camellia*. Mr. Gower, Tooting.

CITRUS TRIFOLIATA, L., *Bot. Mag.*, t. 6513.—A perfectly hardy spinous shrub, with evergreen trifoliate leaves, and white Orange-like flowers. Native of Japan, where it is used as a hedge plant. Kew.

CRINUM KIRKII, Baker, *Bot. Mag.*, t. 6512.—A fine new species of the *ornatum* group. Native of Zanzibar. The segments of the flowers are white, with a central red stripe. Kew.

1 inch in diameter, pinkish-white, dotted with small spots. Native of Guatemala. Kew.

PEAR, *DÉLICES M. FROYENNES*, *Bulletin d'Arboriculture*, July, 1880.—A Pear raised by M. Isidore Degand, gardener at the Château of Froyennes. Shape turbinate; stalk short, set in a shallow cavity; eye wide, shallow; flesh melting, juicy, aromatic. October. An excellent Pear.

STEPHANOPHYLLUM LONGIFLORUM, *Floral Mag.*, t. 419.—An Acanthad, with stalked, ovate lanceolate, serrate leaves, and loose cymose panicles of red flowers. Brazil. Mr. Bull.

STRAWBERRIES, *Bulletin d'Arboriculture*.—The varieties figured are:—1, Victoria; 2, Merveille; 3, Dr. Morice; 4, La Negresse de Tirlémont; 5, Eliza Champin; 6, Saint Lambert.

VERBENAS, *Floral Mag.*, t. 420.—The varieties illustrated are:—1, Mr. Thompson, pale scarlet; 2,

Sir Garnet Wolseley, bright purple; 3, Lord Chelmsford, bright pink. Mr. J. F. Mould.

ZYGOPETALUM SEDENI $\times$, *Floral Mag.*, t. 417.—A hybrid, raised in Messrs. Veitch's nursery, between *Z. maxillare* and *Z. Mackayi*, combining the fine colouring of the former with the free growth of the latter, which is the pollen parent. Messrs. Veitch.

COLONIAL NOTES.

RECENT DISCOVERIES IN NEW ZEALAND.—The botanists of New Zealand are gradually adding to the number of known indigenous plants, and it seems likely that the total number of species of flowering plants will eventually reach a thousand. Volume xii. of the *Transactions and Proceedings of the New Zealand Institute*, issued in May, has just reached this country, and it contains descriptions of some interesting

Island, and more sparingly in similar situations at Port Pegasus. Mr. Petrie also describes an Umbellifera, which he refers to the genus *Hemiphys* (*H. novae-zealandiae*), stating that it is very closely allied to the Tasmanian *H. bellidioides*. It was found growing in Stewart Island side by side with the *Liparophyllum*, where also a new grass was collected. This is described and figured under the name *Phrharta Thomsonii*. Mr. Colenso describes the following new plants:—*Clematis Parkinsoni*, *Metrosideros pendens*, *M. subsimilis*, *Olearia colorata*, *Dicksonia Sparmanniana*, *Hymenophyllum pusillum*, and *Trichomanes venustula*. They are all from the head waters of the Manawatu River, province of Wellington. The *Clematis* is described as a very graceful climber, 14 to 16 feet high, presenting a glorious mass of yellow blossoms; and Mr. Colenso regards his *Metrosideros pendens* as by far the most graceful of all the New Zealand species. It is of elegant

when compared with our other colonies, without having impediments thrown in the way of progress which are not warranted by the experience of other countries. Two very ordinary varieties of Potatoes, for instance, furnish the whole of that valuable esculent placed upon the markets here, where disease is almost, if not quite unknown; and when one hears of a ton of selected varieties of seed Potatoes, imported at great expense by an enterprising and progressive farmer, being burnt on the sea beach, though coming from an uninfected country, and choice selections of fruit trees, which are here in about the same stage of advancement as Potatoes, it is impossible to help thinking that a new country like this is paying very dearly for its fancied exemption from the *Phylloxera*. In our own case I had the mortification to lose a collection of cuttings of the best varieties of basket Osiers—an article almost unknown here, and which the natives would be adepts at working up; roots of the best varieties of Rhubarb, just as great a rarity as the last; and many other subjects of a like useful character, and imported solely for the good of the colony. But the height of folly was reached when, as has lately happened at East London, a consignment of Pine-apple plants from Natal was destroyed, because Natal is a separate colony, though the next port on the coast to this!

I gather from the *Bulletin d'Arboriculture* and the *Gardeners' Chronicle* that great efforts are being made by the Belgian and other Continental horticulturists to get the restrictions modified, and trust that both there and here this desirable change may soon be an accomplished fact.



FIG. 82.—*PICEA AJANENSIS*: LOWER SURFACE OF BRANCH. (SEE P. 428.)

additions to the flora of New Zealand, as well as other botanical information. Mr. T. F. Cheeseman records the discovery, in several distinct localities, of *Sporadanthus Traversii*, a tall growing Restiaceae, previously supposed to be restricted to the Chatham Islands. It is abundant in some swamps in the province of Auckland, often covering hundreds of acres to the exclusion of almost all other vegetation. The discovery of *Sporadanthus* in New Zealand proper, taken in connection with the fact that *Myosotidium* is known to occur on the Snares, has deprived the Chatham Islands flora of any claim to an endemic genus, bringing into still greater prominence the close relationship between the vegetation of the islands and the mainland. Out of the 200 species known to grow in the Chatham Islands, hardly a dozen are specifically different from New Zealand plants. Mr. D. Petrie records the discovery of *Liparophyllum Gunnii*, a little Gentianaceous plant, hitherto only known to grow in Tasmania. The new habitat for this remarkable monotype is the extreme south of New Zealand. It occurs abundantly in marshy ground at the head of Paterson's Inlet, Stewart

pendulous habit, with white flowers, and Mr. Colenso thinks it will become a favourite garden plant. Finally, Mr. T. Kirk describes several new species, and records some other discoveries. The new species are *Ranunculus depressus*, *R. Enysii*, *Carmichaelia Williamsii*, *Senecio compactus*, and *Pimelea Haastii*. And the following Australian plants have been found:—*Mesembryanthemum æquilaterale*, *Vittadenia australis* var. *dissecta*, and *Lagenophora emphyosopus*. Altogether the results of the past year's botanising in New Zealand are extremely interesting.

KING WILLIAM'S TOWN: THE PHYLLOXERA.—I was glad to see your remarks on the advice lately given by M. Maxime Cornu to the Cape Government, as there can be no doubt that such advice has very considerably retarded the wished-for withdrawal of prohibitory restrictions. Of course, it would be folly to import Vines, but to exclude everything else from the colony is almost as bad, and is certainly doing more injury than the supporters of this prohibitory policy can be aware of. South Africa is quite far enough behind the times, in a horticultural sense,

X-30.

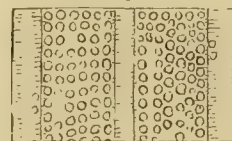


FIG. 83.—*PICEA AJANENSIS*: APPARENT UNTER, REALLY UPPER, SURFACE OF LEAF.

After another serious drought of four months' duration, so that a green blade of grass is not to be seen, we have just been favoured by 0.66 inch of rain. I can assure you we are thankful for small mercies of this kind here. J. C. Nelson, Curator, Botanic Garden, August 24.

JAMAICA.—MUSHROOMS.—Though not indigenous to Jamaica *Agaricus campestris* seems to have become

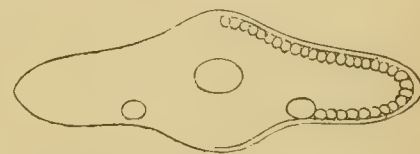


FIG. 84.—SECTION OF LEAF IN ITS REAL POSITION.

naturalised in the neighbourhood of the Government Cinchona plantations on the Blue Mountains, and vies with the Apples, the Strawberries, and the Peaches in rendering life in this elevated region (5000 feet) something like that of an English home. With Strawberries in profusion from December to May, with good "Irish" Potatoes as they are called, and all the usual supply of English vegetables, one would not believe that a few miles below, at Kingston, there is the intense heat and glare of 90° in the shade, with Cocoa-nut Palms, and all the characteristics of a tropical flora. D. Morris, Botanical Department, Gordon Town, Aug. 11.

WEST INDIAN FRUITS.

PERSEA GRATISSIMA, G. (*Laurus Persea*, L.), is the well known Avocado or Alligator Pear of the West Indies. A traveller touching for the first time at these islands during the time this fruit is in season (from July to November), is sure to meet with them at the port of call. He will probably be induced to try them, thinking, unless previously acquainted, that he is going to partake of a delicious fruit; sore disappointment, however, awaits him, for on cutting into it he finds an enormous seed, surrounded with a greenish, soapy looking covering, about 4 to 8 inches in thickness, from which the outer skin readily separates. By this time, doubtless, his fellow traveller will have come to his assistance, and explained to him that this soft, greasy, soapy looking pulp is the edible part of

the fruit, and he will probably be assured that it is excellent eating, but that it requires the addition of salt, pepper, and vinegar, as auxiliaries. These being provided he ventures to taste, and is for the nonce wholly disgusted, and thinks perhaps that never again can he be induced to make the attempt. That he will do so, however, is almost certain, and that he will become very fond of it is in most cases the ultimate result. Such, at least, has been the writer's experience, which has been found to accord with that of others in numerous instances. The tree producing this fruit attains a height of 25 to 30 feet. The flowers are small and inconspicuous, borne in small greenish panicles, from which are produced the large one-seeded fruits. The fruit of individual trees varies in shape, size, colour, and also in flavour and thickness of the flesh or pulp. The best sorts are esteemed as one of the favoured delicacies of the West Indies, and when in good condition most deservedly so. *J. Hart, King's House, Kingston, Jamaica.*

Florists' Flowers.

SEASONABLE NOTES. — AURICULAS. — The old plants are mostly throwing up autumn trusses, and for this there seems to be no help, the warm, forcing weather we are now having being the cause of it. The plants are still in a northern aspect, and will be left there until the weather is colder. Be careful not to give the plants more water than they really require; too much water would have a still further tendency to increase the unseasonable bloom. Keep the frame lights removed at all times except to shelter the plants from rain. The offsets put in as late as July and August have made quite as much growth as the old plants, and we are now busy potting them off singly into thumb-pots. All the small plants are kept in handlights rather closer than the older plants in frames. We have finished potting all the last year's seedlings, each plant singly into a small pot. Some growers prove their seedlings in boxes, two or three dozen in one box; others pot five or six plants in 6-inch pots, as being more convenient; but when space can be spared it is better to pot them singly. About the end of the month we shall remove the plants from the northern aspect to a more open space.

CARNATIONS AND PICOTÉES.

Potting up the plants should be proceeded with and finished as soon as convenient. It is necessary to carefully examine the soil for wireworm. This troublesome pest too often destroys our choicest plants, so that it is quite necessary to spend much time over them rather than to be annoyed with the losses afterwards. Handle the plants carefully, as they are easily injured. They should be removed into cold frames as they are potted off, and the lights should be kept rather close until fresh roots are formed, when air may be gradually admitted; and in a week or ten days the lights should be constantly removed, except when required to protect the plants from excessive wet. The plants propagated from pipings should also be potted off at this time in the same sized pots as the layers. All the perpetual flowering section should be potted on into larger pots as they require it, and the growths should be supported with neat sticks; they will now be commencing to flower, at least the earliest propagated plants of them, and to have clean full-sized flowers it will be necessary to place the plants in a dry airy greenhouse.

DAILIAS.

Still attend to the plants until the frost visits us. We are always glad to have the Dahlia bloom with us for as long a period as possible, and any attention they require in October is very pleasant work. Those who are saving seed must watch and gather it as soon as it is ripe enough. Tie a few heads together and hang them up in a dry place. It is also necessary to look over all the plants to see if any labels have been displaced, and then name all of them correctly. If this is delayed until the frost comes, it will be impossible to do it at all.

GLADIOLUS.

The blooming period is now nearly over: we have yet a spike or two of *Phœbus*, but no other—indeed most of the seed is gathered. As long as the weather continues dry the plants are all right, ripening their bulbs, but towards the end of this month it will be necessary to dig them up, and cut off the bulb or corm with about half an inch of stem attached to

it; place each variety in a pot for a week or so, when an opportunity should be chosen to remove the small bulbs at the base of the large corm. I find it best either to pot these at once or wrap each variety up separately in paper with a portion of dry soil. Other methods of treating the roots have been recommended: the most feasible I tried once, but would not do it again—that was, to lift the whole plant with a considerable portion of soil attached to the roots, and to plant them on the floor of a vinery or greenhouse in light soil until the leaves died off naturally; but I found during this process the roots shrunk up badly, and were not so plump as those from which the leaves were cut off as soon as they were lifted out of the ground. When the corms are well dried, the best way to store them is to wrap them up in clean paper and pack in a box or hamper, placing them where they would not be injured by frost.

HOLLYHOCKS.

When the spikes have flowered out to the point, and it is not intended to save seed, it may be as well to cut them over near the ground, leaving about 6 or 9 inches of stem. Seeds can be saved now in abundance if the flowers have been pulled off as soon as they withered. The seeds are not protected by any close covering, and suffer much from wet and close damp weather. All the choice varieties should be potted in good sandy loam, using well-drained pots; and these should not be large in proportion to the size of the plants. The largest stools may be potted in 8-inch, the medium and smaller in 7 and 6-inch pots. They ought to be potted as deep as they were growing in the ground. The ordinary varieties do well planted out in frames, or in an open position where glass lights can be placed over them in winter to throw off the wet. They keep well in good maiden loam, and if leaf-mould or decayed cocoa-nut fibre can be added to it the roots form in it more readily.

PANSIES.

Our earliest cuttings have not done well this year; the weather happened to be dry and warm for some time after they were put in, and mildew seems to have attacked them. This parasite is very troublesome on the Pansy in the autumn. When the cuttings are taken off they should be dipped in a solution of soft-soapy water and flowers of sulphur. This effectually destroys both the mildew and greenfly. We shall again put in cuttings in shallow boxes. Now is the best time to pot up plants for flowering in pots, and even if the plants do not seem to be affected with parasites or insect pests it is better to dip them in the above solution. Seeds will be plentiful if the present warm and dry weather continues; these should be saved and kept for sowing in spring. The beds should be planted now, but it is also as well to save a plant of each variety to be preserved during winter under glass.

PINKS.

The beds of these should also be planted out as previously advised. Take the opportunity to do this when the ground is dry and the weather favourable. It may be as well to pot up a pair or two of each of the varieties. They may not stand the winter well out-of-doors, and the plants grown in pots will be useful to make up the blanks; and should they not be wanted for this, a bed can be formed of them in the spring; if they are carefully turned out of the pots they will lace well, which plants dug from a store bed early in March will not. The forcing section should now be potted up into the pots they are intended to flower in, if this was not done last month.

POLYANTHUSES.

These ought all to be potted into their flowering pots without any more delay. The size of the pots and material for potting, with other necessary instructions, have been previously given. Our own plants are now well established in pots, but the growth is not so strong as we would like, and is in marked contrast to what can be seen in the best collections about Manchester and Newcastle-on-Tyne, where the leaves have scarcely been touched with red-spider, and the growth is remarkably vigorous. See that the plants are placed on a cool surface after repotting, and they should be placed in a frame until fresh roots are formed.

TULIPS.

The beds must be prepared this month if not already done. The bulbs should be looked over, and

some idea formed of the space of ground to be taken up with them. In dry weather continue to fork over the surface of the beds, so that they may be thoroughly exposed to the atmosphere.

ROSES.

Do not allow the beds to be grown over with weeds. Stirring the surface with a hoe tends to maintain a healthy growth. See that none of the plants are debilitated by insect pests or parasites. Many of the buds put in early will have started; all the suckers and growths should be removed, and the young shoots secured to sticks to prevent injury from gales of wind. Do not shorten the shoots on which the buds are dormant, as it is not desirable to start them so late as this. *J. Douglas, Ilford, E.*

Garden Operations.

FLOWER GARDEN.

The text on which to hinge my first paragraph has been suggested whilst making note of various plants that are likely to be of greater use next than they have been the present year. The text is, "Selection rather than numbers," i.e., better have a few good plants appropriately disposed than large numbers and incongruous arrangement, or, to be more explicit, better effect is produced by the tasteful arrangement of a dozen plants—flowering or foliage—than of twenty times that number where crowded together in a mass. As a case in point, a large bed in which there are but eighteen plants of tuberous Begonias, planted at equal distances all over the bed, and the ground carpeted with *Sedum acre* elegans, is far more telling than a similar bed that is planted with Begonias only, without undergrowth. Another example is a bed of seedling *Acacia lophantha*—seedlings in February: ten plants are made to fill a circular bed 12 feet across, the undergrowth being variegated *Mesembryanthemum* and the magenta-flowered *Mesembryanthemum* conspicuum. This arrangement is most telling, whilst a similar sized bed, planted thickly with *Acacias*, and variegated *Abutilons* alternately, without undergrowth, fails to attract attention, except to note how overcrowded the bed appears. Other examples might be cited, but these will suffice to illustrate my meaning as to selection rather than numbers—a principle that must commend itself to all who have large gardens to fill, and little accommodation for the production of the plants. Another, and not the least advantage is, that for the most part hardy plants may be used as undergrowth, and so soon as the tender plants are cut off by, or have to be lifted to preserve them from frost, their place may be readily filled with suitable shrubs, *Yuccas*, &c., for winter effect; indeed, it was through the necessity of having to study winter effects at the least cost of labour and material, that the idea of this mode of planting was first presented to my mind, and which has many times proved a boon, when through lack of plants it has been compulsory to plant thinly, and fill out with a groundwork of some other kind of plant that would either harmonise or contrast with it. It will shortly be necessary to lift the more tender plants, or else to take the precaution to protect them when frost seems imminent; but which, it is to be hoped, will keep off for a few weeks yet, as the finer weather has again brightened up the beds, which brightness may be greatly aided by the removal of bad flowers and leaves once or twice a week, and the keeping of all the surroundings—walks, turf, and edgings in neat condition. Worm casts are now very troublesome, and where practicable the lime-water cure should be put into practice; a single dose, that is sufficient to moisten the ground 3 inches deep, will settle the worms for at least one season. Transplanting of shrubs and trees, turf removal, &c., may all now be done; hence alterations in prospect should at once be decided on, and be completed before unsettled or frosty weather renders such work tedious. Walk and road making and mending can generally be done in the depths of winter, when through stress of weather it is not practicable to do much else, and therefore this work should be left till the last; but meantime arrangements should be made as to the obtaining of material—gravel, stones, ashes, &c., that there may be no time lost when once the work has commenced. *W. Whit-smith, Heckfield.*

HARDY FRUIT GARDEN.

No more satisfactory weather could be wished for than we are having during the present week for harvesting fruit. Wall fruit has been slow in ripening with us, notwithstanding the warm summer, and one of the greatest difficulties we have to contend with is to protect it from the attacks of wasps. They bore their way through muslin bags and devour everything in the shape of fruit that comes in their way before it is half ripe. The consequence of this is that the fruit

is rendered useless except for cooking purposes, and the loss is serious in a season like this when there is so little to spare. We must, however, persevere against the enemy rather than gather crops that are required for keeping before they are quite ready. Cut a Pear or Apple in two, and the seeds will be turning quite black if the fruit is ripe. Make the bags "large" for fine fruits in order to battle the enemy. With regard to accommodation for keeping fruit, it is seldom what it should be, but care in gathering, cleanliness, and an equable temperature are indispensable conditions to be observed in the fruit-room, whether it be a modern structure, or a mere shed, as a great many of them are. Attention must be given to planting, for although fruit trees have revived rapidly during the past summer there is no doubt that in many gardens Pears, Apples, Apricots, and Peaches will have to be partially renewed. The experienced eye will now be able to discern amongst Apricot trees those that are decaying wholly or in part. The leaves of decaying trees or branches are half curled up; these branches will linger on until next spring, and will probably set an abundance of fruit, about which time, or a little later, they will die outright. It is therefore a season lost to trifle with trees that are in this condition. All barren trees of any kind, that are either in bad situations, or are not adapted to the locality in which they are growing, should be rooted out and replaced by suitable varieties. We made a plantation of young trees from the nursery last autumn, and these will be in capital condition for being transplanted into permanent situations by the end of the month. I find among culinary Apples that Northern Greening, Keswick Codlin, Dutch Mignonne, Lord Suffield, Hawthornden, and Stirling Castle are bearing well everywhere; these may be supplemented by Warner's King, a splendid Apple; Mère de Ménage, also very fine; French Crab, Gravenstein, Emperor Alexander, Reinette du Canada, &c. We have a white-fleshed Apple here named Dominy's Seedling, which is a never-failing bearer, and an excellent keeper. Of dessert kinds Early Harvest, Irish Peach, Old Nonpareil, Devonshire Quarrenden, Baron Ward, and King of Pippins are certain croppers in most soils and situations. Of Pears, Jargonelle, Louise Bonne of Jersey, Williams' Bon Chrétien, Marie Louise, Beurré de Capiaumont, Beurré Hardy, Glou Morceau, and Ne Plus Meuris are sure croppers nearly everywhere; in the North of England Ne Plus Meuris, Beurré Clairgeau, and Pitmaston Duchess are invariably foremost in the prize list at all the great exhibitions. The finest Pear we have in the garden here is Van Mons Léon le Clerc. Passe Colmar also succeeds very well, and there are a great many others that might be placed in the same category. One of the best Pears for stewing purposes is Verulam, and it succeeds very well here as a standard. Six good Plums are Green Gage, Orleans, Victoria, Magnum Bonum, Coe's Golden Drop, and Reine Claude de Ravay. Peaches and Nectarines are best represented by Crawford's Early, Early Grosse Mignonne, Stirling Castle, Walburton Admirable, and Princess of Wales: the latter is a noble fruit, and seems to succeed anywhere. Violet Hâtive, Elruge, and Pitmaston Orange, are trustworthy varieties of Nectarines, being moderate growers, usually ripening their wood well under ordinary favourable conditions. *W. Hinls, Canford Manor.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—Once more the Peach season is over, and the time has arrived for laying the foundation of another year's success by lifting and replanting or replacing unsatisfactory trees, while the earth retains sufficient warmth to insure the formation of new roots before they go to rest. To succeed in the annual production of full crops of first-class fruit, trained trees presenting a large area of foliage to the sun require copious feeding either by means of heavy mulchings or liberal supplies of liquid manure, and as these frequent applications have a tendency to destroy the fibre of the soil and make it sour and impervious to atmospheric influence, too much care and attention cannot be devoted to the renovation of the borders when the trees are going to rest. The best soil for Peaches is sound turfy loam from an old limestone pasture, lime rubble, or burnt garden refuse thoroughly incorporated and kept dry until it is wanted for use. The outlet drains should be ample, and the drainage—not less than 9 to 12 inches of clean broken stone, brick-bats, or clinkers—should be arranged for 2 feet of compost to raise the border to the proper level. On the drainage thin sods of turf must be closely packed with the grass side downwards, and on this the new compost, fairly beaten down to prevent settling and hanging the trees to the trellis after the shoots are tied to the wires. Great care should be observed in lifting the trees, especially where they have been left for some years undisturbed and the roots have become firmly embedded in the adhesive soil, otherwise the thin fibrous roots which are of most value will be destroyed and the next year's crop will suffer. It does not always happen that old trees require complete lifting; if they have been well

managed in their youth all roots having a downward tendency will have been cut off or trained in a horizontal direction; and when this is the case it may not be necessary to do more than take out a semicircular trench at the extremity of the border and work inwards until all the principal roots can be raised and relaid near the surface of the new compost. Sound healthy old trees that have become weak from age and heavy cropping may be renovated by having all the hard surface-soil removed and replaced with new compost, to which 12 per cent. of bone-dust may be added. The compost should be rough, dry, and free from manure, the latter being used as a mulching only—a position in which it will keep the surface moist, draw the active roots upwards, and feed them when the trees are carrying heavy crops of fruit. As few crops under glass are more profitable than good Peaches, and few trees are more accommodating or respond more quickly to the addition of fresh soil to the roots, it is to be regretted that this important operation does not receive greater attention. As I have before stated, autumn is the best time for lifting; but there is no rule without an exception, in proof of which it may not be out of place to say the finest A Bec Peaches I ever grew were taken from a tree that was lifted from the open wall when showing the colour of its flowers in February, and placed in an early Peach-house then closed and in flower. This success was not fleeting, as the same tree is still in existence and produces fruit capable of winning first prizes at the London exhibitions. *W. Coleman, Eastnor.*

CUCUMBERS.

The first batch of plants which were raised from seed the second week in August will by this time have nearly, if not quite, covered the trellis with good short-jointed wood, which will be showing fruit freely. These, however, providing the supply obtained from other sources be equal to the demand for the same, and that there is plenty of scope for root-action, should be removed forthwith to enable the plants to thoroughly establish and strengthen themselves for producing and maintaining a good supply of fruit later on. But on the other hand, where the roots of the plants are growing in a rather confined space, such, for instance, as pots and boxes which they have filled with roots, it will be advisable, under such circumstances, to allow each plant to swell off a couple of fruit, which will draw off the pent-up sap. Ventilate the houses in which these plants are growing freely on all favourable occasions, so that they may make a short-jointed and consolidated growth, which will, all other points being duly attended to, enable them to pass through the rigour of winter satisfactorily.

Plants in the second house, which were raised from seed the end of last or beginning of the present month (September), will even now have reached the first wire of the trellis, to which, as a matter of course, they must be trained in the usual way. Should green or black fly be troublesome, fumigate with tobacco-paper a couple of evenings in succession, when the foliage of the plants and the house in general are dry, which will be better and safer than filling the house too full at one time. Syringe the plants well the succeeding mornings, and ventilate freely, weather permitting. Add some more soil to the hillocks in the succession-house as the roots protrude through the surface of the soil, and see that the plants receive water when necessary—those growing in pots and boxes will need a copious supply frequently. Let the necessary stopping, thinning, and tying of the shoots be attended to as occasion may arise. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

The fine weather, which so fortunately set in some time ago, appears to have left us, and as there is now a sting in the air betokening early frost, it is no longer safe to leave out any plants of a tender nature, nor such as are likely to suffer from heavy rain, which, at this season, soon tells injuriously on hard-wooded subjects, by rendering the soil wet and sour. Before housing them, however, it will be advisable to go over them carefully, and by the aid of the pointed end of a large wooden tally, or some other appliance, remove any mossy growth that may have formed on the surface of the ball, and then thoroughly scrub the pots, as work of this kind can be more readily carried on with plenty of space outdoors than it can under cover, and the same with any washing or cleansing the plants may require. Should this be requisite, as is generally the case with Camellias and Azaleas, the latter being often infested with thrips or red-spider, the best way is to lay them on a handbarrow with their heads over the side, where, if the garden engine is brought to play on the foliage, the force of water will not only carry the insects off, but will do much good by removing any dusty deposits that may have accumulated during the summer, and thus set free the breathing pores in the leaves, the perfect action of which is essential to keep them in good health. When arranging the plants under glass, one of the greatest evils to be avoided is over-crowding, as by standing them too close the finest specimens

soon spoil by having the light and air shut out from their base. To prevent this, much may be done by elevating the back rows and placing them on inverted pots, which not only affords more room, but by admitting a free circulation beneath, stops damp, an enemy that has to be fought against in the dull days to be so shortly upon us. It is then that its evil effects are seen on Pelargoniums of the show and fancy class, the leaves of which spot, and although this has been looked on as a disease, I have never known it make its appearance on plants kept in a buoyant atmosphere and in a suitable temperature, with their heads well up to the glass. Any, therefore, now standing in cold frames will be much benefited by being placed on shelves in positions where they can enjoy the full sun, but before removing them they should be examined to see that they are free from aphids, a pest which if not taken in time soon causes irreparable mischief. The zonal sections of Pelargonium are fortunately exempt from the attacks of all insects; but to keep them in safety during the winter it is necessary that the young shoots be well ripened, which may be done even yet by partly withholding water, as the check at once hardens the tissues by limiting the flow of sap, and thus causes woody matter to form. The same treatment will prepare Fuchsias for storing away, and when the leaves fall, if room cannot be spared, they may be slightly pruned in and kept in a cellar or shed; but young stock must be encouraged to grow gently on by giving them a little artificial heat, and shifting them into larger pots as the roots require fresh soil. Cinerarias and Primulas, too, now need the same attention as the latter; the soil for these to grow in should be rich and light, with a fair amount of sand to keep it open and porous, that water—of which, by-the-bye, they will take almost unlimited supplies—may pass quickly and readily through. In the cultivation of these popular plants nothing answers better than an admixture of very rotten manure, in which both they and herbaceous Calceolarias will be found to luxuriate. The last-named delight in a damp house or pit, as do also Cinerarias, and on sunny days a syringing will be found to do them much good; but, as regards Primulas, care will be required after this to prevent their damping off at the collars. The double kinds are very subject to go in that way, and being more tender it is requisite for them to have a night temperature not lower than 45° or 50°, in which, if placed near the glass, they flower freely and last a long time in perfection.

CONSERVATORIES.—The fast waning light renders it necessary for the welfare of the occupants of these structures, that the climbers be well thinned out, as from the rapid growth which most of them make they so overshadow all beneath in such a way that the sun is completely shut out, and without a fair amount of the solar rays flowers at this season soon languish and fall. In the case of Passifloras, Tacsonias, and such-like, that flower on the young shoots as they form, all that should be left is just enough to furnish the roof and relieve the bareness, and all that can be spared beyond this the better. To insure rest for the plants, the next thing is to keep the borders dry, but as yet this must not be done with those in which Lapagerias are growing, as these are moisture-loving subjects, and so long as there is any blossom on them will take water freely. Thrips in many places are a great scourge to these plants, and the only remedy, if the house cannot be fumigated for a few nights successively, is to hand-wash the leaves with strong tobacco-water or nicotine soap, the latter of which is a most efficacious and safe insecticide that will drive many others out of the market. In washing the foliage of Lapagerias much care must be exercised, as the least turn breaks them near the footstalk, which not only disfigures them but brings about their loss by decay. *J. Sheppard, Woolverstone Park.*

LOCUSTS IN BEYROUT.—In a recently issued report on the trade and commerce of Beyrout for the year 1879, the British Consul points out the devastation to food crops by the visitation of locusts and the prevalence of drought. In the months of May and June large swarms of locusts appeared along the coast and in the Lebanon, causing much damage to the vegetable crops and fruit trees. Some also appeared earlier in the season, but fortunately at a time when the cornfields were almost ripe, and thus the damage done was small compared to what it would have been had the corn been yet young, when it would easily have been devoured by these voracious creatures. Both the Lebanon and Beyrout authorities made every effort to destroy and exterminate these insects. By the offer of rewards the peasants in the neighbourhood of Beyrout were induced to collect about 4500 oaks of the eggs of the locusts, and in the Lebanon the inhabitants of whole villages, encouraged by the local police, were also actively employed in the destruction of the insects.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Oct 4	Sale of Dutch Bulbs, at Stevens' Rooms; and at the Auction Mart, by Frotheroe & Morris.
TUESDAY,	Oct 5	Sale of Winter-flowering Heaths, at Fraser's, Ten Bridge Road, by Frotheroe & Morris. Sale of Dutch Bulbs, at Stevens' Rooms.
WEDNESDAY,	Oct 6	Commencement of three days' Sale of Plants, at Kewcliffe Lodge, Twickenham, by Hutchinson & Dixon. Sale of Hardy Plants and Bulbs, at Stevens' Rooms.
THURSDAY,	Oct 7	Herford Tannery Fairs commence. Sale of a Collection of Established Orchids, at Stevens' Rooms.
FRIDAY,	Oct 8	Sale of Winter-flowering Heaths, at M.L. Let's Nursery, Lee, S.E., by Frotheroe & Morris.
SATURDAY,	Oct 9	Sale of Bulbs and Plants, at Stevens' Rooms.

THE panic which the appearance of the dreaded VINE LOUSE has created in the Vine growing districts of Europe has led, as our readers are aware, to a series of enactments restricting the importation of plants on the part of several countries, and of some of our own colonies. These enactments, excusable, if not quite reasonable, in the case of Vines, or of plants grown near them, have been pushed to such absurd lengths that very serious injury is likely to accrue, and very needlessly, to horticultural enterprise. In endeavouring to protect one industry, others will, in the aggregate, equal claims, have been very ruthlessly treated.

In consequence of these over-rigorous enactments some of those persons most interested in the subject have endeavoured, by various means, to obtain some relaxation of the laws regulating the transport of plants from one country to another. Our own Royal Horticultural Society addressed the British Government on the subject. In France and Belgium similar representations have been made, and in the latter country the Syndical Chamber of Nurserymen took the matter up warmly, and at their instance it was made a principal subject of discussion at the recent Horticultural and Botanical Congress at Brussels, one of the Ministers of State presiding for a time over the debates. This agitation has been productive of good results. At any rate, the Swiss Government, on whose territory and under whose auspices the Convention of Berne was framed, has, we are informed, made overtures to the other parties to the treaty to modify the regulations regarding the importation of living plants other than Vines. What success has followed this recommendation in other countries we do not know for certain, but so far as Switzerland itself is concerned trees and plants in pots (always excepting Vines) imported into that country need no longer have their roots divested of earth, it having been found that this restriction altogether prevented the importation of plants in general, and thereby inflicted considerable injury on the trade of horticulturists. The actual text of the *arrête* of August 18, 1880, runs thus:—

"Plants, trees, shrubs, and various horticultural products which cannot be forwarded without a ball of earth may be admitted into Switzerland, and may be circulated therein, on these conditions:—

"a. That they come from a district reputed to be free from Phylloxera, and noted as such on the special map compiled and revised up to date by the State in question.

"b. That they have not been recently imported into the district from which they are sent.

"c. That the establishment whence they are forwarded contains no Vines, has no trade in them, and is not in the immediate neighbourhood of any 'plantation' of Vines."

With reference to other countries, Spain has enacted a temporary prohibition against the introduction of plants of the genera *Cissus* and *Ampelopsis* (presumably also *Vitis*!). A special International Congress is also being held at Saragossa to consider the whole subject. This Congress was to open on October 1, and continue till the 10th of the same month.

Portugal requires the certificate of a Portuguese Consul to the effect that Phylloxera

does not exist in the place whence the plants are exported.

Of the general regulations enacted by the Berne Convention we have already spoken at length, and have indicated the countries which have ratified that treaty.

In the case of the non-contracting States, it is pointed out by the Swiss Government that the only means to prevent the horticulturists of such States from experiencing the inconveniences of which they complain, would be to secure the adhesion of their Government to the International Convention, in virtue of which adhesion they would immediately be in a position to avail themselves of the benefit secured by the new arrangement.

We greatly fear that the spread of the Phylloxera will, in no material degree, be prevented by any such regulations as we have alluded to; while, on the other hand, the injury to commercial and scientific horticulture is great, and (as we think, with certain possible exceptions) quite unwarrantable. So far as our South African colonies are concerned, we call special attention to the letter at p. 429, from King William's Town, from which some idea may be gained of the utter absurdity of the restrictions imposed and the injury they are likely to cause, not only to horticultural enterprise, but to the well-doing of the colonies in question.

— SECOND FLOWERING OF A PEAR TREE. —

There is a pomological curiosity of the season at Chiswick, in the form of a fine pyramidal tree of the Charles Van Mons Pear, which, having a fine crop of flowers wholly destroyed in spring by frost, came into bloom again in June, and is now heavily laden with fruit—a remarkable display of vigour, after such a season as that of 1879.

— A NEW VINE. — A French explorer, M.

LECART, who is at present on the banks of the Niger, writes home from "Koundian (Gangaran), July 25," that he has discovered a new Vine, which promises to be of great economical value. He says the fruit of the Vine is excellent and abundant, its cultivation very easy, its roots tuberous and perennial, while its branches are annual. It can be cultivated as easily as the Dahlia. He himself had been eating the large Grapes of the Vine for eight days, and found them excellent; and he suggests that its culture ought to be attempted in all Vine-growing countries, as a possible remedy against the Phylloxera. He is sending home seeds for experiment, both in France and Algeria, and will bring home specimens of the plant at all stages. It was not without danger that M. LECART has been able to make this discovery, as he states that the people of the Soudan are in a state of great excitement and apprehension at the many attempts of white people to penetrate into their country. The story of the last expedition sent by France into the south of Algeria has spread to all parts, and the conviction of the natives is that the travellers are collecting information preparatory to conquest. Perhaps the natives are not very far wrong. *Times*.

— AGRICULTURAL SCIENCE IN THE STATES.

—Recognising the need of an educated public sentiment in order to secure progress in agricultural pursuits, several gentlemen who were inspired by the good work done by the American Pomological Society have formed themselves into a society for the promotion of agricultural science. The annual meetings at present are to be held at the same place and time as those of the American Association for the Advancement of Science. The subjects specially to be treated of are Botany and Horticulture, Pomology, Entomology, Agriculture, Agricultural Chemistry, Physics, Dairy Science, Veterinary Science, and Vegetable Pathology. The names of those associated with the new Society comprise those of Professors BEAL, FARLOW, BARRY, COMSTOCK, JOHNSON, KEDGE, and many others.

— THE TURNIP OIDIUM. —

The Rev. J. M. DU PORT writes from East Dereham that there has been an affection of Swedes near there, which he at first took for a prodigious development of the old

Turnip-mould (*Peronospora parasitica*). The affection, however, appeared to be very peculiar, and on reading our last week's article on the Oidium, Mr. DU PORT submitted the fungus to the microscope, and at once found it to be identical with *Oidium Balsamii*.

— THE BELLE JULIE PEAR.—In the collection of pyramidal Pear trees at Chiswick there are a few varieties of Continental origin, which year after year demonstrate in the most forcible manner their great value as certain croppers in our climate, yet which are almost unknown to our gardeners—and our nurserymen too, for the matter of that. Amongst these is Belle Julie, a variety which naturally forms a handsome pyramidal tree, and always carries a crop of fruit. Indeed, no variety that we are acquainted with is better entitled to the designation of "a grand bearer." The fruit is somewhat below medium size, the flesh yellowish-white, of the Winter Nelis character, and delicious in flavour. Its season is November.

— THE BLENHEIM ORANGE MELON.—Mr. CRUMP informs us that he has sold the entire stock of this fine new Melon to Messrs. JAMES CARTER & Co.

— THE MANUFACTURE OF MANIOC FLOUR

AND TAPIOCA.—In the *Journal of Applied Science* for the current month is an interesting paper on the Mandioca, or Tapioca plant, and its uses, from which the following facts are gathered:—The root, it is stated, forms the chief aliment for eleven millions of inhabitants, of every colour, situated on an immense territory of Brazil, twelve times as large as France itself. The plant was known and cultivated by the natives long before the discovery of Brazil. Two kinds of Manioc, or Mandioca, are known, the best and most productive having a bitter poisonous juice in its roots, and is known to botanists as *Manihot utilisima*, while the sweet kind is known as *M. Aipi*. This is cultivated for use in the preparation of the Brazilian pepper-pot, and it is prepared by boiling the meal with some Pumpkin, sweet Potatoes, Turnips, &c. The cultivation of the bitter kind is simple and very productive. It grows anywhere in the moist plains near the sea, in the depths of the valleys, and on the hillocks and slopes as high as 3000 feet. In the damp plains it is cultivated in straight ridges, and on the hillocks, or on the divided lands, the cultivation is made flat. The plant is easily propagated by slips, which take root readily, and these form in the second or third year, according to the land upon which they are grown, a bush of from 6 to 9 feet high, resembling in general appearance the Castor-oil plant. If the plants were allowed to grow for any length of time they would flower and produce seed, but it is found more profitable to dig them up in the third year. The preparation of the meal is carried on in a rough manner near a stream of running water. The mortar is a wheel of ladles on a vertical stem, which hardly utilises a tenth of the power. To the upper part of the stem is fixed the rasp; this is a drum formed of tin, which is used for grating. The roots are pulled up, the thick rind removed, and then pressed by the hand against the rasp, or grater; the pulp falls into a sack, which is pressed by a lever or screw; it is afterwards ground and pressed again, and finally rapidly dried by heating and stirring in a flat basin. The poisonous juice is removed in a great measure by washing, and the remainder is dissipated in the process of drying. Manioc flour, which is produced by the process here described, supplies food for an immense majority of the Brazilian population. The national mess, the "frejoada," is a sort of pastry made of a layer of Manioc flour in the black broth that they obtain from cooking with plenty of water over a good fire black Haricots, with lard, and a piece of meat dried in the sun. Manioc flour, as it is called, will be seen to be not a true flour, but in reality a mixture of fibrous matters, roughly torn by the grater, combined sometimes with fibres of a centimeter long, much starch not carried away by the washing water, and nitrogenous matters. Mixed with broth, or milk, it makes a good porridge, which would be much better if the root were more finely rasped or grated. In the water used for washing Manioc flour is deposited starch in large quantities, and from this the Tapioca of commerce is made by throwing it, after being well drained, into a copper basin over a fire, taking care not to over-heat it; by

this process it gets crisp, becomes partially baked, and forms into the well-known irregularly agglomerated masses. The author of the paper from which the foregoing has been principally collected, thinks that Manioc flour and Tapioca might be produced on a much more economical and profitable system were it to be taken up by Europeans, with perfected machinery, and to suppress the peeling of the roots, by which a large proportion of starch is wasted.

— **FRUIT PRODUCE OF THE AZORES.**—During the year 1879 there was exported from the Azores to the English market 263,205 malotes of Oranges, 3485 malotes of Tangerines, 39,869 Pine-apples, and 504 bunches of Bananas. London received about

Fir, Pine, Birch, Beech, Maple, Oak, Poplar, Elm, Plane, Ash, Chestnut, and Cornel. But little profit, it is said, is derived either by the Government or the population from these extensive woods.

— **SCLEROTUM DISEASE IN IRISH POTATOS.**—Mr. W. J. GOODE, of Finglas House, Co. Dublin, writing to the *Irish Farmers' Gazette*, says, he observed sclerotia similar with those recently figured by Mr. SMITH in our columns several years ago in the interior of Potato stems. Mr. GOODE's specimens resembled in appearance the excreta of the mouse. Mr. GOODE also describes an "inky fluid" observed by himself in blanched new stalks, and this fluid he is inclined to associate with the sclerotia. Mr.

roots of *Ixias* and *Spiraxis* to be kept as long as possible before planting in the open air, even till they were well nigh shrivelled, and then to plant them. The apparently wasted bulbs will swell out in plumpness and life when put in contact with the moist soil, and in their own time flower finely. Under any circumstances mulching the surface of the bed or beds is necessary as a matter of precaution, as early frosts exercise a most blighting influence on the young growth, and are even more injurious when associated with moisture.

— **CALECOLARIA PAVONI.**—A very distinct species, with sulphur-coloured flowers on freely branched stems, and fine foliage. This seems an

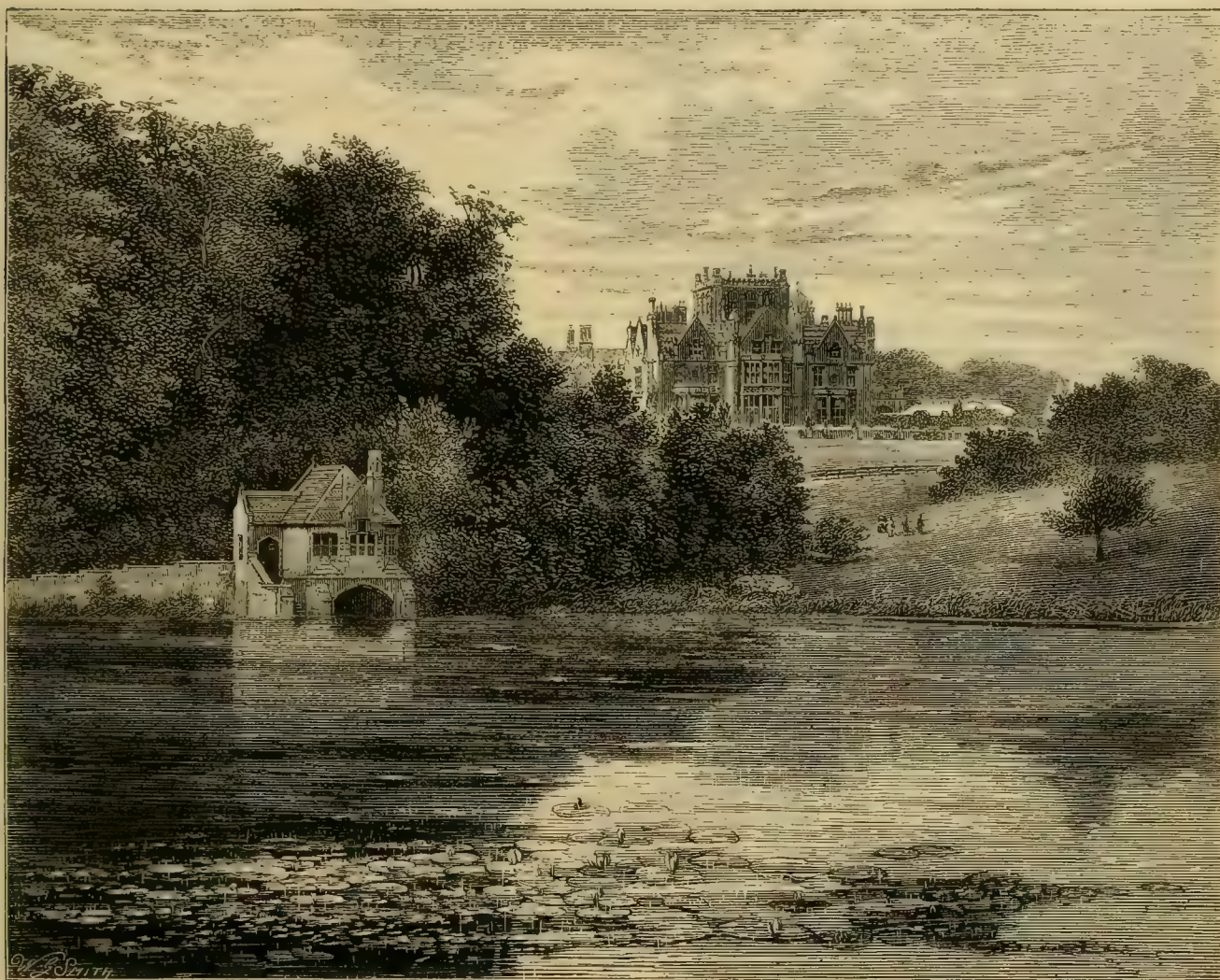


FIG. 85.—TORTWORTH COURT, THE SEAT OF EARL DUCIE. (SEE P. 435.)

half the above mentioned quantity of Oranges, while the next largest quantity was sent to Hull, and the remainder to Bristol. The Orange trees suffered a great deal from a disease characterised by the exudation of gum or resin, and the fruits also on many trees were attacked by mildew and fell off. During last winter the trees in many gardens were nearly stripped of their leaves by the constant and furious gales which prevailed, and in the early spring of the present year they had the appearance of deciduous trees in winter instead of being masses of beautiful and luxuriant foliage.

— **FORESTS IN TREBIZOND.**—The province, and especially the sandjak of Trebizond, is reported to be very rich in forests, covering nearly one-eighth of its entire extent, in the proportion of one-fourth for that of Trebizond proper. These forests consist of

GOODE is, however, quite wrong in supposing that these bodies can represent the resting-spores of *Peronospora*, and he appears to be unacquainted with DE BARY'S essay of 1876, published by the Royal Agricultural Society of England, or Mr. SMITH'S discoveries, published in our columns in 1875.

— **IXIAS AND SPARAXIS IN THE OPEN AIR.**—It is an undoubted fact that these charming Cape bulbs are much less grown in the open air in this country than formerly. Perhaps there are two main reasons operating to bring this about; one being that it is not easy to secure the fine, light, warm, free, sandy soil that suits the roots; the other that the plants are so apt to be destroyed by spring frosts. Mr. THEODORE LOCKHART, who many years ago grew Cape bulbs largely and successfully in Hackney, Fulham, and other places, always recommended the

especial favourite at Wimbledon with Mr. JOAD, who is growing it largely in pots, and with whom some fine plants, average 3 feet 6 inches in height and 2 feet through, are making a fine display with their profusion of blooms.

— **CHINESE WHITE WAX.**—From an article in the *British Mail* on the white wax industry of China, it seems that the average annual value of this peculiar crop amounts to about £650,000. From Hankow alone upwards of £81,000 worth of this wax was exported in 1879. The Chinese white wax is a deposit found on twigs of *Ligustrum lucidum*, and caused by the puncture of an insect. It is said that in Keenchang district the plant thrives in great abundance, and in the spring of the year the twigs are covered with countless swarms of flies having the appearance of a brown film. The branches soon become

covered with a white soap-like incrustation, which increases in volume till the commencement of the fall of the year, when the sprays are cut off and immersed in water which is kept boiling. "The viscid substance rises to the surface, and is skimmed off, melted, and allowed to cool in deep pans. It was accidentally discovered, that by transporting the insects from their native districts to the more vigorous one of Keating-fu, in the north of the province, their power of discharging wax was largely augmented—a property which was promptly and extensively availed of by the Sze-chum traders. The period between evening and morning is chosen for conveyance, because many hours of sunlight would precipitate the hatching. This should take place only after the females have been attached to the trees. Arrived at their destination, six or more of the mothers—which are enormously prolific—are tied, wrapped in a Palm-leaf, to a branch of the Ligustrum. A few days later the young flies are swarming on the twigs, where they fulfil their mission by the month of August; then they perish in the cauldrons, where the results are immediately collected. It is stated that this peculiar industry requires the exercise of great care and forethought."

— *PRIMULA SINENSIS*, SINGLE AND DOUBLE. —Amateurs and others growing these plants, and who wish to keep them clean and vigorous, would do well to leave the light off during the nights on which heavy dews are expected, until the weather becomes too cold for such an operation, when they will find that their plants have greatly benefited. The same plan may be equally well adopted with *Cinerarias* and other like plants.

— PROPERTY IN A FLOWER.—To be possessor of a flower it is not sufficient to say it is mine, it is not enough to love or admire it, it is requisite thoroughly to understand it in all its parts, to appreciate all its harmonies, to know its affinities, the place it occupies among other plants, the regions it inhabits or in which it may dwell. We must be initiated into its sympathies and preferences as into its antipathies, we must know its temperament, its caprices, its tendencies, its passions, its instincts, and its soul! So says M. GERMAIN in the *Journal des Roses*.

— COLD WEATHER PERIODS SINCE 1764. — Mr. BUCHAN submitted a communication on the cold weather since November compared with cold periods from 1764. The cold weather, he said, they had been suffering from since November last was of such a nature as to become historically memorable for the unprecedented cold which had been its characteristic. The cold had varied considerably at different parts of the British Islands. The depression of temperature was least in the Hebrides and those parts of the country farthest from the east coast, and most open to the Atlantic. There the average depression of temperature on the seven months was about 2° below the average. In the south of Ireland and the Channel Islands the depression was about 3°; along the Channel it was generally about 4°; then an average depression of 5° swept round a little to the north of London, round to Wales and Liverpool, up to Silloth, through the centre of Scotland as far as the Spey, and out at Berwick. In the centre of England the patch of greatest cold, amounting to fully 6°, occurred in the plain of the Severn, the greatest cold being thus felt in the most inland situations. Since, at least, 1764, from which year their thermometric observations date, they had had no such cold of equal intensity and duration combined as they had had during the past seven months. Once a near approach was made to it in 1782, when during seven months the temperature was 5.2 below its average; during, however, the past seven months, in some parts of Scotland the cold was nearly 6° below the average. In 1792 there was a great summer depression of temperature, lasting from February to the month of November. Another cold period was from September, 1798, till March, 1800—nineteen months—which was the longest continued cold period they had had in Scotland. On every one of those nineteen months the mean temperature was below the average. In the middle of this period occurred the "great dearth" at the end of the last century. The next longest period occurred from September, 1859, to January, 1861, a period of seventeen months, when during no month did the temperature rise to its average. They had had a period of fifteen months—

from October, 1815, to December, 1816—when the temperature fell 3°, on the mean, below the average. Dividing these 115 years into longer periods, he found that from 1799 to 1824 there was a period marked by a great deficiency of temperature which embraced the cold winters their fathers spoke about. During the whole of that extended period, in only two of the years did the mean annual temperature rise to the average. The temperature was generally about a degree below the average. In the next period of thirty years the mean temperature was above the average by fully half a degree; but since 1853 there had been an oscillation, the temperature seldom going much above or below the average. The diminution, on the mean of the last twenty-seven years, was just one-tenth of a degree below the average. To sum up—from 1764 to 1781 the mean was 0.65 above the average of the 115 years; from 1782 to 1786 it was 2.02 below it; from 1787 to 1796 it was 0.76 above it; from 1797 to 1824 it was 0.99 below it; from 1825 to 1852 it was 0.65 above it; and from 1853 to the present it has been 0.09 under the average. The most remarkable contrasts were shown in the ten years from 1777 to 1786, the first five of these years being on the mean 1.90 above the average of the 115 years, and the last five years, as already stated, 2.02 below it. The unequal and irregular duration and intensity of these abnormally cold and warm periods in the climate of Scotland is perhaps the most important point brought out in this discussion. *Report of the Council of the Scottish Meteorological Association.*

— *HELIANTHUS GIGANTEUS*. — Mr. LYNCH sends us from the Cambridge Botanic Garden a sample of this showy late-flowering hardy perennial, which would form a very useful plant for the back line of herbaceous borders, or for any other position where subjects of 5 or 6 feet high are not out of place. Its tall stems are furnished with scabrous, lance-shaped leaves some 5 or 6 inches long, the stem being alternately branched near the top, and each branch terminated by a large flower-head about 3 inches across, the acute, yellow ray florets spreading around a yellowish disk. The branches are by no means ill adapted for use in vases as cut flowers.

— *HELIANTHUS STRUMOSUS*. — A pretty tall-growing hardy perennial furnished with ovate, scabrous, triple-nerved stalked leaves, about 5 inches long, the stems branching towards the top, and bearing showy golden-yellow flower-heads measuring some 3 inches or more across. This and some other of the tall-growing *Helianths* are useful plants for the shrubby border, or for the back of the herbaceous border, and furnish an attractive patch of colour during the autumn when many of the floral ornaments have faded away. We have received specimens from Mr. LYNCH, of Cambridge.

— THE WHEAT CROP. — Mr. LAWES informs us that the predictions made last autumn as to the badness of the Wheat crop have been fully realised, and that not one fourth of the Wheat consumed by our population was grown on our own soil. The average yield was only about 16 bushels per acre—the worst result known in the present century. For the present year Mr. LAWES estimates the crop will prove slightly over average—about 30 bushels per acre. He further estimates that we shall require nearly 25,000,000 of quarters of Wheat to feed our population for the year ending August 31, 1881, to supply which we must receive from foreign countries about 14,000,000 quarters, and that 57 per cent. of our population will have to be fed on foreign Wheat. This dependence on foreign supplies it is assumed will increase in amount year by year.

— *VITEX INCISA*. — Mr. LYNCH describes this to us as a very pretty and attractive plant, as indeed the specimens he has forwarded sufficiently indicate. It is a woody plant, of stiff but slender growth, with opposite palmate leaves, consisting of five lanceolate deeply-incised leaflets, and a paniculate inflorescence of small clustered flowers, of a pleasing tint of pale rose or rosy-lilac.

— FIR TREE OIL. — A sample of this insecticide, placed in our hands for trial, when made the subject of experiment was found to be very effectual in killing the insect pests, without doing any injury to the

plants. Used of the strength of half a pint to four quarts of soft water—one of the mixtures recommended—and applied by dipping, we find that it killed all mealy-bug and scale with which it came in contact; but for the purpose of killing newly hatched stragglers we should recommend a second dipping after an interval of a day or two. The mixture was used in the cool state, and the tops of the plants gently moved about in it for the space of a couple of minutes. We look upon it as being a very useful help to the gardener in keeping his insect enemies in check.

— NICOTINE SOAP. — We have found CORRY & SOPER'S Nicotine Soap effectual for the destruction of mealy-bug and red-spider, when made up as recommended by the proprietors, in the proportion of 4 oz. to 1 gallon of water, and used at a temperature of 90° Fahr. The plants were dipped and gently agitated for a few minutes in the liquid. The plants were not in the least injured, so that we may safely recommend the Nicotine Soap as one of the most useful insecticides. In cases where the bug was partially protected, a second dipping killed the stragglers. When used cool, that is, at a temperature of 60°, it had no effect.

— *CHRYSANTHEMUM SOUVENIR D'UN AMI*. — Mr. T. S. WARE sends us flowers of a very pretty white Pompon variety, under the name above quoted. It appears to be a very free-flowering sort, and likely to be useful for decorative purposes and for cutting.

— A FRUIT SHOW AT HEREFORD.—It is announced that an exhibition of Apples and Pears will be held at Hereford on October 27 and 28.

— THE WEATHER.—General remarks on the weather during the week ending September 27, issued by the Meteorological Office, London:—The weather during this period has been dry in all parts of the kingdom, the sky, however, was very cloudy or overcast, and on some days fog or haze prevailed. The temperature was a little above the mean for the season in all districts; the highest of the maxima occurred in most places on the 27th, when the thermometer in London rose to 75°. The minima were not very striking, the lowest reading of all being 39°, which was registered at Glenalmond both on the 21st and 22d. The rainfall was considerably less than the mean in all districts, the greatest deficit being over the central and southern parts of England. Bright sunshine was everywhere very deficient, the percentage of possible duration ranging from 11 in the "Midland Counties," to 33 in "Scotland, E.," and 28 in "England, N.E." The wind was westerly on the 21st and 22d in all parts of the country, but by the 23d it had backed to the south-west, and continued to blow very generally from that quarter during the remainder of the period, but on the 27th calms or variable easterly breezes were experienced at many of the English stations. The westerly and south-westerly currents were generally light or moderate in force, but on the 22d the westerly wind blew strongly at several of our west coast stations.

— GARDENING APPOINTMENTS. — Mr. W. STANTON, late Foreman to Mr. SUMMERS at Sandbeck Park, Rotherham, has succeeded Mr. BURROWS as Gardener to P. B. GREENWOOD, Esq., Swarcliffe Hall, Ripley, Yorks. — Mr. G. AMERSON, late Gardener to JOHN BREWIS, Esq., of The Heights, Newton-le-Willows, Lancashire, has been appointed Gardener to C. E. ASHTON, Esq., of Leeswood Hall, Mold, North Wales. — Mr. C. DAVIES, late of Woodcote, Newport, Salop, succeeds Mr. SANDFORD as Gardener to C. N. P. PHIPPS, Esq., M.P., Chalcot, Westbury. — Mr. T. BEDDARD, late of Beechwood, Tunbridge Wells, succeeds Mr. ELPHINSTONE as Gardener to Lord LEIGH, Stoneleigh Abbey, Kenilworth. — Mr. JAMES BENNETT, for ten years Gardener to the late Baron HAMBO, of Milton Abbey, Dorsetshire, has been appointed Gardener and General Manager to P. SAILLARD, Esq., Tillgate Forest Lodge, Crawley, Sussex. — Mr. MCNICOL, late Gardener to A. C. H. PERCY, Esq., Hodnet Hall, near Market Drayton, Salop, has been appointed Gardener to W. BURCHELL, Esq., Laleham, near Staines. — Mr. A. HAMSHIRE, late Gardener to Mrs. ELLIS, of The Brand, Loughborough, has been appointed Gardener to Sir W. SALT, Bart., Mapplewell, Loughborough.

TORTWORTH COURT.

THE Gloucestershire seat of Earl Ducie (see fig. 85, p. 433) is situated some fifteen miles from Bristol. The approach is on the main road leading from Bristol to Wotton-under-Edge, which passes through the estate at a short distance eastward from the entrance to the grounds surrounding the mansion, at which point there is a very handsome lodge and massive archway built of stone, in keeping with the character of the mansion. Pausing for a moment opposite this noble arched gateway we notice the excellent effect that Ivy, when judiciously planted, has even on a new erection; for this, like the mansion, is comparatively new, and, from the light colour of the stone, looks still newer than it is. The Ivy is planted, and covers the stonework on the opposite side to that on which the lodge stands from the base up to the crown of the arch, with a thick green mantle, admirably toning down the effect which the massive stonework would otherwise have. Tastes differ, but if an opinion might be ventured, I should say that the covering is now just far enough, and looks much better and more artistic than if the whole were clothed. Once through the lodge gates there are two things perceptible—that the planting of evergreen trees known to this country during the present century has here kept pace with their introduction, and also that they will thrive in a way they are very far from doing in many places; and further, a common-sense course has been followed in planting them where they have room enough to grow without being encroached upon after a few years by existing trees, which cannot be spared. The absence of such forethought is so often apparent that one might suppose the planters forgot that the trees they put in would ever require more room. Timber generally grows well here, the place being studded with fine deciduous trees, amongst which Wellingtonias, Araucaria imbricata, and others of a like character have been freely introduced, in groups and single examples, and grow in a way that is not observed in many localities. They are not confined to a few isolated spots, but are here and there at intervals over the extensive grounds.

Leaving the lodge and following the carriage road towards the mansion there are some beautiful examples of these trees both to right and left. The largest of the Wellingtonias stands here, 52 feet in height. The road from this point descends, crossing a deep ravine, to the right of which is an arboretum, occupying an extensive piece of ground undulating in surface and rising to a considerable height in a north-eastern direction, affording advantages alike for the requirements of the different species of trees grown, evergreen and deciduous, as well as for giving an effect to the whole, especially as seen from several different points of the adjacent grounds. A number of magnificent Beeches, Spanish Chestnuts, and other old deciduous trees, are scattered in groups over the arboretum, and give character to the younger examples coming on. A few of the best of these have reached the following heights:—*Taxodium sempervirens*, 49 feet; *Cryptomeria Lobbi*, 55 feet; *Wellingtonia gigantea*, 49 feet; *Picea lasiocarpa*, 22 feet; *P. bracteata* (true), 28 feet, a splendid young tree; *P. firma*, 20 feet; *Pinus Jeffreyi*, a beautiful specimen; *P. Sabini*, *Abies Douglasii*, and many others equally handsome, thriving trees, that look as if there was every likelihood of their continuing to grow on freely. There is also here a remarkable specimen of *Castanea chrysophylla*, 20 feet in height, said to be the largest plant in Europe. Besides the ordinary kinds of deciduous trees usually met with, others of a promising character likely to thrive in this country are added as they make their appearance, rendering this part of the grounds of exceptional interest to all lovers of arboriculture.

Returning from this point to the bridge before spoken of, to the left there is an extensive group of large-growing Austrian Pines. Amongst the commoner varieties that have been planted, trees of sterling merit like this Pine have not been omitted; the beautiful effect of its intense deep green foliage, associated with paler-leaved kinds, is apparent from this point. At a short distance stands the mansion, a noble building in the Tudor style, completed in 1853. It is in the form of a parallelogram, and is constructed of stone procured on the estate, with dressings of limestone and freestone. It has an imposing lantern tower and a couple of small turrets. The entrance porch is par-

ticularly handsome. The situation is a beautiful one, being at the head of the gently sloping ground overlooking the lake which lies southward from it not far away, the flower garden and broad stretch of undulating lawn beyond intervening. There are a good many very interesting plants grown out against the walls of and about the mansion, that thrive in a way it would be useless to expect in a less favourable locality. The white-flowered evergreen shrub *Choisya ternata* has been here for two years, and is doing very well, not injured by the severity of last winter; the precaution of hanging a mat before it was taken, and with this protection it has escaped harm. *Vitis polymorpha*, also uninjured, is rambling along with *Clematis Jackmanni* on the gun-room attached to the house; near it is *Lapageria rosea* with a quantity of healthy young shoots 3 feet long springing up from below the surface, to which it has been cut down the last two winters, although it also had a mat covering.

The conservatory stands here, to the east side of the mansion; it is a very handsome structure, composed of stone, iron, and glass, built by Hope, of Birmingham, in his usual substantial style, yet, with the advantages of the position it occupies, affording plenty of light to enable the plants within it to do well. The central portion, kept at an intermediate temperature, is cruciform in shape, with two smaller divisions right and left, which are kept cooler. It is a costly erection, nothing having been spared to render it a fitting adjunct to the palatial residence it adorns. Its principal occupants are Tree Ferns, Palms, and similar plants that attain a considerable size, with the ordinary smaller flowering and fine-leaved subjects to keep it gay. *Bougainvillea glabra* was blooming as this unsurpassed climbing plant only does when it has room to extend freely.

The extensive dressed grounds immediately surrounding have been well planted with a good selection of shrubs and trees, amongst which may be named *Abies Albertiana*, 24 feet high; *Torreya myrsinica*, 15 feet by 12; the Chinese *Photinia serrulata*, 16 feet by 16—uninjured; *Juniperus recurva*; *Pyrus nivalis*, a beautiful specimen; *Liquidambar*, an equally fine example; *Pinus maritima*, *Picea cephalonica*, *Cupressus Lambertiana*, the Osage Orange, and the handsome *Betula papyracea*, with its bark unusually silvered. Through the rage that the present generation has seen for planting evergreens to the all but exclusion of deciduous trees this finest of the white-barked Birches is much seldomer met with than it deserves to be. To the south of the mansion is the flower garden, which, either as looked down upon from the terrace above or when viewed more closely, has a very good effect, the disposition of the beds and the planting being alike well done. There is much less formality than one usually meets with—a good many evergreens, such as Irish Yews, are interspersed in the design; which, together with the number of subjects attaining larger growth than the ordinary occupants of the flower garden, give more freedom and relief in the surface than where the ordinary run of plants are alone used. When I saw it at the beginning of August it was in excellent condition.

Beyond the flower garden, on the beautiful sloping well kept turf, there are a number of the best evergreen trees judiciously disposed, with no approach to the objectionable dotting style of planting so frequently seen, which gives no repose or breadth of open surface, even whilst the trees are young, and this becomes intensified as they get large enough to show their character. The newer kinds of *Taxaceae* and *Coniferous* trees appear to thrive here equally with those that were introduced earlier in the present century. *Retinospora pisifera* is in splendid health, some 12 feet high by 10 feet through—the spread of its lower branches; *R. squarrosa*, 12 feet high; *R. obtusa*, 18 feet high by 10 feet through; *R. pisifera aurea*; *Thuja Lobbi* [gigantea?], 28 feet—as handsome and perfect a pyramid of elegant feathery foliage as it is possible to imagine; *Juniperus drupacea*, 10 feet in height; *Prunus Myrobalana*, fruiting freely. These are a few amongst the many distinct and handsome trees and shrubs with which these beautiful grounds are furnished.

There is a very interesting alpine garden lying further to the south from this point, recently made by Mr. Shingles, the present gardener, who, in the short duration of my acquaintance, extending to the few hours of my visit, impressed me as being a genuine enthusiast in all he has to do with trees, fruit, flowers, and plants, down to the pretty alpine in this garden, which is situated on the crest of a ridge, where, shel-

tered but not overhung by trees, many things will thrive that would fail in a less favourable position. The best of the Saxifrage, Sedums, and a general assortment of alpine and other flowering plants, with hardy Ferns interspersed, and the rarest kinds of shrubs, are doing well. A walk from the alpine garden leads in a quick descent to the lake—a fine sheet of water, occupying the space between two high, thickly wooded ridges running in a southern direction from the pleasure grounds. There is a beautiful shady path following the edge of the water all round under the dense overhanging branches of Beech—the tree that principally clothes these slopes, and in most places standing so close that they have formed long, straight trunks as smooth in the bark as if polished, proving that the soil (a stony brash) suits them well. At the extremity of the lake is an example of *Picea nobilis* planted in 1842; it has now attained a size that gives some idea of what this fine tree will ultimately become. Not far from it is *Larix Kämpferi*, 20 feet in height.

Returning on the opposite side of the water in the direction of the mansion the park is again reached, where a number of very fine *Araucarias* and other coniferous trees meet the eye, showing how well they thrive in every part of the grounds. The garden wherein are the various plant and fruit houses is situated in a north-eastern direction, at some distance, and to it there is a convenient approach leading from the main road. Commencing at this point, the first structure is a long, lean-to house, erected some six years ago against a wall covered with Apricots—fine thriving trees, but which have not borne well, consequently they are to be removed, and the space filled with Peaches, of which, from the length of wall, it is calculated to give a plentiful supply. Not far from this is the principal range of fruit-forcing houses, the first of which is a lean-to vinery planted last June twelvemonth with Black Hamburgs and Foster's Seedling that have made excellent growth. A similar house adjoins, three years planted; both these, when fully established, are intended for early forcing. Adjoining are two Peach-houses, occupied with good well-proved kinds, such as Grosse Mignonne Peaches and Elruge Nectarines; these have been forced to come on in succession. The trees occupy a trellis in front up to the glass. The back walls of both these houses are covered with Camellias, planted out—clean healthy plants, that furnish plenty of flowers during the winter; those in the earliest forced house, as a matter of course, make their growth and bloom early, the flowers beginning to open soon after the house is started in November. Next in the same range is a vinery, the latest but one; in it there is a mixed lot, consisting of Black Hamburgs, Muscats, Pearson's Golden Queen and Lady Downe's, which were ripening a good useful crop.

From this we enter another vinery, all Black Hamburgs and Duke of Buccleuch, forced to come in first. In the adjoining house, also a vinery, the crop was ripe, the sorts Black Hamburg and Foster's Seedling. Leading from this is the latest vinery: the kinds are Lady Downe's, Gros Colmar and Venn's Seedling, carrying a good crop, just commencing to colour. Mr. Shingles is an advocate for ripening in good time when the fruit has to be kept late. Some of last year's crop of Gros Colmar and Lady Downe's kept up to June, they were bottled the first week in December. The roots of the three first houses of these old Vines are all in outside borders, in the last house the roots are part inside and part out; for the last three years the crop of the earliest has been ripe the first week in May; they afford substantial evidence against the use of fermenting material on the border, and even do something to shake the belief that any covering at all is an advantage. Until they came into Mr. Shingles' charge those that were forced had fermenting matter laid on the border in the usual way, a little more being added as the warmth weakened. Mr. Shingles has never used anything, not even so much as a covering of litter or leaves, and he assured me that whilst he could not find living roots within a foot of the surface when he first came, they are now in quantity right up to the top—the crops, as might be expected from the presence of plenty of surface-roots, being superior and colouring better.

There are also two lean-to houses devoted to Figs. The sorts grown are Brown Turkey and Negro Largo, planted out. These were in very good condition, producing quantities of fruit through the season. They occupy the back wall and body of the house as well.

Not far from the principal range of fruit-houses above mentioned there is a roomy span-roofed plant-house, filled with ordinary greenhouse stock for conservatory decoration and the production of flowers for cutting, amongst which were a number of well-managed examples of the old *Trachelium cœruleum*, one of the best summer decorative subjects that can be grown. The heads of flower are in form not unlike those of *Spiræa palmata*, the largest as much as 9 inches in diameter from a 6-inch pot, with a number of smaller ones to each. They are bright blue in colour, but vary if raised from seed, for which reason it is better to strike cuttings, selecting them from such as are of the brightest shade. Cuttings struck early in the spring will bloom the same summer; the flowers will last fresh for two months.

Adjoining is another span-roofed house, occupied by a mixed collection of stove plants, flowering and fine-leaved, and a selection of Orchids, consisting of *Vandas*, *Aerides*, *Dendrobiums*, *Cattleyas*, *Cypripediums*, *Calanthes*, and others, with the Dove-plant (*Peristeria elata*) nicely in flower. Amongst the stove blooming plants *Clerodendron fallax* and *Ixora coccinea* were very well grown; the latter I look upon as no bad test plant in the warm stove section, for if it thrives and flowers well the treatment is generally such as to induce most other heat-requiring things to grow satisfactorily. In a long range of pits there was an extensive and well-grown lot of winter decorative subjects, consisting of *Bouvardias*, *Eranthemums*, *Solanums*, and others of a like character. There is also a select lot of *Amaryllis*, consisting of named kinds and seedlings. *T. Baines.*

(To be continued.)

AGRICULTURAL CHEMISTRY.

(Continued from p. 398.)

RESPIRATION OF PLANTS.

I SUPPOSE I shall be considered a heretic if I venture to suggest that it seems in a sense inappropriate to apply the term growth to that which is associated with actual loss of material, and that the term respiration should be applied to so secondary an action as that, as the result of which, carbonic acid is given off from the plant. It may, I think, be a question whether there is any advantage in thus attempting to establish a parallelism between animal and vegetable processes; rather would it seem advantageous to keep prominently in view their contrasted, or at any rate complementary characteristics, especially in the matter of the taking up of carbonic acid and the giving up of oxygen on the one hand, and the taking in of oxygen and the giving up of carbonic acid on the other.

But it is obvious that in latitudes where there is comparatively continuous daylight during the periods of vegetation, the two actions—designated respectively assimilation and growth—must go on much more simultaneously than where there is a more marked alternation of daylight and darkness. In parts of Norway and Sweden, for example, where, during the summer, there is almost continuous daylight, crops of Barley are grown with only from six to eight weeks intervening from seed time to harvest. And Professor Schübele, of Christiania, after making observations on the subject for nearly thirty years, has recently described the characteristics of the vegetation developed under the influence of short summers with almost continuous light. He states that, after acclimatisation, many garden flowers increase in size and depth of colour; that there is a prevailing tinge of red in the plants of the fields; that the aroma of fruits is increased, and their colour well developed, but that they are deficient in sweetness; and that the development of essential oils in certain plants is greater than in the same plants grown in other latitudes. Indeed, he considers it to be an established fact, that light bears the same relation to aroma as heat does to sweetness.

INFLUENCE OF THE ELECTRIC LIGHT.

In connection with this question of the characters of growth under the influence of continuous light, compared with those developed with alternate light and darkness, the recent experiments of Dr. Siemens on the influence of electric light on vegetation are of considerable interest.

In one series of experiments, he kept one set of plants entirely in the dark, a second he exposed to electric light only, a third to daylight only, and

a fourth to daylight, and afterwards to electric light from 5 to 11 P.M. Those kept in the dark acquired a pale yellow colour, and died; those exposed to electric light only maintained a light green colour, and survived; those exposed to daylight were of a darker green colour, and were more vigorous; and lastly, those submitted to alternate daylight and electric light, and but a few hours of darkness, showed decidedly greater vigour, and, as he says, the green of the leaf was of a dark rich hue. He concluded that daylight was twice as effective as electric light: but that, nevertheless, "electric light was clearly sufficiently powerful to form chlorophyll and its derivatives in the plants."

In a second series of experiments one group of plants was exposed to daylight alone; a second to electric light during eleven hours of the night, and was kept in the dark during the day; and a third to eleven hours day, and eleven hours electric light. The plants in daylight showed the usual healthy appearance; those in alternate electric light and darkness were for the most part of a lighter colour; and those in alternate daylight and electric light far surpassed the others in darkness of green and vigorous appearance generally.

I have carefully considered these general descriptions with a view to their bearing on the question whether the characters developed under the influence of electric light, and especially those under the influence of almost continuous light, are more prominently those of assimilation or of growth; but I have not been able to come to a decisive opinion on the point. From some conversation I had with Dr. Siemens on the subject, I gather that the characteristics were more those of dark colour and vigour than of tendency to great extension in size. The dark green colour we may suppose to indicate a liberal production of chlorophyll; but if the depth of colour was more than normal, it might be concluded that chlorophyll had not performed its due amount of assimilation work. In regard to this point, attention may be called to the fact that Dr. Siemens refers to the abundance of the blue or actinic rays in the electric arc, conditions which would not be supposed specially to favour assimilation. On the other hand, the vigour, rather than characteristic extension in size, would seem to indicate a limitation of what is technically called growth, under the influence of the almost continuous light.

Among the numerous field experiments made at Rothamsted, we have many examples of great variation in depth of green colour of the vegetation growing on plots side by side under known differences as to manuring; and we have abundant evidence of difference of composition, and of rate of carbon-assimilation, coincidently with these different shades of colour. One or two instances will strikingly illustrate the point under consideration.

There are two plots, side by side, in the series of experiments on permanent grass land, each of which received during six consecutive years precisely the same amount of a mixed mineral manure, including potass, and the same amount of nitrogen in the form of ammonia salts. After those six years, one of the two plots was still manured in exactly the same way each year; whilst the other was so, with one exception—namely, the potass was now excluded from the manure. Calculation shows that there was a great excess of potass applied during the first six years; and there was no marked diminution of produce during the five or six years succeeding the cessation of the application. But each year subsequently, up to the present time, now a period of fourteen years, or of nineteen since the exclusion of the potass, the falling off in produce has been very great.

The point of special interest is, however, that all but identically the same amount of nitrogen has been taken up by the herbage growing with the deficiency of potass as by that with the continued supply of it. The colour of the vegetation with the deficiency of potass has been very much darker green than that with the full supply of it. Nevertheless, taking the average of the eight years succeeding the first six of the exclusion of the potass, there has been nearly 400 lb. less carbon assimilated per acre per annum; and in some of the still later years the deficiency has been very much greater than this.

We have here, then, the significant fact that an equal amount of nitrogen was taken up in both cases, that chlorophyll was abundantly produced, but that the full amount of carbon was not assimilated. In other words, the nitrogen was there, the chlorophyll

was there, there was the same sunlight for both plots; but the assimilation-work was not done where there was not a due supply of potass.

Again, in the field in which Barley has now been grown for twenty-nine years in succession, there are two plots which have annually received the same amount of nitrogen—the one in conjunction with salts of potass, soda, and magnesia; and the other with the same, and superphosphate of lime in addition. The plot without the superphosphate of lime always maintains a darker green colour. At any given period of growth the dry substance of the produce would undoubtedly contain a higher percentage of nitrogen; but there has been a deficient assimilation of carbon, amounting to more than 500 lb. per acre per annum, over a period of twenty-eight years. Here again, then, the nitrogen was there; the chlorophyll was there; the sunlight was there; but the work was not done.

It may be stated generally that, in comparable cases, depth of green colour, if not beyond a certain limit, may be taken to indicate corresponding activity of carbon assimilation; but the two instances cited are sufficient to show that we may, so far as the nitrogen, the chlorophyll, and the light are concerned, have the necessary conditions for full assimilation, but not corresponding actual assimilation.

It cannot, I think, fail to be recognised that in these considerations we have opened up to view a very wide field of research, and some of the points involved we may hope will receive elucidation from the further prosecution of Dr. Siemens' experiments. He will himself, I am sure, be the first to admit that what he has already accomplished has done more in raising than in settling important questions. I understand that he proposes to submit plants to the action of the separated rays of his artificial light, and the results obtained cannot fail to be of much interest. But it is obvious that the investigation should now pass from its present initiative character to that of a strictly quantitative enquiry. We ought to know not only that, under given conditions as to light, plants acquire a deeper green colour, and attain maturity much earlier than under others, but how much matter is assimilated in each case, and something also of the comparative chemical characters of the products. As between the action of one description of light and another, and as between the greater or less continuity of exposure, we ought to be able to form a judgment whether the proper balance between assimilation on the one hand, and growth and proper maturation on the other, has been attained; whether the plants have taken up nitrogen and mineral matter, and produced chlorophyll, in a greater degree than the quantity and the quality of the light have been able to turn to account; or whether the conditions as to light have been such that the process of transformation and growth from the reserve material provided by assimilation have not been normal, or have not kept pace with the production of that material.

But one word more in reference to Dr. Siemens' results and proposed extension of his enquiries. Even supposing that by submitting growing crops to continuous light by the aid of electric light during the night, they could be brought to maturity within a period shorter than at present approximately in proportion to the increased number of hours of exposure, the estimates of the cost of illuminating the vegetation of an acre of land certainly do not seem to hold out any hope that agriculture is likely to derive benefit from such an application of science to its needs. If, however, the characters of growth and of maturation should prove to be suitable for the requirements of horticultural products of luxury and high value, it may possibly be otherwise with such productions.

OFFICE OF CHLOROPHYLL.

The above considerations obviously suggest the question: What is the office of chlorophyll in the processes of vegetation? Is it, as has generally been assumed, confined to effecting, in some way not yet clearly understood, carbon assimilation, and, this done, its function ended? Or is it, as Pringsheim has recently suggested, chiefly of avail in protecting the subjacent cells and their contents from those rays of light which would be adverse to the secondary processes which have been distinguished as growth?

It has been shown that the plant may receive abundance of nitrogen, may produce abundance of chlorophyll, and may be subject to the influence of sufficient light, and yet not assimilate a due amount of carbon. On the other hand, it has been seen that the mineral constituents may be liberally provided, and yet, in the absence of a sufficient supply of nitrogen in an available condition, the deficiency in the assimilation of carbon will be still greater. In fact, assuming all the other necessary conditions to be provided, it was seen that the amount of carbon assimilated depended on the available supply of nitrogen.

(To be continued.)

TABLE AND ROOM DECORATION.

THE season is now fast approaching when house furnishing and table decoration will occupy a considerable share of attention in most private establishments. Those who carry on the business of furnishing merely as a business, as many of the large nurserymen in London do during the season, have little idea of what is expected from private gardeners at certain seasons of the year in the shape of plants and cut flowers. In the hands of the trade the work is rendered comparatively simple, because of the vast variety of material which is specially grown and always in readiness for executing orders to any extent. It is not therefore to be wondered at that with such excellent opportunities put in the hands of skilled workmen a display is produced which could not be so satisfactorily accomplished under less advantageous circumstances. It is a fact also that many of the large orders that are entrusted to firms who have distinguished themselves in the art of furnishing, are more readily accomplished than the smaller ones, because of the scope given for diversifying and blending the different shades and tints of colour in plants and cut flowers.

Gardeners, as a rule, are also placed under the disadvantage of having the work to perform at the dulllest period of the year, when there is hardly a touch of Nature to brighten and beautify the scene. In the spring a little group of feathery Palms, associated with scarlet Tulips, some in flower and some in bud, with Lilies of the Valley open and opening, and small plants of Maidenhair Fern judiciously mixed, give an effect altogether different from anything that can be produced by the most happy combination of winter flowering plants. Yet there is much that may be done beforehand to lighten the burden that presses so heavily upon gardeners during the dull winter months. It is not necessary to go over the names of plants suitable for purposes of decoration as they are so well known and in abundant variety, thanks to the enterprise of our leading nurserymen. Writing, however, from a gardener's point of view there are many so-called decorative plants that stand the wear and tear of winter decoration badly. The choicer kinds of Palms, Crotons, and Dracenas that do not relish a temperature much below 60° are often sadly disfigured through being exposed to low temperatures in cold frosty weather. Even if they are safely taken from the plant stove to the sitting-room, the variable temperature of the latter so frequently inflicts permanent injury upon them that the work of a whole season is lost for the pleasure of a very brief period.

Some of the hardier kinds of Palms, such as Chamerops and Scaforthia, the Australian Dracenas, and other equally accommodating plants have rendered good service to gardeners for the embellishment of front halls and staircases. Cannas are not perhaps as much used for this purpose as they deserve to be, their large glossy leaves chime in well with Chrysanthemums (decided colours), red and white Bouvardias, bush grown, and toned off with Primulas and Isolepis gracilis. Nearly every one grows Cannas now-a-days, and it is well worth while to lift plants of suitable size, and have them potted up before the cold weather and, what is worse, the violent winds disfigure the leaves. They should then be put in a north house until the roots begin to act afresh, after which they will enjoy an aspect with more light, and as the season advances a little warmth—such a temperature as is generally maintained to make conservatories comfortable. These are a class of plants that cost little, and stand a great deal of rough treatment.

Tall plants of Hedychium I have also found useful for adorning lofty staircases; their large massive leaves towering above a group of miscellaneous plants, have a stately effect in winter when everything is naked and barren outside. Suitable plants for rooms are of course already grown for the purpose. The principal thing to study in furnishing rooms is to avoid using plants having leaves of the same colour as the walls. In other words, whatever is the predominating colour in a room the plants should contrast with it, as they should also contrast with the vases in which they are placed. It is a very good plan to have a lot of pots made of zinc and dressed upon the outside with Selaginella Kraussiana, which always looks well in winter. The pots are done in the following way:—They are made exactly after the model of a flower-pot, 6 inches to 7 inches in depth and

5 inches and 8 inches wide respectively at the bottom and top, including a projecting ledge 1 inch in width, to which a piece of wire netting is attached or woven, in order to admit of as much earth being tightly pressed in as will make a surface for the Selaginella to take root in. We first of all root the Selaginella on the surface of small pans and then peg it on to the outsides of the pots, and place the latter in a north house, where the moss soon takes root and forms a dense green carpet. It may be necessary to turn the pots upside down in order to get the moss to cover every part of the pot that is seen from the base upwards.

A number of plants corresponding with the size of these pots are also grown in sufficient quantity to give a change of colour when required, and their surface is covered with growing moss, so that when the pot in which the plant is growing is placed within the zinc one the whole surface presents a mass of living green which is charming by gaslight. Another simple device, which makes a nice change for the dinner-table, and is a great saving upon cut flowers, is made by having a circular base of wood so constructed that a piece of wire netting can be run round it, and have it draped with green moss, as described in the case of the pots. There should be three tiers of proportionate sizes to produce anything like an effect. An idea of the proper proportions for a design of any size may be gathered from the following dimensions:—Take two circular pieces of board, each 18 inches in diameter, and raise one above the other about 8 inches either by three perpendicular supports or by means of short spars nailed against the outside of both boards; then run a piece of wire netting round, fill in with soil, and peg the rooted moss over the surface, and a base is formed for the design. The second tier should be 10 to 12 inches in diameter and 6 to 7 inches in depth, and the third tier should consist of one of the pots already referred to (or a suitable substitute), in which should be placed a graceful plant according to fancy. When required for table, the whole design should be thinly dotted over with single flowers of Eucharis, or red and white Camellias in equal number would perhaps answer better, and produce a better effect, but that is a matter for individual taste or fancy.

Any time within the next week or so will be early enough to make a design that will be at its best about Christmas, and a temperature not exceeding 50° will be ample to keep the moss both sturdy and green between now and then, with a daily sprinkling or two of water applied through a fine syringe. Table decoration, notwithstanding the liberal prizes given at horticultural exhibitions for the best arranged tables, is still an incomplete and unfinished art in the hands of many who attempt it. It does not follow because there are a great many adepts in the art that there are not also a still greater number who require educating into better taste. It would be impossible for me or any one else to lay down a guiding principle which would be acceptable to every one, so varied are tastes and circumstances; but, at least, all should be agreed upon one point, and that is that the pots, stands, or vases, used upon a table, should be chosen with some regard to the size of the table upon which the decorator is to display his or her taste. I am tempted to make these remarks from a case that recently came under my notice, in which there were three tables, laid out in such a way that all idea of proportion was totally ignored. The tables were entered for competition, and, strangely enough, the worst of the three obtained the first prize. The fair decorators (for the competitors were ladies, and had it all their own way) must have curious ideas upon questions of taste, for one lady depended chiefly upon the strength of a display of glass ornaments which were large enough for a table four times the size. Now, if the judges were actuated by motives of gallantry they ought at least to have awarded the first prize to the lady who had the best show of flowers and fruit, but in my opinion it is bad policy to award a prize at all in cases of "no merit," much less in a case where the first principles of good taste are flagrantly violated.

There are many useful lessons to be learnt from observation, which have a healthy tendency to educate and improve. The point is to know where to employ them and when. No one will ever shine in the art of furnishing or decorating who is not possessed of some little resources of his own, some idea of originality, of change, who has not an eye for colour, and, more important still, who has not the faculty of discerning when things bear a relative proportion the one to the other. *Decorator.*

MARVEL OF PERU.

"Is it worth growing?" was the question put some time ago in reference to this fine and useful old flower, and the answer given was, "Oh, ingrate world, to ask such a question. Look into the tiny front court of the cottager in the cool of the day, and be struck dumb with astonishment at the scintillating beauty of the great round dense bushes clothed with bright light green shining leaves, and pink, white, scarlet, purple, or rosy flowers that truly glitter, as if blessed with a better sort of daylight than the grand plants that swelter in my lord's garden." In such forcible terms has Mr. Shirley Hibberd placed on record his impressions of this old American herbaceous perennial, introduced from South America as far back as 1596 or thereabouts.

It is said to have been called Marvel of Peru because at that time anything was at first called wonderful that came from America. Miller states it is called "Merveille" by the French, and "Belle de Nuit," and though he wrote remotely he made at that time seven distinct species. In catalogues it is now the practice to group all that are grown in gardens now-a-days under the head of varieties of *Mirabilis Jalapa*, and they comprehend nine or so. Some of them are garden varieties raised in this country. The principal sorts are, as they appear in catalogues, the gold striped, red, scarlet, silver striped, sweet-scented, purple sweet-scented, white, yellow, and the variegated leaved—a very pretty form indeed; in some instances the variegation is most distinct and vivid. A single plant yields flowers that are various-coloured, and therefore highly attractive; and the variegated-leaved type are not only very handsome, but valuable decorative plants in the open air.

A large plantation of the different varieties of Marvel of Peru growing in Messrs Sutton & Sons' florist flower seed grounds at Reading, in August last, set forth the plant to the greatest advantage. The season appeared to have suited it exactly. The seed was sown in heat in February, and so soon as it was safe to do so the plants were placed out in some rich light soil; and here, during the moist weather of early summer, the plants made a fine growth, and during the spell of dry weather flowered with great profusion. But it is a plant well adapted for isolating in the mixed border, as it makes a compact and handsome bush-like growth, which becomes covered with pretty flowers.

Many years ago it was the custom with past generations of gardeners to raise their plants in heat as already stated, and then they were transplanted into a hot-bed and grown on into size, but air given to keep them from being drawn. Then when a foot high or so the plants were placed in pots, using a rich light soil, and placed in the open air for blooming. Possibly our forefathers were fearful of trusting the plant entirely to the mercies of open-air culture, or at least only in part. But potting must have been a rather difficult process, as the plant puts forth a long, thick, fleshy, succulent root, something like a carrot, and in days of yore special directions were given as to fully covering the roots when potted.

It is in early morn or towards evening that the flowers of the Marvel of Peru can be seen in all their beauty, while the "sun's directer rays" fall on them, when the orb is at or near the meridian, the flowers close, as if unable to bear exposure to the great heat; but in the evening, when the sun declines, they begin to open, and in the cool and freshness of the morning the same happens; also in cloudy weather and towards autumn, when moisture and cooler weather prevail, the flowers remain open for the greater part of the day.

In the days when the pots were more used for the culture of the Marvel of Peru, it was necessary to use sticks as supports; but a plant in the open ground makes so orderly and compact a growth, that no supports whatever are required, and provided the soil be deep and rich, and the plants have had a good start, but little moisture is required.

It was thought at one time that the roots of the Marvel of Peru furnished the true original jalap, and they were regarded as a purgative, but it has been proved that this virtue exists only in a slight degree. They have an acrid and nauseous taste, and abound in starch. In his *Vegetable Kingdom* Dr. Hogg states that "the seeds are composed of a great quantity of farina, and on that account have been proposed as an article of diet, and with this flour the Japanese ladies make a white paint for their cheeks."

The roots of Marvel of Peru are usually wintered by keeping them in sand, in a place where they are secure from frost. In spring they can be planted out as desired. It is said by those who grow the Marvel of Peru that the best plants in flower are those that are raised from seed early in the spring, and planted out in good rich soil. The Marvel of Peru must not be starved, or the results will be decidedly unsatisfactory; the great thing is to secure a vigorous and stately growth, and then a fine harvest of flowers will surely follow. *R. D.*

Home Correspondence.

Italian Hyacinth.—Replying to your query regarding the above, we beg to enclose you a root or so of each, showing you a difference in the colour, the bulbs of the Italian Hyacinth being dark blue. It succeeds precisely in the same manner as Roman, and if potted at the same time flowers about a fortnight later, bearing a creamy-white flower; yet not so pretty and fragrant as Roman, but most useful where there is a great demand for cut flowers. There is also one bearing blue flowers, but of very little use. *W. Cutbush & Son, Highgate.*

A Double Lapageria.—Enclosed is a bloom of the ordinary *Lapageria rosea*, come in a good double form. It was broken off before we saw it, or we should have tried to have seeded it. *Heath & Son, Cheltenham.* [We have seen several such cases. It would be worth while layering the shoot producing such flowers. *EDS.*]

Bougainvillea glabra.—I enclose a spray of *Bougainvillea glabra* planted out, and reaching half-way or more to the top of my house. How much more lovely it is grown in the open air! I have no doubt, from what I have observed the last three years, that it will be nearly hardy, if not quite so—at any rate, it will only want the protection I used to give my Myrtles when I lived in Surrey. Of course, all would depend upon the wood being ripe and the plant asleep when the frost arrived. This is so seldom attended to, and therefore many plants that would otherwise stand our winters are killed. *J. T. B., Lamorran, Cornwall.*

The Disease of Turnips.—In consequence of Mr. W. G. Smith's communication, in your paper of September 25, upon the disease of Turnips, I have examined some fields closely to ascertain to what extent the fungus had been at work. The *Oidium Balsamii* is certainly here, but it took me a long time to find it, and, when found, it was limited only to two or three Turnips, the leaves of which were not impoverished as yet, and merely looked a whiter tint than usual; whereas, had *Peronospora parasitica* been present, the leaves would have assumed a yellowish tint on the upper surface. For this *Peronospora* I searched in vain. A finer crop of Turnips farmers need not desire than are here, and unless the *Oidium* increases very rapidly, there is not much prospect of a deficient crop in this neighbourhood. *John E. Vise, Forden Vicarage, Welshpool.*

American Vines.—In a house planted with Lady Downe's we have a good fruiting cane of the Fox Grape—*Vitis Labrusca*, of Linnaeus—with about 100 bunches on it. The berries are about as large as a small rough red Gooseberry, with the taste of Black Currant or Raspberry. I believe there are two known varieties of *V. Labrusca*—*Catawba* and *Isabella*—and that which I possess I believe to be the former. My employer is anxious to obtain the other species of American Grapes, of which known species are the American Summer Grapes, *Vitis aestivalis*, *cordifolia* and *riparia*, and the Muscadine or Scuppernon, *Vitis rotundifolia*, and *vulpina*. I have never come across any of the above species or varieties in our nurserymen's catalogues; but should any one have any or all of the above to dispose of, I should be glad to purchase them. *A. Brown, Gr. to S. E. B. Pusey, Esq., Faringdon, Berks.* [The French nurserymen could supply you. *EDS.*]

Flowering of *Zizania aquatica*.—The notice of the death of Dr. Hanstein, Professor of Botany and Director of the Botanic Garden at Bonn, in last week's *Gardeners' Chronicle*, reminds me to place on record an interesting occurrence I was fortunate enough to observe a short time since in that establishment. This was the flowering of *Zizania aquatica*, due, one must imagine, to a more favourable climate than that of England. The plant was small compared with natural development, but the confinement of pot-culture conducing to this may also have favoured the flowering. It was standing in water with a number of other aquatics such as are commonly met with. In this Botanic Garden it is im-

possible not to be struck with several points—first and foremost, the ill-keeping of every part, accounted for, no doubt, by financial reasons. Yet the plant structures, in particular a fine one near the entrance, indicate a considerable expense at some time past, and it seems a pity that so much should have been attempted. The position of the garden appears a fine one, having charming views of the Drachenfels and other mountains of the group. The use of ashes in the place of gravel here is a great eyesore; it is also the same in some other Continental gardens, several seeming to agree with this in having the worst of turf as well as in that particular. Then we come to notice the grouping of indoor plants in their orders out-of-doors. A group of Cacti is conspicuous, another of Composites interesting, and also one of Bromeliaceae deserving of notice. *Nymphaea Ortgiesii* was flowering out-of-doors. It may be worth while to remark the use of the Mountain Ash as an avenue or boulevard tree near the University. Alternating with it was the False Acacia, and the combination of red berries with light green foliage was very pleasing in effect. *R. J. Lynch.*

Gladioli.—Mr. Douglas describes a first-class *Gladiolus* as having "a long spike, with flowers well formed, and all of them facing one way" (*Gardeners' Chronicle*, September 18, p. 364). I should like to know if the attempt has ever been made to raise a form with regular and erect flowers, like the modern kinds of *Gloxinia*, for I saw at Chamounix a few days ago several spikes with one, two, or more flowers perfectly symmetrical, quite erect and trumpet-like. The three stamens were also regularly disposed around the pistil. It struck me as being likely to furnish a handsome addition to our stock of *Gladioli* if plants could be raised with their spikes having all the flowers permanently erect. Moreover, instead of the streaks being confined to two or three petals, the whole were similarly coloured. Another peculiarity I have noticed in *Gladioli* in the ordinary forms is that the position of the stamens is sometimes reversed, being "declinate," instead of ascending, with overarching anthers. *George Henslow.*

Slugs in Orchid-houses.—I have much pleasure in offering the suggestion to Mr. Robert Warner of a plan which I find effectual in putting a stop to the depredations, not only of slugs, but also of woodlice and cockroaches, in Orchid-houses. It is not a new idea, inasmuch as it was advocated years ago in Johnson's *Gardeners' Dictionary* in the article upon Orchids, although, like much other good advice, it is rarely taken. The manner in which I have adopted the principle is the following:—The stages are covered with zinc trays 2 inches deep, of sufficient width to reach from back to front, in 3-foot lengths; larger than this is not desirable, as even the stoutest zinc is liable to warp and defeat the object in view—viz., to obtain an even surface and depth of water. The trays are kept full winter and summer, and their contents are used for watering the Orchids, ensuring water of the same temperature as the atmosphere of the houses, and providing it close at hand wherever the operator may be standing. The syringe is used for this purpose in summer, and in winter the water is drawn off into buckets by means of a syphon. The trays are then refilled from a hose-pipe, thus keeping the water fresh and clean. The trays are covered with lattice stages in 5 feet lengths—for convenience in cleaning—on short legs, so as to keep them clear of the water and far enough away from the edges of the trays to admit of the syringe being dipped in, which appears also to be the limit of a slug's span. Thus the stages are really isolated from any surface upon which slugs, woodlice, or cockroaches can crawl, the only points of contact being in the water, so that to reach the plants it becomes necessary for our good friends to take the plunge, which I have rarely found they have the hardihood to do. Whether from having missed their footing or no I know not, but occasionally a dead slug or woodlouse has been found in the trays; but all that remained necessary was to conduct the funeral with becoming decency, for they had never reached the plants. For small shelves and corners inverted pots in flower-pot saucers filled with water are used to stand the plants in pots upon, which seems to secure them from attack. For those who have substantial slate or stone stages it would be an easy matter to have such cemented so as to hold water, and thus save the expense of the trays, which cost about 6s. or 7s. each. It is, of course, needless to point out to Orchid growers what a valuable assistance it is to have all this water immediately beneath the plants, as it reduces the necessity for damping down to a minimum. I confess myself unable to suggest anything to meet the case of the slug that climbs the rafters and depends himself from the roof. This displays an amount of craft and cunning which I did not even suspect, and I feel disposed to give him up as a bad job; however, we have the satisfaction of knowing that he has but one road open to him, and that, like Mr. Richard Swiveller, he has to go a long

way round to get into the next street. *T. L. C., Birkenhead.*

Lathyrus.—My search after the long-lost *Lathyrus magellanicus* has brought under my notice various species of this interesting genus. I speak of *L. magellanicus* as lost, and I quite believe it is. If this handsome and most desirable perennial is ever to be restored to our herbaceous borders some enterprising nurseryman or amateur must reimport it from its native habitat. How a hardy perennial *Everlasting Pea*, with a good big bunch of blue flowers, almost as large as those of *L. latifolius*, came to be lost is a marvel, but I suppose it is one of the results of the bedding-out craze, now happily dying away. It is true that seed of *L. magellanicus* is advertised in many catalogues, but it is in reality *L. Cicera*, an annual species, with beautiful blue flowers occasionally striped with red. It is of the same hue as *L. magellanicus*, but there is only one flower on each stalk. There is also a pure white variety of *L. Cicera* in commerce. It is, I believe, sold under the names of *L. magellanicus albus* and *L. tingitanus albus*. I have grown it this summer as an annual, and found it very floriferous and pretty. I never saw the white variety of *L. tingitanus*, and should much like to obtain it. The purple type is a lovely annual, and ought to be in every collection. *Lathyrus Cicera* is also sold under the name of *L. azureus*. Under the name of "yellow Sweet Peas" I received this spring a small parcel of plants from a correspondent which turned out to be the pretty little orange-yellow *L. annuus*, which I saw and admired growing wild in Minorca in the spring of 1879. Closely allied to this is another little annual species with inconspicuous orange-yellow flowers, *L. Gorgoni*, the seed of which I purchased of Mr. Thompson, of Ipswich. *L. grandiflorus*, now known as *L. biflorus*, is a grand plant when in bloom, but such a terrible weed in its Twitch-like growth that it should be banished from small gardens. The same remarks apply to its pretty little congener, *L. tuberosus*, which, however, is so pretty when in bloom that I can never make up my mind to banish it altogether. All the varieties of *L. latifolius* are excellent, I find the pure white form is killed here in a very hard winter following upon a wet summer. By-the-bye, I saw the other day in Mr. Nelson's garden at Aldborough a very good old variety of the plant, which he told me came originally from his father's garden at Winterton. *L. Sieboldii*, which appears to be of hybrid origin, is very useful, because it comes in so early. As a curiosity I always like to grow the little straw-yellow *L. Aphaca*, a rare British plant; but I think the queen of the whole tribe is *L. rotundifolius*. It has flowers of a most peculiar and uncommon shade of red, and is intensely floriferous. A bush in my garden this summer had some 200 bunches of bloom expanded at the same time, and was the admiration of everybody who saw it. It is a bad plant to divide, and with me seeds very sparsely. As I am on the subject of leguminous plants, may I ask if any of your readers can put me in the way of getting a plant of the true *Orobus varius* which I grew for years, but lost in the winter of 1878-79? *O. albus* (not *O. varius albus*) also died about the same time, and I do not know how to recover it. *H. Harpur Crewe, The Rectory, Drayton Beauchamp, Tring, Sept. 25, P.S.*—Since writing the above on *Lathyrus* I have received a post-card from my friend Mr. Max Leichtlin, in which he tells me that he was successful in rediscovering *L. magellanicus*, so that we may again hope to see this pretty plant in our gardens. *H. H. Crewe.*

Carpet Bedding.—There is little pleasure to be extracted from a visit to any flower garden, however good it may be, if it is raining in torrents, and heavy rains have fallen from time to time during the preceding week. How very miserable the flowers look. Nature's paints are all washed off, or the petals are beaten and mangled beyond knowledge, in fact all the floral glories have departed. It is not only the scarlet *Pelargoniums*, the yellow *Calceolarias*, the blue *Lobelias*, the purple *Petunias*, mauve *Ageratums*, and similar bedding plants that show all these deplorable aspects, even the hardy border flowers resemble a regiment of soldiers just home from the wars, all tattered, bespattered, and miserable. Some may brighten up again for a time, but all beauty in the mass, all colour in the concrete, is gone for this season, and nothing can restore it. But turn to the carpet beds and note the divergence. One well-known gardener demurs to the title of carpet bedding, because that implies some mere flat, monotonous arrangement, whereas any good so-called carpet bedding is always planted so as to obviate that defect. But planted flat or on raised surfaces, and in whatever designs or devices, if foliage plants only be employed, the beds so arranged are as beautiful and fresh as at any time. How the succulents, the hardy moss-like carpet plants, the rich red *Alternantheras*, the effective Golden Feather, the creamy *Mesembryanthemums*, with the *Agaves*, *Dracenas*, and other elevated plants, glisten and smile under the downpour,

Bedding of this kind is no doubt to the new æsthetic gardener "awfully vulgar," but it looks none the less very beautiful, and in the production of pleasing garden effects beats all the flowering plants hitherto. No doubt these beds should be filled with all sorts of hardy plants, or, better still, should not be beds at all; but the world is not prepared for this kind of advice just yet, and until the hardy plant millennium does come there is too much reason to believe that the uncultured savage will for some time continue to delight in carpet bedding. A.

Dishaulming Potatos.—Misquotation of my words will hardly make my sentences more intelligible, but they would seem to be sufficiently so to Mr. Fish, as he has drawn from them the real point at issue, and made his statement in reply. To make the matter as clear as possible I will put it in this form:—Dishaulming a crop of Myatt's Ashleaf on August 1 here, would have been a saving interposition between a crop of tubers and its serious injury by disease; but the same process applied four days later to Champions, instead of saving the tubers, would have anticipated their formation—destroyed the crop, in fact, instead of saving it. Mr. Fish has given me a right to put the whole matter in the above crucial form, for he has shown in the *Agricultural Gazette*, p. 125-6, that his rule ought to have been carried out this year, even on the latest known Potato, as early as the first week in August. I quote the words referred to:—"Red-skinned Flourballs, Magnum Bonums, Champions—all are going. Lift them or draw every top the moment the disease spots the shaws." There is no crop under Champion shaws at that date (August 5). He thus betrays the impossibility of framing rules for the extension of the season of dishaulming (or getting in "the Potato crop as safe and sound as if no disease were abroad") without ignoring the stage of growth of all the late varieties. In proof that he does not ignore the stage of growth of those varieties which constitute the main crop, he says that he "has constantly insisted that semi-maturity is one and probably the chief cause of the disease." To be a cause of the disease, semi-maturity must come before the disease, and this is the order of things we should have to deal with under that law:—1. The grown tubers; 2. Semi-ripeness; 3. Disease. But what is the order with the Champion, and in a modified form with the other late kinds? It is this—1. August 1: Disease spot on the leaves; tubers quite small. 2. Continued growth of tubers for five or six weeks. 3. Maturity according to soil, &c., from September 10 to 30. It is obvious with such facts to deal with that we cannot dishaulm Champions on August 5, or even August 15, without anticipating, not merely ripeness, but the growth and existence (in food and marketable form) of the tubers; yet at that early date—the same about which we might dishaulm a crop of Myatt—are we told to pull "every top" of the latest Potato grown. Indeed, when I read that "semi-maturity" law, as a rule to judge the sufficient growth of tubers, I thought Mr. Fish was giving me a little theory to play with, and avoiding a practical answer. But it is not so; for I find that the instruction to pull up the Champion shaws given in the *Agricultural Gazette* is grounded by him on that strange assumption of ripeness, in these words:—"The Potatos are going with unprecedented rapidity in the order of their ripeness. No variety has proved disease-proof. Red-skinned Flourballs, Magnum Bonums, Champions—all are going." Champions ripening on August 5! We might credit him with inadvertence in bringing the ripening of the Champion within a few days of early kinds, but his rule for momentary action in pulling up the tops is given in direct relation to them, and this when the shaws are as green as grass, and the tubers small as marbles. He is of course at liberty to express his own opinions regarding disease-resisting varieties, even in the face of a very large growing experience of their peculiarly valuable qualities, and to make this apparent on the face of all his writings. But he has twice advised a process of dishaulming these Potatos at a moment when it would spoil a crop of Magnum Bonums, and destroy one of Champions; and if they are to be written down or rooted up it must not be, even inadvertently, under the form of a rule for saving them from disease, without serious remonstrance. The sanity of the process of dishaulming as a panacea is made to rest on this principle, that the Potato crop is half ripe before the disease spot appears on the leaves. *Rev. J. M. Taylor, M.A., Seer Green Vicarage, Beaconsfield.*

Autumn Tints.—It is not an unexpected sight to behold the rich hues of autumn now illuminating many of our noble trees in pleasure grounds and parks. There are many places where planting has been so judiciously varied that autumn tints harmonise and blend with each other so agreeably that the sight is charming for several weeks in the autumn. At the present time a plant of *Ampelopsis hederacea* (Virginian Creeper) is in full beauty on the walls of a

cottage in the village here. The curious thing is that the leaves upon the north aspect are changing colour soonest—the plant is trained upon the north and east walls. Is it then the cold instead of the influence of solar rays that causes the change to come about in this way? Every one is aware that trees lose their leaves rapidly upon the approach of cold, but I think colour is usually ascribed to a different cause. At any rate, the plant in question is beautiful to look upon at the present time; it is not over-trained, and the blending of leaves already coloured and changing colouring, with those that are still green is both pretty and effective. The best effect is produced where the long pendent streamers (the late growths, still green) are naturally interwoven with the larger leaves now bronzy-red, and occasionally lit up with a gleam of sunshine. *W. Hinds.*

Note on the Reappearance of Geaster coliformis, Dicks., in Norfolk.—I was much pleased to receive from my friend Dr. J. D. Alexander, of Grimston, on Saturday last, September 25, 1880, four fresh specimens of this rare Geaster, which, as far as I can make out, has not been found in Britain since the first decade of the present century. The specimens grew upon a hedge bank in the village of Hillington, Norfolk. The largest measures 6 inches across the widest part of the outer coat or peridium, which is divided into ten unequal rays. The inner peridium is no less than 2 inches in diameter, and has the beautiful silver-grey lustre mentioned by the older botanists, since whose time the fungus has hardly, if at all, been gathered in this country. In the specimen before me as I write, the inner coat or peridium shines as if it were covered by a very thin coating of silver-leaf, totally unlike any other Geaster. It has no less than forty distinct openings upon it. Another

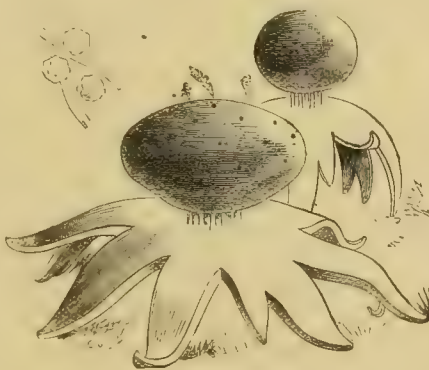


FIG. 26.—GEASTER COLIFORMIS. (Half actual size; spores $\times 700$ diam.)

character not noticed in the text-book is that the inner peridium is minutely tuberculated. Neither of these points struck me when I examined the specimen in the British Museum herbarium some years ago; but they are both observable on careful observation in a specimen my friend Prof. C. A. J. A. Oudemans, of Amsterdam, sent me from near Haarlem, gathered by him in January, 1877. As showing the rarity of this species generally, it is worthy of note that Persoon when he wrote the *Synopsis* in 1801 had seen no specimen, neither had Fries when he wrote his *Systema* in 1829. In this country it has been found (1) by Doody, "in the lane from Crayford to Bexley Common"—Ray, *Synop.*, ed. iii., p. 27 (1724); (2) by Mr. Merrett, at Hampton Court; (3) on sandy banks at Mettingham, Suffolk, and at Gillingham and Earsham, Norfolk, by Messrs. Stone and Woodward—*Linnean Trans.*, vol. ii., p. 59; (4) at Hanley Castle, Worcestershire, by Messrs. Ballard and Rufford—*Withering*, ed. ii., vol. iv., p. 460 (1792), Purton, *Midland Flora*, vol. ii., p. 702, No. 1075 (1817). On the Continent it has been found at Haarlem and near Darmstadt—Fueckel, *Symb. Myc.*, p. 37. The figure given above by Mr. Worthington G. Smith, after Sowerby, t. 313, conveys a very accurate idea of the general appearance and habit of this fine Geaster. *Charles B. Plowright, King's Lynn, Sept. 27.*

Wasps.—Bad as the season was last year, there appeared a crumb of comfort for those connected with gardening in the thought that there would be no wasps, and one derived a grim sort of satisfaction in the feeling that their nests were destroyed and the hated things drowned; but however that may have been with the common workers and scavengers among their community, it is very evident that the queens knew how to take care of themselves, for instead of being defunct, they, phoenix-like, have risen, well, not from the ashes but from the mud, and have stocked

the country, if any thing, thicker than ever, as we hear on all sides great complaints of the havoc they have made of the fruit. To attempt their destruction during the summer without seeking out their homes and paying them a visit by night seems hopeless to many, and yet I am convinced that much may be done in that way, for had we measured up those entrapped here I feel sure there would have been a peck; and if these had not been caught, what an amount of mischief they would have worked, as instead of being floundering about in bottles of sweet liquid or showing their anger caged under handlights, they would have been attacking everything they could find. All about the place here we have had traps set for them, besides searching for their nests, and if every one engaged in country or even horticultural pursuits would only bear a hand and treat them as common enemies, their numbers might be so reduced that they would cease to vex and worry in the way they do, for I know of nothing so annoying as to go to a Peach or other tree and find it in possession of such marauders, daring one under pains and penalties to come near. Late as it is to battle with them now, it is not too late to catch the queens, which on sunny days are out for an airing, in the true fashion of royalty; and it should be remembered that every one of these killed now means a nest the less next year, leaving casualties, &c., out of the bargain. Whether they fill themselves to repletion before becoming dormant for the winter I know not, but certain it is that a mixture of treacle and beer is an irresistible temptation to them, as in it they go headlong, regardless of consequences, till too late to effect a retreat. This being so, I would advise that lots of clear open-mouthed bottles be hung about with a few spoonfuls of the above named mixture in them, and it will be found, if we get fine warm weather, that the bait has not been laid in vain. Not only should this be done, but every nest that can be found should be squibbed and dug out, or have turps poured in the hole and bunged up thoroughly, for if the air is kept out, the fumes would soon suffocate all within, and the turps is therefore the easiest and most expeditious way of getting rid of them. Carbolic acid, too, answers the same purpose, but it is dangerous to handle, for if spilt on the flesh it destroys where it touches. *J. Sheppard.*

Cockroaches in Pine Stoves.—If "One in Distress" (p. 210, No. 348) is still plagued with this most destructive pest in his Pine-stoves, and will send to Mr. Durant, chemist, of Dorking, Surrey, for 2 oz. of his powder for destroying them, I think he may find it most effectual in its results; the price is 4d. per oz. The simplest and best method for applying it, is to dust a small quantity on some pieces of paper and place them where they frequent, using only a small quantity on each paper, as it requires renewing each evening for a short time: it becomes useless when damp. *J.*

Araucaria imbricata Bearing Cones.—Not far from Stirling there is now to be seen an *Araucaria* with seventeen cones, each about as large as a Cocoa-nut. The tree is not a very old one, but is a remarkably healthy, thickly-furnished specimen. Please say whether you are aware of any, or many, bearing cones in Britain. *W. D. & S.*

The Old Canary Creeper.—It is surprising that this, assuredly the most showy and useful of all our annual creepers, is not more generally grown. I have long grown and admired it in a certain patronising sort of way; but I confess that until this summer I never knew how much it could accomplish. Driving through a remote village in Suffolk last month I noticed the front wall of a two-storey house, at least a dozen feet high, covered from top to bottom with this beautiful creeper. The leaves were more like those of Hollyhocks than those of this plant as they are generally seen; but even these were almost wholly covered with the golden branchlets that depended from the main shoots from top to bottom. I had never seen such a mass of their soft, fluffy, golden flowers before, and the effect was so beautiful that I instinctively pulled up at once. My first intention was to call at the house to see how it was done. This, however, was not necessary, for, mounting a step or two of the flight that led to the door and seeing no one in sight, I was able to take in all the culture arrangements at a glance. In a narrow border in front of the house about half a barrowload of rich compost had been placed. This was scooped out dish-fashion in the middle. Near the centre of the hollow or dish about a dozen seeds had been sown. The plants had obviously never been allowed to become dry, and, from the dark appearance of the soil-basin, had evidently had strong manure-water or house sewage. The situation was high and dry, the aspect south. Hence, no doubt, the enormous profusion of bloom. What a rare old plant for covering bare walls in towns and villages, for running through our Virginian Creepers so as to bring its soft yellow to contrast with their fiery scarlet

in the autumn months. How useful, too, as we have found it, to grow with Clematis, the blue or purple sorts especially of the Jackmanni type, either on walls or on the ground. The old mixture for wreathing windows of the large Convolvulus and this Canary Creeper has never been excelled. They do exceedingly well sown in boxes on the window sill and trained round a wire or stout cord. The Canary Creeper also forms a capital basket or bracket plant. Grown thus it may be stopped into bushiness, or the long branches may be looped up or turned round into any and every form of graceful pendancy. As a surface coverer under taller plants the Canary Creeper is admirable, forming a golden carpet, and the better to display the bravery of their greeneries, the grandeur of their richly varied gorgeous colouring, it will run for yards along the ground, and may easily be kept to the ground with a few pegs here and there. It is admirably adapted for growing on the leads or parapets. Placed in such positions in pots, tubs, or boxes, the Canary Creeper would clothe much of the higher portions of our bare walls with beauty, and would often be able to reach down so far as to shake hands, as it were, with the Roses, Honeysuckles, Jasmines, that are climbing up as fast and as far as they can from the bottom. Few plants are more useful for the rapid covering of the roofs or walls of cool houses, corridors, or verandahs under glass than this old creeper either alone or mixed with some of the bright Tropæolums of the Lobbianum type. In places, too, where the common flame Nasturtium is grown successfully, either out-of-doors or under glass, the effect might often be heightened by mixing the Canary Creeper with it or placing it near to it. Were this plant not so common not one of the beautiful family to which it belongs, not even excluding *T. tricolor*, would be more worthy of being grown into specimens for the decoration of the conservatory in the early spring, late autumn, or winter. But I trust enough has been written to direct special attention to this fine old plant, and to cause it to be better and more generally grown. *D. T. Fish.*

The International Potato Show.—How well the committee which have the charge of this exhibition have played their part this year, the recent show has told. In the matter of producing handsome show tubers, in the matters of variety, of size, and of quantity, enough has so far been done to satisfy the most anxious; and therefore do I most sincerely join in the advice you give, that the committee should now become established as a permanent body, with aims wider and more general than are found in its present work, and that it should exhibit itself before the world as a body that, more than any other, feels itself to be especially charged with the interest of the Potato. One of the committee's chief exponents, Mr. McKinlay, has spoken of the possibility at some time of the committee being hampered by an excess of wealth. Having as it now has only an annual, and therefore temporary existence, such a misfortune might at some time or other prove an unbearable incubus, but if the committee and all its subscribing supporters were a permanent society, the fact, that there was a balance in hand at the bankers from year to year, would be found of the greatest value in promoting the stability of the Society. Favoured, as it now is, with strong city support, and with the support and favour of the Crystal Palace Company—having, further, that magnificent building as a place in which to hold its exhibitions—it has in these advantages for which other societies may well sigh in vain. So much do the Sydenham authorities seem to appreciate the Potato show, that it is rumoured on good authority they will attach to it next year a large show of hardy fruits, and perhaps garden vegetables. Should this be so, the next Potato show may be held under more than the customary excellent auspices. Perhaps the mention of this fact may serve to stimulate the committee to fall in with your suggestions, and present to the liberal directors of the Crystal Palace not a sort of incorporeal body, without head or tail, but a permanent strong society, having a broad national basis, and members all over the kingdom. If any difficulty grows upon the committee, it is less one of abundance of funds than of exhibitors. When thirty or more persons contend in one class for some half-dozen prizes, it is evident that twenty-four must go away disappointed and unrewarded. Under the present arrangements this sort of thing is likely to get worse rather than better. Every year brings more competitors, who, nothing daunted by previous failures, still hope that they shall win. The object of the committee now should be to see how far it was possible by a re-arrangement of the schedule and the prize list to reduce the list of unsuccessful competitors without reducing the number of competitors on the whole. Spare funds will be an incubus no longer if spent in enlarging the schedule and in increasing the prize list, whilst it is evident that if there are twenty classes, some limit should be placed upon the number open to any one exhibitor; and if the limit were, say twelve out of the twenty, leaving such exhibitor to choose his number, it would prevent

the excessive competition in all the classes that now is seen. It would further add to the completeness of the schedule if the Messrs. Sutton would exhibit the same liberality as is shown by the Messrs. Carter and other prize givers, by removing from their prizes the present restriction. Trade exhibitors are so few in number, and they are in good form so seldom, that the chances are, even if they competed, that the gardeners would carry off the prizes nine times out of every ten. It is not difficult to understand that the judges exhibit a preference for collections that have a preponderance of English kinds over those that have too many American sorts. One collection of twenty-four dishes had in it not less than seventeen American sorts, and although I do not know what might have swayed the judges in their decisions in that class, yet I can very well understand that, fine and handsome as the tubers were, these functionaries thought it was not a fair representative collection. As exhibitors, however, do not know the opinions of judges in this matter, it is well worthy consideration whether in all such collections American sorts should be permitted to show a greater preponderance than one half. It is, I learn, proposed to re-establish a special class for American sorts, as well as one limited to English kinds. This is no doubt wise, as then the products of each part of the world will fairly be judged upon their own merits. One of the chief difficulties that now beset the exhibitor and the judge is the introduction of new kinds that bear a close resemblance to older varieties when on the show table. This leads to endless disputes, and it must be admitted that it is difficult to raise a Potato having in its appearance something very distinct from all others. This difficulty presents itself very largely in the American kinds, especially those of more recent introduction. Early Ohio is so near to Beauty of Hebron that its identity on the show table is doubted, although evident enough when growing. Pride of America is pronounced to be a Snowflake, Mammoth Pearl a Peerless, and so on, although if grown the plant growth will perhaps be distinctive enough. Even with English kinds the same similarity is very patent, and it is now most difficult to put before the public anything that is not open to the charge that it is but some old kind, and nothing more. Here is a field of operation open to the committee, or, better still, to a Potato Society, wherein it could do great service to its members as well as to its own reputation. The class for seedling kinds established this year is a valuable one, but it is open to much difficulty because the judges have no independent proof that the sorts before them are really what they are represented to be. I would suggest that the committee, in arranging to perpetuate this class, should endeavour to obtain the assistance of the Royal Horticultural Society, and get that body to do for it at Chiswick what it now does for the Pelargonium Society, and permit the gardens there to be made an auxiliary to the Potato Society's work. Suppose the two bodies could agree, and that under the supervision of Mr. Barron, assisted by the joint Royal Horticultural Society's Fruit Committee and the Potato Committee, all seedling Potatoes were to be tried at Chiswick, the Potato Committee in arranging the schedule might well make it a condition that no seedlings would be eligible to compete for that or other prizes that had not been first grown at Chiswick and proved to be distinct. Further, if a large collection of sorts was grown, it would enable the committee and their judges to get well acquainted with the distinctive features of all the kinds that came under their notice on the show-table, and thus prevent improper awards. Not least, now that raisers are striving to do something to obtain disease-resisting kinds, some kind of trial or test of this important feature would also be of the utmost value. And, further, if the judges wish to get some prior knowledge of the table qualities of the various sorts, that also could be done. In any case, as a raiser, having entire confidence in the distinctness and good qualities of my own seedlings, I shall send some of each to Chiswick next spring, whatever the Potato Committee may determine to do in the interim. *A. D.*

Lifting the Potato Crop.—Permit me in the public interest to subscribe to Mr. Earley's proposal that we should "dig and store early." All possible modes, methods, and manners have been tried by us, both in the Park Street and Hermitage grounds, and the collective vote of master and men is in favour of lifting as soon as you are fairly sure of a crop. This business, like many others, requires judgment, but the principle on which it rests may be quickly understood by the meanest capacity. To an Irishman I should say, "Wherever you see a head, hit it." To a Scotchman "There was a wife that kept her supper to her breakfast and she was dead ere day." To an Englishman "A bird in the hand is worth two in the bush." He who cannot see the application in any case may lose his Potatoes, and we cannot be bothered to find them for him. Mr. Earley's plan has been followed here for any length of time. Mr. McKinlay makes it his rule to lift while the shaws are green, provided there

is a crop to pay for the proceeding. To leave them to "ripen off" is to give the devil a golden chance, and like telling a man not to say his prayers until death has got hold of him. If you lift too soon the tubers will shrivel, if you lift too late they will rot—problem for each and all to hit the golden mean, which occurs long before the shaws die down. *Shirley Hubbard, Stoke Newington.*

Princess of Wales Peach.—A short time ago I sent you a few remarks upon the behaviour of Crawford's Early Peach, as I saw it in the garden of the Rev. L. D. Damer, at Canford Vicarage. I am now pleased to say that Princess of Wales is even more satisfactory as a late Peach in the same garden. The tree I allude to has borne a fair crop of magnificent fruit—indeed I have not seen better examples of Peach growing this season, and I am told they are quite as good as they look. If the Peach will bear as these trees are doing in a narrow border of gravelly soil "without scientific training," surely experts in the art will not yet give up in despair the cultivating of the Peach out-of-doors. *W. Hind.*

Fir Tree Oil.—In a recent issue you have published that serious consequences have resulted from using this insecticide. We have used it here for sponging and syringing both, and it has not done any injury at all. *A. R. P.*

I can safely say with the manufacturer that Fir Tree Oil is perfectly harmless; having used it for nearly twelve months—sometimes with scratches and cuts on the hand—I have always found to heal the sooner rather than to be poisoned by it. I can with confidence recommend the Fir Tree Oil, having used it for destroying insects and also mildew on all kinds of plants. *F. Nash, Manager to G. Cooling & Sons, Bath.*

The Horse Chestnut in Paris.—I don't know if I am displaying great ignorance of the laws of Nature, or relating what is hardly worthy of remark, but I was much struck and astonished by seeing in and about Paris last Thursday, Sept. 24, the Chestnut trees with their summer leaves withering, while at the extremities of their branches new shoots had burst forth, showing bright green leaves and full blossom—in fact, all the Chestnuts that I saw were in as full bloom as one sees them in June. Is this uncommon, or nothing worthy of note? The trees generally had lost their leaves far more than here at present. *R. W. Folkestone, Sept. 29.* [*This fleuveaison anticipée* is not uncommon after transplantation, and even without it in such seasons as the present. *Eds.*]

Obituary.

It will startle and grieve a very large number of the horticulturists of this country to hear of the death of Mr. ARTHUR VEITCH on the 25th ult. The deceased gentleman was in the prime of life (in his thirty-seventh year), when he was taken from his work, leaving a widow and several children to mourn the loss of one whose aim in life was to make himself useful to his neighbours.

Arthur Veitch was not, we believe, originally intended for the nursery business, having passed some years in the office of Messrs. Rothschild, but on the death of his father he became one of the partners in the firm, and, by his energy and ability, speedily rendered himself a most valuable adjunct in the supervision and management of this immense establishment. The greatest sympathy will be felt for the members of a family which has been so sorely tried of late years, not only by those connected with them by the ties of business and of a common pursuit, but also by numbers for whose welfare, material and moral, Arthur Veitch laboured with a fixity of purpose and an abnegation of self rare in these days.

—We note the death of Mr. CHARLES JOHN-SON, at the age of eighty-nine, at Grove Lane, Camberwell. His chief claim to remembrance is that for the long period of forty-four years he held the lectureship on botany at Guy's Hospital, and it is only within the last few years that he resigned that office. Presuming that he kept himself fairly abreast with the ever progressing and ever varying current of botanical knowledge, it would be interesting to glance at his lecture notes to see indications of the progress of the science.

ADIANUM FARLEYENSE.—We recently saw a fine specimen of this noble Fern in the gardens of Crookham House, Newbury, the residence of A. R. Tull, Esq. It is about 5 feet through, and is in prime condition. Mr. Marsh, the gardener, informed us that its age does not exceed 2½ years. It has made its *début* on one or two occasions at the local exhibitions, and, as may be imagined, with success.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, SEPT. 29, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.				HYGROMETRIC DE- DUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.		RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 15 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure from Average of 60 years.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.	
Sept.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
23	29.95	+0.17	66.5	54.3	12.2	59.7	+5.54	83	NNW	W.	0.00
24	29.94	+0.17	64.4	53.2	11.2	57.8	+2.85	91	W.	W.	0.00
25	29.93	+0.17	66.8	51.8	15.0	59.3	+4.25	73	W.	W.	0.00
26	30.02	+0.28	70.1	54.0	16.1	62.0	+5.65	86	W.	W.	0.00
27	30.15	+0.42	74.1	53.7	20.4	61.5	+6.95	87	ESE	ESE	0.00
28	30.28	+0.55	80.9	48.5	32.4	55.8	+1.35	94	NNW	NNW	0.00
29	30.29	+0.57	64.4	49.0	15.4	55.4	+1.05	91	NNE	calm	0.00
Mean	30.08	+0.33	67.5	52.2	15.3	58.5	+3.85	85	variable	sum	0.00

Sept. 23.—A fine day, generally cloudy. Warmer. Overcast at night.
 — 24.—A fine day, though very dull and cloudy.
 — 25.—A fine warm day, but not very bright. Overcast at night.
 — 26.—A fine day, though dull and very cloudy. Warm. Almost a perfect calm.
 — 27.—A very fine, bright, warm day. Clear sky.
 — 28.—A fine day, but dull and misty. Thick fog in morning. Cloudless at night, but fog on ground.
 — 29.—A fine day, very cloudy till evening. Cloudless at night. Fog in morning.

LONDON: *Barometer*.—During the week ending Saturday, September 25, in the vicinity of the metropolis, the reading of the barometer at the level of the sea decreased from 29.79 inches at the beginning of the week to 29.69 inches by mid-day on the 19th, increased to 30.15 inches by mid-day on the 23d, decreased to 30.09 inches by the afternoon of the 25th, and was 30.12 inches at the end of the week. The mean reading for the week at sea level was 29.99 inches, being 0.36 inch above that of the preceding week, and 0.02 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 70½° on the 22d to 56½° on the 19th; the mean value for the week was 63½°. The lowest temperatures of the air observed by night varied from 40½° on the 20th to 54½° on the 23d; the mean value for the week was 48½°. The mean daily range of temperature in the week was 15½°, the greatest range in the day being 22½°, on the 22d, and the least 11½°, both on the 19th and 24th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—19th, 49°.8, —6°.3; 20th, 51°.1, —4°.7; 21st, 51°.1, —4°.4; 22d, 58°, +2°.7; 23d, 59°.7, +4°.5; 24th, 57°.8, +2°.8; 25th, 59°, +4°.2. The mean temperature of the air for the week was 55°.2, being 0°.2 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 136° on the 22d, 127° on the 25th, 118° on the 20th, and 109° on the 19th; on the 24th the reading did not rise above 75°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 39½° on the 20th, and 42° on the 19th; the mean of the seven lowest readings was 46°.

Wind.—The direction of the wind was S.W., and its strength moderately strong at the beginning of the week, but almost calm afterwards.

The weather during the week was generally fine, though dull, and the sky cloudy.

Rain.—Rain fell on two days during the week; the amount measured was 0.22 inch.

ENGLAND: *Temperature*.—During the week ending Saturday, Sept. 25, the highest temperatures of the air observed by day were above 70° at Truro, Brighton, London (Blackheath), Cambridge, and Birmingham, and below 63° at both Liverpool and Bradford; the general mean from all stations was 66½°. The lowest temperatures of the air observed by night were below 42° at London (Blackheath), Leicester, Wolverhampton, Nottingham, and Hull, and above 47° at Truro, Bristol, and Liverpool; the mean value from all places was 44°. The extreme range of temperature in the week was above 29° at Brighton and London (Blackheath), and below 18° at Liverpool and Bradford; the mean range of temperature in the week from all places was 22½°.

The mean of the seven high day temperatures was

above 64° at Truro, Brighton, Cambridge and Birmingham, and below 60° at Liverpool and Bradford; the mean value from all places was 62½°. The mean of the seven low night temperatures was below 48° at Wolverhampton, Nottingham and Hull; and above 52° at Truro, Plymouth, and Liverpool; the mean from all stations was 50°. The mean daily range of temperature in the week was above 15° at Cambridge and Birmingham, and below 10° at Liverpool, Bradford and Leeds; the mean daily range from all places was 12½°.

The mean temperature of the air for the week from all stations was 55°, being 3½° higher than the value for the corresponding week in 1879. The mean temperature of the air for the week was above 57° at Truro, Plymouth, and Brighton, and below 54° at Wolverhampton, Nottingham, Hull, and Bradford.

Rain.—The heaviest falls of rain in the week were 0.94 inch at Liverpool, 0.71 inch at Hull, and 0.70 inch at Leeds; and the least falls were 0.10 inch at Cambridge, and 0.14 inch at Bristol; the average fall over the country was 0.38 inch.

The weather during the week was generally fine, but occasionally dull and showery, with thunder at places on the 19th and 20th.

SCOTLAND: *Temperature*.—During the week ending Saturday, September 25, the highest temperatures of the air observed by day varied from 66° at Dundee to 61½° at Edinburgh; the mean value for the week was 63½°. The lowest temperatures of the air observed by night varied from 35° at Paisley to 41½° at Leith; the general mean from all places was 38½°. The mean range of temperature in the week from all places was 24½°.

The mean temperature of the air for the week from all stations was 52½°, being 2½° higher than the value for the corresponding week in 1879. The mean temperature was above 53° at Edinburgh, Dundee, and Aberdeen, and below 51° at Paisley.

Rain.—The amounts of rain were the heaviest at Paisley, 0.92 inch, and at Greenock 0.88 inch, and the least Dundee, 0.25 inch, and Aberdeen, 0.36 inch; the average fall over the country was 0.53 inch.

DUBLIN.—The highest temperature of the air was 67½°, the lowest 42½°, the extreme range 24½°, the mean 55½°, and the fall of rain 0.54 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

CROTONS FROM SEED.—*J. R.* would be pleased to learn the best means of germinating and growing Crotons from seed; and also the length of time they take to germinate.

Answers to Correspondents.

BLACK PEPPER: *E. Morgan*. The fruits of the "Black Pepper" sent from Spain, and eaten there in salads, belong to the variety of Capsicum which the French call *Piment gros card doux*. The flesh is very succulent, but the flavour appears to be anything but agreeable.

CRAIGSIDE AND THE COQUET.—The name of the River Coquet, p. 325, was accidentally converted into "Croquet." *H. E.*

DAHLIAS: *Rawlings, Brothers*. The blooms of William Rawlings, a deep maroon, are very good, large, full, and well-formed. Frank Rawlings, with a dash of magenta in the rosy-purple hue, is not quite so full or so perfect, but is nevertheless attractive, as is the white-tipped crimson-scarlet Mrs. Sheffield. Of the other two, Mrs. Harris appears to be the best—a deep crimson. They are altogether a nice lot.

DIPLACUS: *E. T. R.* This is naturally a bushy-growing shrub, and with a very small amount of stopping in its various stages may be grown as dense as could be desired. You should cut your plant down next spring, and keep the young shoots it produces topped two or three times successively as soon as they have grown a couple of joints. The points of the shoots may be struck as cuttings, and if properly stopped after being started they will grow sufficiently bushy.

ENCEPHALARTOS VILLOSOUS: *F. Webber*. This plant has fruited frequently in this country, and you will find illustrations of the male spikes in our volume vii., 1877, p. 21.

ERRATUM—YUCCAS AND AGAVES: *W.* Of course the transposition was a mere slip of the pen; the names striata, corulescens, Roeziana, Celsiana, and heteracantha, belong to Agave, and not to Yucca.

EUCALYPTUS: *J. Garnier*. No. 1 shows the leaves belonging to the juvenile state of this tree; and No. 2 those of the same plant arrived at maturity. The Ficus has repeatedly been observed to take on an enlarged tree-like growth.

HEATHS: *Subscriber*. The woolly-leaved sorts you name do not like heavy syringing, nor a close atmosphere; and this, or a gleam of sudden sunshine while damp, or drought at the root, may be the cause of your plants going rusty.

LAUREL LEAVES: *F. T. M.* The holes in your Laurel leaves are probably attributable to scalding, the scattered rain-drops acting like a lens under the influence of the sun. What strengthens this view is that the affected portions drop out when touched, leaving an aperture in the leaf.

NICOTIANA LONGIFLORA: *E. T. R.* This Tobacco is reputedly an annual, and if raised early in heat may be planted out to flower during summer. There is no necessity to grow the plants singly in small pots, but if several are wished for the pots must be large enough to allow their leaves to develop themselves. Doubtless if the flowering stem as it spindles up were topped at an early stage it would develop side branches, but it might cause it to be too late to flower before the summer was at an end. We have never tried it.

NAMES OF FRUITS: *W. B. Rugby*. 1, Mank's Codlin; 2, Irish Peach, or Early Crofton. — *A. H. S.* Vineyard Pippin. — *T. P.* Porthgwidwen. 1, Comte de Lamy; 4, Reineite du Canada; 6, St. Saviour. The others we do not recognise. Very finely grown.

NAMES OF PLANTS: *S. E. N.* 1, Vitex Agnus-Castus; 2, a species of Fragaria; 3, a species of Xeranthemum which we do not recognise; 4, the Carob Bean tree (Ceratonia Siliqua); 5 and 6, hybrid varieties of Veronicas.—*D.* Deal. Probably Sisyrinchium, but specimen insufficient.—*An Old Sub.* Aster horizontalis.—*R. H.* Saponaria officinalis flore-pleno.—*J. D. Ryde*. 1, Cotyledon obiculata, probably—no leaves sent; 2, Thespesia populnea.—*H. W. E.* Phyllanthus urinaria.—*H. Smith*. Scabiosa succissa.—*F. Freeman*. Taxodium distichum.—*Jas. McR.* One of the forms of Vitis heterophylla.—*J. McIndoe*. Lonicera Xylosteum.—*Canon & Reid*. Clethra arborea.—*Y. Z.* 1, Leycesteria formosa; 2, Anchusa sempervirens; 3, Rhus typhina; 4, Viburnum Opulus; 5, Clematis Vitalba; 6, Ailanthus glandulosa; 7, Viburnum Lantana.—*E. H.* 1, Hypolepis tenuifolia; 2, Adiantum assimile.—*Old Subscriber*. 1, Rudbeckia Neumannii; 2, Anthemis tinctoria.—*J. C. T.* 1, Physianthus albens; 2, Escallonia montevicensis; 3, Begonia Craigii; 4, Platyloma rotundifolium; 5, Adiantum Capillus-Veneris; 6, Adiantum tenerum; 7, Adiantum hispidulum; 8, Bambusa Fortunei variegata.—*W. G. Turner*. Phytolacca decandra, the Virginian Poke-weed.—*T. P.* Porthgwidwen. 2, Adiantum Capillus-Veneris, var. digitata-lobata; 3, A. cuneatum.

PRESERVING PELARGONIUMS: *Amateur*. It is quite true that Pelargoniums which have been bedded out all summer can be kept during the winter if lifted and hung up in a cellar. The cellar must be frost-proof, and moderately dry. About February or March they must be potted, and started very gently, using little or no water till they are fairly started.

READING ABBEY POTATO: *A.* We have no personal experience of this variety; but a grower, upon whose judgment we can rely, informs us that it is after the style of Victoria in its growth, a good cropper, and of good table quality.

RED ROUND POTATOS: *A Constant Reader*. Triumph, Red Emperor, Beauty of Kent, Grampian, Centennial, Radstock Beauty, and Lye's Favourite are blotched with red on the skin, but the skin is not wholly of that colour. They are both very fine exhibition varieties. Blanchard is blotched with purple, it also is very handsome. Vicar of Laleham and Scotch Blue have deep purple skins, and are very handsome and fine for exhibition.

SEEDLING PELARGONIUM: *H. H.* Nothing unusual.

SOLANUMS: *Subscriber*. Obtain young plants from cuttings or seeds early in spring, and grow them on freely, and they should afford you a crop of berries in the autumn and winter months. The details of treatment have often been explained in our columns.

TUBEROSES: *E. T. R.* They do not generally succeed well the second year.

WEIGHT OF PEACHES: *Constant Reader*. Eleven ounces is a good weight, but not a very unusual one. At p. 242 of our number for August 21, you will find a record of a fruit of Lord Palmerston which weighed 17 oz.

* Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED:—William Paul & Son (Waltham Cross, Herts), Catalogue of Roses. — *S. Dixon & Co.* (34, Moorgate Street, London, E.C.), Catalogue of Bulbs, Roots, and Spring Flowering Plants. — *A. M. C. Jongkindt Coninck* (Dedemsvaart, near Zwolle, Netherlands), Wholesale Trade List of Fruit Trees, Conifers, Hardy Perennials, and Alpine Plants. — *G. J. Alberts & Co.* (Boskoop, Holland), Trade Catalogue of Fruit Trees, Hardy Trees and Shrubs, Roses, Herbaceous Plants, &c.

COMMUNICATIONS RECEIVED:—*W. C.*—*W. S.*—*T. D. H.*—*G. D.*—*G. N.*—*J. S.*—*T. C.*—*H. E.*—*T. R.*—*G. H.*—*J. B.*—*T. B.*—*N. E.*—*B.*—*W. A. M.*—*L.*—*S.*—*R. G.*—*A. O.*—*F. F.*—*G. H.*—*Rev. J. B.*—*J. R.*—*M. C.*—*H. B.*—*P.*—*H. E.*—*J. B.* & *Son*.—*J. A. C.*—*H. W.*—*W. B.*—*Comte du Buys*.—*Ed.*—*André* (with thanks).—*R. H. P.*—*W.*—*Lord T.*—*L.*—*A. A. C.*—*O.*—*O. B.*

Markets.

COVENT GARDEN, September 30.

Trade has been quiet, with scarcely any alteration, the principal feature of the week being large arrivals of Apples from America. Kent Cobs and Filberts are only cleared at lower rates. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0 5 0	Melons, each	2 0 3 0
Cobs, per lb.	1 3 0 0	Peaches, per doz.	6 0 12 0
Filberts, per lb.	1 3 0 0	Pears, per dozen	1 6 2 6
Grapes, per lb.	0 6 4 0	Pine-apples, per lb.	1 6 4 0
Lemons, per 100	6 0 10 0	Plums, ½-sieve	2 0 4 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	3 0 4 0	Horse Radish, p. bun.	4 0 0 0
Aubergines, per doz.	3 0 0 0	Lettuces, Cabbage,	0 6 1 6
Beans, French, p. lb.	0 6 0 0	per doz.	0 6 1 6
Beet, per doz.	1 6 2 6	Mint, green, bunch.	1 0 4 0
Cabbages, per doz.	1 0 2 0	Mushrooms, p. basket	1 0 2 0
Carrots, new, bunch	4 0 6 0	Onions, per bushel.	5 0 0 0
Cauliflowers, Eng-	0 3 0 0	— Spring, per bun.	0 6 0 0
lish, each	0 3 0 0	Parsley, per bunch.	0 4 0 0
Celery, per bundle	1 6 2 0	Radishes, per bun.	0 4 0 0
Chilis, per 100	3 0 0 0	Small salad, per bun.	0 4 0 0
Cucumbers, per doz.	0 6 0 0	Spinach, per bushel	2 6 0 0
Endive, per 2 doz.	1 6 3 0	Tomatoes, per lb.	0 9 1 0
Garlic, per lb.	1 0 0 0	Turnips, new, bunch.	0 4 0 0
Herbs, per bunch	0 2 0 4	Veg. Marrows, doz.	2 0 0 0

POTATOS.—Kent Regents, 80s. to 105s.; Champions, 80s. to 95s.; Early Rose 60s. to 80s.

Prices for cut flowers, and plants in pots, remain about the same as last week:—

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	3 0 6 0	Evergreens, in var.,	0 6 1 0
Begonias, per doz.	4 0 12 0	per dozen	0 6 1 0
Bouvardias, per doz.	12 0 24 0	Ferns, in variety, per	4 0 18 0
Chrysanth., per doz.	6 0 12 0	dozen	4 0 18 0
Cockscombs, p. doz.	3 0 6 0	Ficus elasticus, each	1 6 7 6
Coleus, per dozen	3 0 9 0	Foliage Plants, vari-	0 2 10 6
Cyperus, per dozen	4 0 9 0	ous each	0 2 10 6
Dracena terminalis	3 0 6 0	Fuchsias, per dozen	3 0 9 0
— viridis, per doz.	12 0 24 0	Lilium auratum, doz.	18 0 48 0
Erica gracilis, per	0 12 0 18 0	— various, per doz.	0 9 18 0
dozen	12 0 18 0	Myrtles, per doz.	6 0 12 0
— caffra, per doz.	18 0 0 0	Palms in var., each	6 2 1 0
Etiwayms, various,	0 6 0 18 0	Rhodanthe, per doz.	6 0 9 0
per dozen	6 0 18 0	Solanums, per dozen	6 0 18 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Heliotropes, 12 sp.	0 6 1 0
Asters, 12 bunches	3 0 6 0	Mignonette, 12 bun.	2 0 6 0
Bouvardias, per bun.	1 0 4 0	Pelargoniums, 12	0 6 1 0
Calceolaria, p. bunch	0 9 1 0	— zonal, 12 sprays	0 6 1 0
Camellias, per dozen	3 0 9 0	Phlox, 12 bunches	0 3 0 6
Carnations, 12 bun.	3 0 0 0	Primula, double, per	0 12 0 0
Dahlias, 12 bunches	3 0 6 0	bunch	1 0 1 6
Eucharis, per doz.	3 0 9 0	Roses (indoor), doz.	1 0 6 0
Feverfew, 12 bun.	4 0 6 0	— outdoor, 12 bun.	3 0 9 0
Forget-me-not, 12	0 3 0 0	Stephanotis, 12 spr.	3 0 6 0
bunches	0 3 0 0	Tropaeolum, 12 bun.	1 0 3 0
Gardenias, 12 blms.	3 0 6 0	Tuberose, per dozen	1 0 2 0
Gladioli, 12 spikes	1 0 3 0		

SEEDS.

LONDON: Sept. 29.—The market to-day was characterised by a quiet feeling. The new Trefoil seed which has been milled in this country from French consignments notwithstanding the further reduced terms now asked, still fails to find buyers. Clover seeds are firm, but no sales of importance are noted; purchasers are awaiting further information from America, and also from the Continent. There is no change in either Alsike or white Clover. Italian Rye-grass now shows an advance of 2s. per bale. A few sacks of good new Trifolium are still obtainable on Mark Lane. Winter Tares offer sparingly—the growers are asking more money; this favourable weather, moreover, encourages the consumptive demand. Finest seed Rye is selling at 39s. per quarter. New English Linseed is this season remarkably cheap and good. For blue Peas the trade exhibits considerable improvement. Haricot Beans are also in increased request. Scarlet Runners promise this year to be exceedingly abundant and low in price. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

POTATOS.

From the Borough and Spitalfields Markets reports we learn that supplies were on a liberal scale, and that trade remains dull. Quotations:—Kent Regents, 90s. to 110s.; Essex, do., 78s. to 90s.; Scotch, do., 80s. to 100s.; Jersey kidneys, 110s. to 120s.; Champions, 70s. to 80s. per ton.—The imports from Hamburg into London continue heavy. Last week 6674 bags arrived from that port, whilst from other ports the arrivals consisted of only about 100 bags and 82 barrels.

COALS.

The following are the quotations current at market during the week:—Beeside West Hartley, 14s. 3d.; Ravensworth West Hartley, 14s. 3d.; Walls End—Hetton, 17s. 6d.; Hetton Lyons, 16s.; Lambton, 17s.; Wear, 16s.; Tees, 17s. 3d.; Hawthorns, 16s. 3d.; South Hetton, 17s. 6d.; Thornley, 16s. 9d.; Radford Navigation, 16s.

Government Stock.—The closing prices of Consols on Monday were, for delivery, 97½ to 97½, and 97½ to 97½ for the account. On Tuesday prices for both delivery and account were 97½ to 97½; and on Wednesday the same figures were recorded. The final quotations on Thursday were 97½ for delivery, and 97½ to 97½ for the account.

STRAWBERRIES.

Strong Roots for Fruiting next year, 4s. per 100.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Pansies and Violas.

HEATH and SON beg to offer PANSIES in best named varieties, 20s. per 100. VIOLAS, do., 12s. per 100. Florists, Cheltenham.

RHODODENDRONS for POTTING—nicely furnished plants, with from five to twelve buds, in good varieties. Hardy AZALEAS, including the beautiful double varieties and Mollis.

ANTHONY WATERER has a very fine lot to sell this autumn. They will not fail to give satisfaction. Knap Hill Nursery, Woking, Surrey.

SURPLUS STOCK OF LARGE ORNAMENTAL AND EXHIBITION PLANTS.—Phormium Veitchii variegata, P. Colensoi; Dracanas, Palms, Crotons, and Heaths. Size and price on application.

EPIPHYLLUMS, grafted plants, of sorts, 12s., 18s., and 24s. per dozen.

PRIMULA FIMBRIATA, red and white, single pots, 16s. per 100.

DRACENA, of sorts, 9s., 12s., and 18s. per dozen.

CALLA ETHIOPIA, 9s. and 12s. per dozen.

R. W. PROCTOR, The Nurseries, Ashgate Road, Chesterfield.

FOR SALE, 1000 Common YEWs, for Hedges, &c., 3 to 6 feet; 500 Golden Queen HOLLIES, 1½ to 2 feet.—Apply

R. COLLYER, Cart House Lane, Woking Station, Surrey.

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COCOA-NUT FIBRE REFUSE.

3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.

LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.

BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 or 40s., or 34s. per ton; sacks, 4d. each.

COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 2 cwt. bags, 4d. each.

YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.

SPHAGNUM MOSS, 8s. 6d. per sack.

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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6d. per truck.

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Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.

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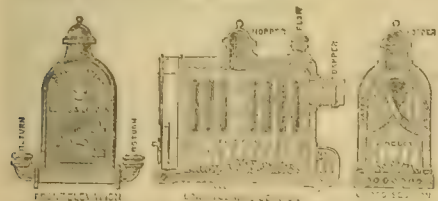
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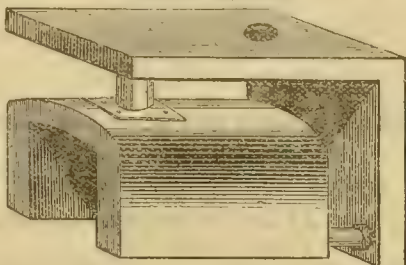
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24 "	24 "	24 "	700	12	0 0
24 "	24 "	30 "	850	14	0 0
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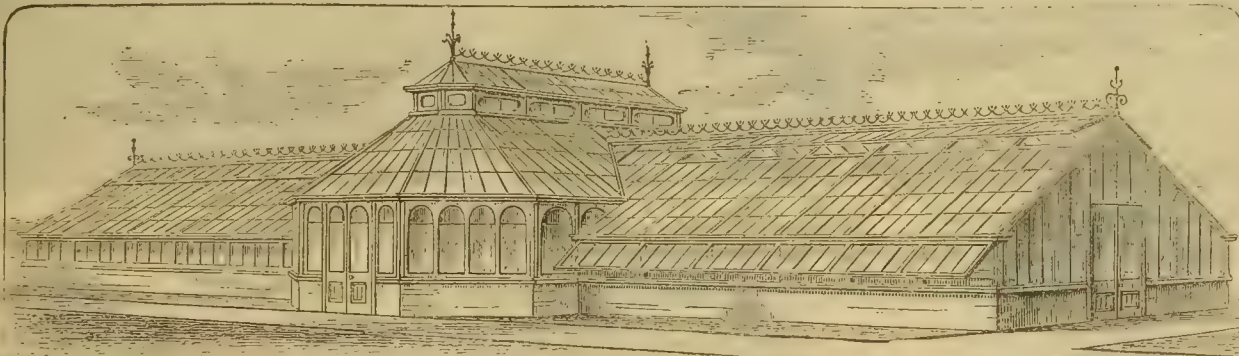
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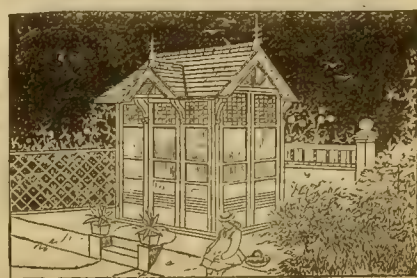
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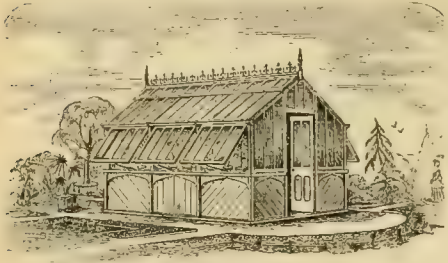
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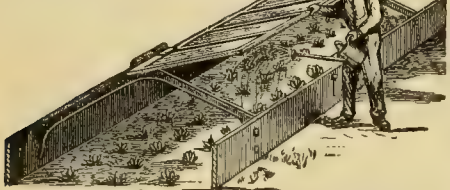


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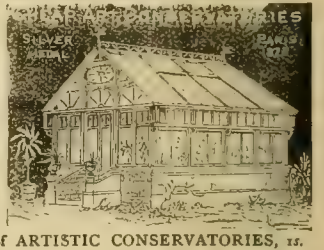
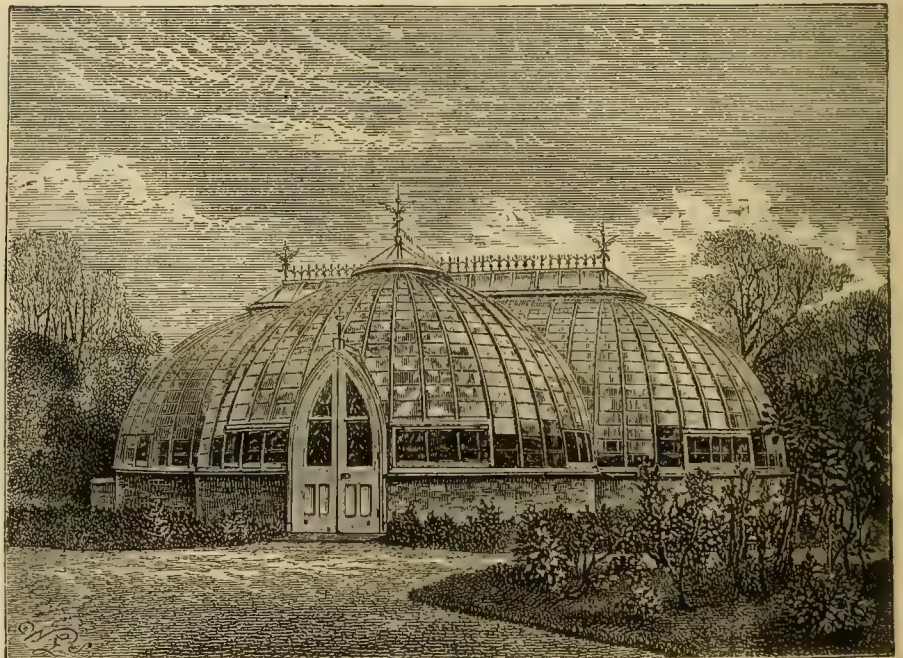
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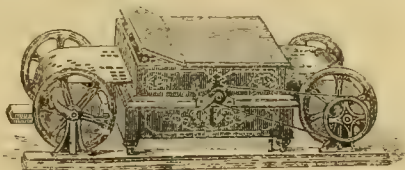
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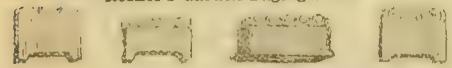
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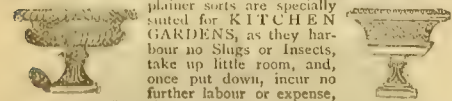
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Price, 2s. 6d. and 4s. 6d. per Bottle.

From Chemists and Perfumers. Forwarded to any address upon receipt of remittance by

BARCLAY & SONS, 95, FARRINGTON ST., LONDON. (or by any other Wholesale Agent).

DINNEFORD'S MAGNESIA.

The Medical Profession for over Forty years have approved of this pure solution as the Best Remedy for

ACIDITY OF THE STOMACH, HEARTBURN, HEADACHE, GOUT, and INDIGESTION,

and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.

DINNEFORD'S MAGNESIA.

OLD DR. JACOB TOWNSEND'S

SARSAPARILLA.—The best autumnal Medicine for the Blood, Scorbatic Disorders, Gout, and all Skin Diseases. In Bottles, 2s. 6d., 4s. 6d. and 12s., of all Chemists. Chief Depot: 131, Fleet Street, E.C.—DEAN, STEEL AND CO.

HOLLOWAY'S OINTMENT and PILLS.

Diseases of the Skin.—No case of Disease of the Skin, be its nature what it may, has failed to be benefited when these potent remedies have been properly applied. In Scrofulous and Scorbatic Affections they are especially serviceable. Scurvy and Eruptions, which had resisted all other modes of treatment and gradually become worse from year to year, have been completely cured by Holloway's Cooling Ointment and Purifying Pills, which root out the disease from the blood itself and leave the constitution free from every morbid taint. In the Nursery Holloway's Ointment should be ever at hand: it will give ease in Sprains, Contusions, Burns, Scalds, and Infantile Eruptions, and may always safely be applied by any ordinary attendant.

SEND FOR A PRICE LIST OF

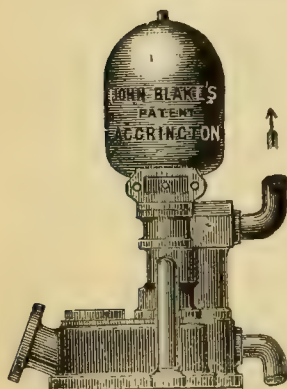
JOHN BLAKE'S PATENT SELF-ACTING HYDRAULIC RAMS,

*For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions,
Fountains, Farms.*

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 ft.

RECENT TESTIMONIALS.

From V. F. BENETT-STANFORD, Esq., M.P., *Pyt House, Tidbury, Wilts, August 20, 1880.*—"I have no hesitation in saying my Self-acting Hydraulic Ram and Apparatus for Extinguishing Fire, which you laid down here, including about a mile of pipes, are very satisfactory. The Ram forces upwards of 5000 gallons per day to a service reservoir holding 25,000 gallons at an elevation of 205 feet, being 70 feet above the roof of the house, from which reservoir the water is distributed to the house, stables, home farm, and several cottages; and in case of fire, four jets can be thrown on to the house from different sides at a great force and large volume. I consider the work has been done well and efficiently, and does you credit."

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March 1, 1880.*—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of the tower, 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

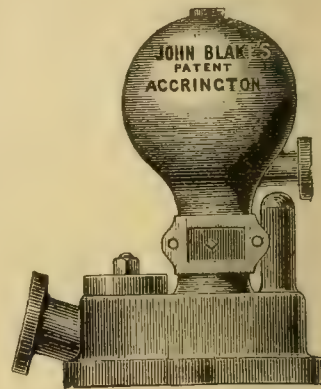
From Sir ROBERT MENZIES, Bart., of Menzies, *Rannoch Lodge, Rannoch, August 20, 1880.*—"The Hydraulic Ram you fixed for me to supply water to Rannoch Lodge and Camessurich, two houses three-quarters of a mile apart, is a complete success. The extreme distance the water is carried is a mile and a quarter, and though the elevation of the two houses are different, there is a regular supply of seven quarts per minute to each house, which has never ceased since the Ram was set going, about three months ago. Your Ram took the place of one previously tried on the same spot, and which did not succeed, and was in fact a complete failure."

From Capt. GANDY, *Castle Bank, Appleby, February 11, 1880.*—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 72 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

BLAKE'S HYDRAULIC RAMS

have been supplied to the following amongst others:—

- His Grace the Duke of Cleveland.
The Right Hon. the Earl of Crawford and Balcarres.
The Right Hon. the Earl of Derby.
The Right Hon. the Earl of Ilchester.
The Right Hon. the Earl of Romney.
The Right Hon. the Earl of Granard.
The Countess de Morella.
Lord Leaconsfield.
The Right Hon. T. Sothorn Estcourt.
The Right Hon. R. More O'Farrell.
The Hon. George Kenyon.
Admiral Sir George Broke Middleton, Broke Hall, Suffolk.
Gen. Gerard Potter Eaton, The Pole, Cheshire.
Sir Henry A. Hoare, Stourhead, Bath.
Sir William Fielding, Feniscowles, Blackburn.
Sir Robert Menzies, of Menzies.
Sir Henry W. Ripley, M.P., Acacia, near Leeds.
Colonel Starkie, Lovely Hall, Blackburn.
Colonel Milligan, Caldwell Hall, Burton-on-Trent.
Colonel Towneley, Towneley, Lancashire.
Colonel Hargreaves, Maiden Erlegh, Berkshire.
Colonel Tremayne, M.P., Carclew, Cornwall.
Colonel Mitford, Mitford Castle, Northumberland.
Colonel Leyland, Nantclwyd Hall, Ruthin.
Colonel R. R. Jackson, Lostock Hall, Lancashire.
W. Bromley-Davenport, Esq., M.P., Capes-
thorne, Cheshire.
V. F. Bennett-Stanford, Esq., M.P., Pyt
House, Wilts.
John Hick, Esq., M.P., Mytton Hall, Lanca-
shire.
Hamer Bass, Esq., M.P., Needwood Hall,
Burton-on-Trent.
Major J. F. Trist, Tristford, Totnes.
Captain Gandy, Skirsgill, Penrith.
Captain Townshend, Wincham.
Henry Sandbach, Esq., Hafodunias, Abergel-
le.
The Rev. H. J. De Sallis, Portnall Park, Vir-
ginia Water.
The Rev. E. G. Edwards, Trentham, Stafford-
shire.
G. H. Pinckard, Esq., Combe Court, Godal-
ming.
W. Bickford Smith, Esq., Trevanno, Cornwall.
John Taylor, Esq., The Rocks, Bath.
William Roundell, Esq., Gledstone, Skipton.
Archibald Dunn, Esq., Architect, Newcastle-
on-Tyne.
L. Hamner, Esq., Deanwater, Wilmslow.
W. H. Hornby, Esq., Poole Hall, Nantwich.
T. W. Bateman, Esq., Middleton Hall, Derby-
shire.
John Hampson, Esq., Ullenwood, near
Cheltenham.
R. Andrews, Esq., Prestbury Hall, Cheshire.
Richard Smethurst, Esq., Ellerbeck Hall,
Lancashire.
T. M. Shuttleworth, Esq., Howick House,
Preston.
C. R. Collins, Esq., Strath Culme House, Hele,
Devonshire.
S. S. White, Esq., Manor House, Wethersfield,
Essex.
The Corporation of Blackburn.
J. Barnes, Esq., Contractor, Chatburn and
Hellefield Railway.
The Executors of John Hargreaves, Esq.,
Burnley.
G. Redmayne, Esq., Brathay Hall, Amble-
side.
Thomas Mason, Esq., Alkincoates Hall, Colne.
Basil Sparrow, Esq., Gosfield Place, Halstead,
Essex.
R. O. Leycester, Esq., Toft Hall, near Knuts-
ford.
Fred. Lion, Esq., Seighford Hall, near Staf-
ford.
Rev. A. C. Basset, Watermouth, Ilfracombe.
John Walker, Esq., Mount St. John, Thirsk.
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Colne.
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David Russell, Esq., Silverburn, Leven.
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The Castle Brick Company, Northop, Flint.
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Burnley.
Charles Hill, Esq., Rockhurst, Sussex.
Messrs. A. & W. Law, Manufacturers, Little-
borough.
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Northampton.
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Rugby.
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Hellefield Railway.
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J. R. Shaw, Esq., Arrowe Park, Birkenhead.
Thos. Townley-Townley-Parker, Esq., Cuer-
den, Lancashire.
John Fielden, Esq., Grimston Park, Tadcaster.
The Rev. Canon Bridges, The Avenue, Ewell,
Epsom.
A. Stead, Esq., Woodley, Romsey.
John Rowe Bennion, Esq., Nursted House,
Petersfield.
J. Spender Clay, Esq., Ford Manor, Surrey.
The Guardians of the Sheffield Union (New
Workhouse).
Richard Mercer, Esq., Sandling Place, Maid-
stone.
James Smithells, Esq., (Caledonian Railway),
Dean Wood, Rivington.
Chas. J. Ebdon, Esq., Baldolo Manor, Hast-
ings.



This Ram, for deep working falls, will force up one-third of the water passing through it.

RECENT TESTIMONIALS.

From J. SPENDER CLAY, Esq., *Ford Manor, Lingfield, Surrey, August 9, 1880.*—"In reply to your letter of inquiry I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6120 gallons per twenty-four hours, being 120 gallons above the quantity you guaranteed."

From the Right Honourable the EARL of ROMNEY, *Eaton Place, S.W., June 12, 1880.*—"Sir,—In reply to your inquiry, I have pleasure in stating that the Hydraulic Ram which you erected for me at Gayton does its work remarkably well, and is a great success. I think the work is especially creditable to you on account of the very small fall of but 3 feet with which you had to deal, and I shall always be glad to recommend you.—Yours faithfully, ROMNEY."

From JOHN ROWE BENNION, Esq., *Nursted House, Petersfield, August 25, 1880.*—"I have much pleasure in saying that the two Hydraulic Rams you put down for me, and which are supplied from a spring now yielding in this dry season only 3 gallons per minute, are sending up an ample supply of water to my house and the home farm, distributing the supply through more than 2000 feet of pipes and to an elevation of 137 feet. Of this result I think you have as much reason to be proud as I have to be satisfied."

From EDWARD SINGLETON, Esq., *Preston Deanery, Northampton, July 9, 1880.*—"The Hydraulic Ram you fixed here for me is very successful. It sends up more than sufficient water for a hundred head of cattle, besides horses, also feeds a steam engine, and during two severe winters we have not had a pipe go wrong with frost as I quite expected they would do. No farmer who requires abundance of water should be without one."

From Col. TREMAYNE, *Ferran-ar-Worthall, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons per day to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 354.—VOL. XIV. { NEW SERIES. }

SATURDAY, OCTOBER 9, 1880.

{ Registered at the General Post-office as a Newspaper. } Price 5d. POST FREE, 5d.

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NOTICE.—Will be published with the "Gardeners' Chronicle" for next Saturday, October 16, a Double-page Coloured Plate of the POET'S NARCISSUS.

For further particulars, see page 454.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Complete.

SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of the Numbers:—

1879.—Oct. 11, 25.	1880.—Jan. 10, 24.	1880.—May 8, 29.
Nov. 8.	Feb. 7, 21.	June 10.
15, 20.	Mar. 20, 27.	July 10.
Dec. 13.	April 3.	August 7.

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY,

South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M., GENERAL MEETING at 3 P.M., on TUESDAY NEXT, October 12. Admission 1s.

N.B.—The Special Prizes offered by Messrs. Freeman & Freeman for Vegetables, and Messrs. Ewing & Co. for Fruit, will be competed for at this Meeting.

THE LIVERPOOL HORTICULTURAL ASSOCIATION will hold their First Grand Autumn EXHIBITION OF CHRYSANTHEMUMS, STOVE and GREENHOUSE PLANTS, FRUITS and CUT FLOWERS, in St. George's Hall, on TUESDAY and WEDNESDAY, November 23, and 24, when over ONE HUNDRED and THIRTY POUNDS will be given in PRIZES. The dates are fixed subject to the Assize Courts. If the Hall be not available for these dates, due notice will be given. Prices of Admission:—First Day, from 1 to 5 P.M., 2s. 6d.; and from 5 to 10 P.M., 1s. Second Day, open from 10 A.M. till 9 P.M., 1s. Schedules may be had on application to

R. WASHINGTON, Secretary.
25, Lucerne Street, Lark Lane, Liverpool.

To the Trade.

DAPHNE INDICA RUBRA, short, healthy, green plants, with 2 to 4 shoots, 55s. per 100. ISAAC DAVIES, Nurseryman, Ormskirk.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free on application. Lion Walk, Colchester.

EWING AND CO.'S Magnificent Collection of SPECIMEN CLEMATISES is NOW in FULL BLOOM. The Nurseries are open to the Public on Week-days. CATALOGUES of Clematisses, Roses and General Nursery Stock gratis and post-free. The Royal Norfolk Nurseries, Eaton, near Norwich.

BROOM SEED, White Portugal, just harvested. The undersigned has a quantity to offer, price on demand. FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

SEEDLING THORNS.—The finest in the Trade. Price and particulars on application. Also transplanted of various sizes. RODGER Mc CLELLAND AND CO., 64, Hill Street, Newry.

Bulbous Flower Roots.
FIRST QUALITY, CARRIAGE FREE.
JAMES DICKSON AND SONS have received, in the finest possible condition, their first large annual consignment. Priced CATALOGUE post-free. 108, Eastgate Street, Chester.

Roses.
W. GROVE, Tupsley, Hereford, offers choice dwarfs, fine plants; sample dozen, 4s. 6d. QUICK, 12s. 6d. to 3s. per 1000. See LIST.

All Kinds of
FIELD and GARDEN SEEDS are purchased by I. KORNWEIBEL, Seed Merchant, Dusseldorf, Germany.

TO FURNISHERS and OTHERS.—1 Chamærops excelsa, 1 Latania, 1 Pandanus, 3 Allamandas, 3 Phoenix dactylifera, 1 Croton, 13 Specimen Ferns, 50 fine Peach Trees, fit for pots, all splendid stuff, to be SOLD cheap, in lots, or EXCHANGED for EUCHARIS, Double White PRIMULAS, GARDENIAS, or White AZALEAS. For particulars apply to G. BEER, Chesswood Gardens, Worthing.

EXCHANGE.—Norway Maple, 10 to 14 feet; Horse Chestnuts, 6 to 8 and 8 to 10 feet; Black Italian Poplars, 6 to 8, 8 to 10, and 10 to 14 feet; Gean or Wild Cherry, 10 to 14 feet. The above are all fine clean-grown transplanted trees, and will be EXCHANGED for CONIFERÆ, &c., or special quotations given. STUART, MEIN, and ALLAN, Nurseries, Kelso.

Cut Flowers.
WANTED, CAMELLIAS, ROSES, EUCHARIS, GARDENIAS, VIOLETS, and other CHOICE FLOWERS. TURNER BROTHERS, Florists, 2, Parker Street, Liverpool.

WANTED, STEPHANOTIS, GARDENIAS, CAMELLIAS, and other CHOICE FLOWERS.—Letters and Consignments to W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WANTED, a few Hundred CAMELLIA JAPONICA, and several thousand MANETTI STOCKS. Please state lowest price. WM. DEEDMAN, Titchfield, Hants.

WANTED, OLD GERANIUMS, from the Ground, free from frost. The following sorts required:—Vesuvius, Master Christine, Flower of Spring, and Madame Vaucher. State lowest price per 100 or 1000. JAMES WALTON, F.R.H.S., Nurseryman and Florist, Horn Park and Eltham Road Nurseries, Lee Green, S.E.

WANTED, about 300 SYCAMORES, 12 to 14 feet high. Must be good formed trees. Send lowest price for cash to ARTHUR BOOTY, Rose Villa Nursery, High Harrogate.

Limes.
WANTED, 2000, for Avenues. Must be stout, healthy trees, about 7 feet in stem. Price for the whole or per 100, delivered in London, to W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WANTED, Seventy LIMES, 8 to 10 feet. State lowest price delivered at Edmonton. B. J., Poole's Library, Edmonton Green, Middlesex.

WANTED, English YEWS, 4 to 5 feet; Common BOX, 2 to 3, and 3 to 4 feet. Lowest cash price per 100. W. AND J. BROWN, Stamford.

WANTED, CRAB STOCKS. Apply, J. C. WHEELER AND SON, Kingsholm Nursery, Gloucester.

WANTED, CHOICE FRUITS, CUT FLOWERS, &c. Prompt returns and moderate commission. WISE AND RIDES, Tavistock Court, Covent Garden, W.C.

WANTED, English GRAPES and FRUIT of all kinds, suitable for Sale in Smithfield Market, Manchester. Good prices realised, and prompt cash. Moderate commission. DORAN AND SON, Stretford, Manchester.

WANTED, Quotations for FORCING SEAKALE.—Apply, stating price per 1000, to JOHN STANDISH AND CO., Royal Nurseries, Ascot.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit. CARTERS, the Queen's Seedsmen, High Holborn, London.

FINE FOLIAGE.—Intending Planters should visit H. LANE AND SON'S Nurseries, Berkhamstead, to see the variety of Foliage and different styles of Plants.

CAMELLIAS, in Bud, small plants, at £3 per 100; larger, £6 per 100; **AZALEAS, in Bud**, at £4 per 100; beautiful Crowns, at £5 per 100; **LILY OF THE VALLEY**, 35s. per 1000; **CHRISTMAS ROSES**, £4 per 1000; **SPIRÆA JAPONICA**, £4 per 1000. PETER DE COCK, The White Flower Nursery, Meirlebeke, Ghent, Belgium.

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. **HARDY AZALEAS**, a selection of the most beautiful kinds known, all well furnished with buds. Knap Hill Nursery, Woking, Surrey.

Christmas Roses.
BUDDENBORG BROS., BULB GROWERS, Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.

NEW ROSES in Pots.—Tea and Noisette ROSES in Pots—CLEMATIS in Pots. **INFALLIBLE MILDEW COMPOSITION.** Special LISTS, with full particulars, now ready, gratis and post-free. EWING AND CO., EATON, NORWICH.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HERE-FORD. (Established 1785.) Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

TWELVE GARDENIA INTERMEDIA for 12s.—Strong, well-grown, clean plants in 5-inch pots of this, the best variety for winter flower. Packages gratis for cash with order. J. H. LEY, Royal Nursery, Croydon.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug. Royal Nurseries, Ascot, Berks.

STRAWBERRIES.
The best sorts for Fruiting next year. V. H. DE THURY. } Strong plants, all well rooted, in small pots, prepared for PRESIDENT, } forcing, 10s. per 100. Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1000. Package free. Extra Plants for carriage. Cash from unknown correspondents. H. J. HARDY, F.R.H.S., Stour Valley Seed Grounds, Bures, Suffolk.

STRAWBERRY RUNNERS.—Twelve leading varieties, 2s. per 100, or 15s. per 1000. True to name. J. G. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once. CATALOGUE post-free. Special Prices for large quantities. H. CANNELL, Swanley.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. **MANUAL ON STRAW-BERRY CULTURE**, with sample of plants, post-free, 1s. W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

Strawberries.
CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice. The Royal Nurseries, Slough.

VINES—VINES—VINES.—B. S. W. has much pleasure in announcing that his Stock of VINES is this year unusually fine, and comprises all the leading kinds including ALNWICK SEEDLING. For descriptions and prices, see B. S. W.'s Bulb CATALOGUE for this year. B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, N.

Vines—Vines—Vines.
J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

SALES BY AUCTION.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., every **MONDAY, WEDNESDAY, and SATURDAY**, during October, at half-past 12 o'clock precisely each day, consignments of **DUTCH BULBS** arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues hid.

Plants from Ghent.—Bulbs from Holland.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **WEDNESDAY, October 13**, at half-past 12 o'clock precisely, a consignment of 600 choice **CAMELLIAS, INDIAN AZALEAS, PALMS, &c.** from Ghent; consignment of **BULBS and PLANTS** from Germany; a quantity of **HARDY HERBACEOUS BORDER PLANTS**; and a choice assortment of First-class Double and Single **HYACINTHS**, for glasses, pots, and borders; **TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULUS, SCILLAS, SNOWDROPS, Roman HYACINTHS**, and other **BULBS** from well-known Farms in Holland, in lots to suit all buyers.

On view the morning of Sale, and Catalogues had.

Anthurium Andreanum.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, October 14**, at half-past 12 o'clock precisely, 100 Established Plants of the marvellous **ANTHURIUM ANDREANUM**, First-class Certificate, Royal Horticultural Society, London, April 13, 1880; 1st Prize, Extra Gold Medal, Royal Botanic Society, Ghent, March, 1880; 1st Prize for the best New Flowering Plant, Grand National Exhibition, Brussels, July, 1880; also 25 Plants of **LYCASTE SKINNERI ALBA**; by order of Mr. J. Linden, of Ghent. A specimen in bloom will be in the room.

On view the morning of Sale, and Catalogues had.

Important Sale of Masdevallia Harryana

and **ODONTOGLOSSUM ALEXANDRAE**. **MR. J. C. STEVENS** begs to announce that he has received instructions to **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, October 14**, 200 fine plants of this lovely **MASDEVALLIA**, just arrived, from an entirely new locality, in the best possible condition. These will be found in this consignment some of the finest masses ever brought alive to this country. The plants have beautiful green leaves from 6 to 15 inches long, and are breaking freely. Amongst this lot buyers may expect to find some of the darkest varieties, as the Collector found several of the plants in flower. The **ODONTOGLOSSUMS** are also from a new locality, in fine order, and good varieties may be expected from them. There will be 500 of these offered. Owing to the great difficulty of importing **Masdevallias** to this country in good order these plants will never become so plentiful as many other Orchids.

On view the morning of Sale, and Catalogues had.

Highly Important Sale of Entirely New Crotons, DRACENAS, and OTHER NOVELTIES.

MR. J. C. STEVENS is favoured with instructions to offer for **SALE** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, October 14**, at half-past 12 o'clock precisely, Without Reserve, a valuable **COLLECTION of ENTIRELY NEW VARIETIES** of the above well-known plants. They have been sent to this country from Australia by a very eminent cultivator, and the plants have been grown here for a considerable time, so as to fully establish them. They are strongly recommended as being quite distinct from all others in cultivation, and well worthy the attention of Nurserymen and others interested in New Plants. In all cases every plant of each kind as received or since propagated in this country is offered.

On view the morning of Sale, and Catalogues had.

Bedford.

IMPORTANT SALE of VALUABLE and WELL-GROWN NURSERY STOCK, the land being required for building purposes, the property of Mr. Sheppard.

MR. H. PULLEY will **SELL** by **AUCTION**, on the premises of Mr. Sheppard, the Nurseries, Union Street, Bedford, on **TUESDAY, October 19**, and two following days, at 10 for 12 o'clock precisely each day, the valuable **NURSERY STOCK**, consisting of upwards of 9000 Evergreen and Deciduous Flowering Shrubs, 2000 large Handsome and variegated Box Trees, 1500 Aucuba japonica, and some male varieties; 300 Standard and Ornamental Trees, 500 Climbing and other Roses, 2400 Raspberry Canes, 8000 Strawberry Plants, 200 Fruit Trees, 600 Plants in Pots, consisting of Chrysanthemums, Ferns, and Pelargoniums; a quantity of Hardy Phloxes, Roots of Pampas-grass, &c.

May be viewed one week prior to Sale. Catalogues may be had on the Premises, and of the Auctioneer, Bedford.

Every Monday.

SALES of DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE and MORRIS will **SELL** at the Mart, on **MONDAY NEXT**, and every following Monday, at half-past 11 o'clock precisely, extensive consignments of first-class **HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS**, and other **BULBS** from Holland, in lots to suit all buyers.

Catalogues at the Mart, and 38, Gracechurch Street, E.C.

Brixton, S.W.

MESSRS. PROTHEROE and MORRIS will **SELL** by **AUCTION**, on the Premises, the Nursery, Loughborough Park, Brixton, S.W., on **TUESDAY and WEDNESDAY, October 12 and 13**, at 12 o'clock each day, by order of Messrs. Ponsford & Son, a large quantity of **NURSERY STOCK**, in healthy and thriving condition, including an assortment of Evergreen and Deciduous Shrubs for border planting, 5000 Limes, 1200 Planes, 3000 Aucubas, 1000 Ives of sorts, 3000 Eucalyptus of sorts, 2000 Hardy Climbers, 2000 Standard and Trained Fruit Trees, 2000 Mulberries, recently transplanted. Also the **SURPLUS STOCK of STOVE and GREENHOUSE PLANTS, &c.**

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C.; and Leytonstone, E.

Frindsbury, near Rochester, Kent.

UNRESERVED SALE.

MESSRS. PROTHEROE and MORRIS are instructed by Miss Beadle, who is giving up the business, to **SELL** by **AUCTION**, on the Premises, The Bell Street Nurseries, Frindsbury, about a mile from Strood and Rochester Bridge Stations, on **WEDNESDAY, October 13**, at 12 o'clock, the well grown **NURSERY STOCK**, in good condition for removal, including 5000 Coniferæ and Evergreen Shrubs, an assortment of Ornamental and Forest Trees, 3000 Ash, 5000 Privet, 5000 Gooseberries and Currants, 1200 Fruit Trees, 15,000 strong Quicks, and other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. The NURSERY TO LET. Particulars and terms of the Auctioneers.

Lower Norwood, S.E.—Fifth Annual Sale.

MESSRS. PROTHEROE and MORRIS will **SELL** by **AUCTION**, on the Premises, the Castle Nursery, Lower Norwood, S.E., near the Lower Norwood Station, on **FRIDAY, October 15**, at 12 o'clock precisely, by order of Mr. James, a carefully selected Assortment of Valuable **ESTABLISHED ORCHIDS**, in splendid condition, and for the most part showing flower, including two fine strong plants of the new **Anthurium Andreanum**; also a quantity of young and free-growing **STOVE and GREENHOUSE PLANTS**, **Exotic FERNS**, **Tree CARNATIONS**, **Specimen CAMELLIAS and AZALEAS**, the whole stock of the splendid new **COLEUS "SOWERII"**, and other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Important Sale of a First-class Collection of Dutch

BULBS, 400 Handsome Standard and Dwarf ROSES, Selected Hardy AMERICAN PLANTS, Fine FRUIT TREES, PRIMULAS, &c.

MESSRS. PROTHEROE and MORRIS will **SELL** by **AUCTION** the above, at the City Auction Rooms, on **SATURDAY, October 16**, at 12 o'clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

The Nursery, High Street, Acton, W.

MESSRS. PROTHEROE and MORRIS will **SELL** by **AUCTION**, on the Premises as above, on **TUESDAY, October 19**, at 12 o'clock precisely, by order of Mr. Reeves, who has to give up a portion of his land for building, a large quantity of well-grown **NURSERY STOCK**, including 3500 Aucubas, 1000 Limes, 1000 Thuja aurea, 1000 Arbor vites, several hundreds of Eucalyptus, 1500 Ives and Creepers, an assortment of Conifers and Evergreens, for Border planting, Deciduous Shrubs, Ornamental Trees, &c.; also 600 double white Primulas, and 300 Poinsettias, together with 50 FIGS.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Tooting, S.W.

CLEARANCE SALE, in consequence of a portion of the Land being required for Building.

MESSRS. PROTHEROE and MORRIS will **SELL** by **AUCTION**, on the Premises, the Exotic Nursery, Tooting, S.W., on **TUESDAY and WEDNESDAY, October 19 and 20**, at 12 o'clock precisely each day, by order of Mr. R. Parker, Without Reserve, a large quantity of extra young **NURSERY STOCK**, remarkably well grown and in excellent condition for removal, comprising several thousands of choice Evergreen and Coniferæ Shrubs, handsome specimen Coniferæ, a splendid assortment of Ornamental and Forest Trees, fine Fruit Trees, Hardy Climbing Plants, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

King's Newton, Melbourne, Derby.

About a Quarter of a Mile from Melbourne Station.

3½ ACRES of THREE-YEAR OLD TRANSPLANTED QUICKS.

MESSRS. OLIVER, NEWBOLD, and **OLIVER** respectfully give notice that they are instructed to **SELL** by **AUCTION**, on **THURSDAY, October 14**, about 1,500,000 3-yr.-old Transplanted QUICKS, in lots of from 30,000 to 40,000 each, now growing on 3½ acres of land. The Quicks is well grown, of a superior quality, and convenient for removal by road or railway.

The Auctioneer will be glad to meet his company on the ground at 10 o'clock.

To view, apply to the Auctioneers, or to Mr. PASS, Farmer, King's Newton.

At the Gardens, Oakwood, Crayford.

Choice **FERNS, ORCHIDS, and WINTER-FLOWERING PLANTS.**

MR. DANN has received instructions to **SELL** by **AUCTION**, on **WEDNESDAY, October 30**, at 12 for 1 o'clock, on the Premises, 140 Ailanthus and other choice Ferns, 62 Orchids, 40 Azaleas, 12 Camellias, 600 Solanums, 400 Dracenas, 120 Crotons, 12 Eucharis, 100 Primulas, 800 Chrysanthemums, 36 Callas, 84 Poinsettias, 300 Strawberry Plants, Bouvardias, Hoyas, Callas, Isoplexis, and numerous other Plants for Winter Decoration. Also a stump of Meadow HAY. May be viewed the day previous and morning of Sale. Catalogues may be had of Mr. A. TOMLIN, at the Gardens, Oakwood, and of the Auctioneer and Estate Agent, Bexley.

Survey (4620) close to the Crystal Palace.

FOR SALE, a very Lucrative and Old-established **NURSERY and FLORIST'S BUSINESS** (the owner retiring), situate in the leading thoroughfare of a high-class locality, comprising a Residence, with imposing Shop and Conservatory, 2 Acres of Land, and 12 Greenhouses. Rent, on lease, £160 per annum. Income reduced from £1100 to £600. Personally inspected and recommended by Messrs. PROTHEROE and MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C., of whom detailed particulars and orders to view may be had.

To Nurserymen, &c.

TO BE SOLD, about 1 Acre in extent of **GARDEN and BUILDING LAND**, well stocked and planted with Fruit Trees; 2 Greenhouses, heated with hot water; Potting-shed, Well of Water, Piggeries, Fowl-yard, &c. Close to Great Northern Station. Apply to **W. GOODE**, High Street, Dunstable, Beds.

The late Mr. John Verschaffelt.

THE NURSERY at LEDEBERG,

near Ghent, lately conducted by

MR. JEAN NUYTENS VERSCHAFFELT

IS FOR SALE,

ON ADVANTAGEOUS TERMS,

And with Special Facilities for Payment to a Suitable Purchaser.

Apply to

MADAME NUYTENS VERSCHAFFELT,

CHAUSSÉE DE BRUXELLES 134,

LEDEBERG LEZ GAND, BELGIUM.

To Florists and Others.

TO BE LET, about 4 Acres of excellent **LAND**, on which are erected eleven well-built Propagating Houses, each 150 feet long by 16 feet wide, with Boiler-house, Potting Shed, &c., complete. For particulars apply to **Mr. J. GOULD**, Surveyor and Auctioneer, Parrock Street, Gravesend.

Waltham Cross, Herts.

TO FLORISTS.

TO BE LET, on Lease, extensive **PLEASURE GARDENS**, with large Vinery, Greenhouses, and other Buildings, with Front Shop and Rooms on main road, suitable for a Florist's Business. Three minutes from Waltham Station on the Great Eastern Railway, and 11 miles from London. Apply at the "Four Swans," Waltham Cross, Herts.

To Gardeners.

TO BE LET, a good **COTTAGE**, with every convenience, and One Acre of **GARDEN GROUND**, wherein is a large Peach-house, well stocked Cucumber-house, and small Stone and Conservatory; the Garden well stocked with Trees. Rent, 25 guineas. Close to a good Market Town, and within 22 miles of London. Fruit will sell per rent. Application to be made to **A. B.**, 28, Great James Street, Bedford Row, London, W.C.

The Gardeners' Royal Benevolent Institution.

NOTICE IS HEREBY GIVEN that an Addition will be made to the **LIST of PENSIONERS** in **JANUARY NEXT**. All persons desirous of becoming Candidates are required to send in their applications to the Committee on or before November 6 next, after which date they cannot be received. Preference will be given to those applicants who have been subscribers for fifteen years and upwards. Should there not be a sufficient number of this class to fill the vacancies then the claims of those who have not subscribed so long, or not at all, will be considered.—By order, **E. R. CUTLER**, Secretary.

14, Tavistock Row, Covent Garden, W.C., October 6. P.S. Printed Forms can be obtained on application to the Secretary.

PLANT FRUIT TREES EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit trees. We beg to invite inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

Descriptive Priced CATALOGUE free on application. **CRANSTON'S NURSERY and SEED CO. (Limited)**, King's Acre, Hereford.

To the Trade.

JOHN PERKINS and SON beg to call attention to their large Stock of the following, the whole of which are good plants and well rooted:—

CEDRUS DEODARA, 3 to 4, and 4 to 5 feet. **HOLLY**, Green, 1½ to 2, 2 to 3, and 3½ to 4 feet. **LAURELS**, Common, 1½ to 2, 2 to 3, and 3½ to 4 feet.

Portugal, 1½ to 2, 2 to 3, and 3½ to 4 feet. **PICEA NORDMANIANA**, 3 to 4, and 4 to 6 feet. **THUJA AUREA**, 1 to 1½ foot, and 1½ to 2 feet. **WELLINGTONIA GIGANTEA**, 2 to 2½, and 2½ to 3 feet.

VEWS, English, 3 to 4, and 4 to 5 feet.

Wholesale CATALOGUES on application.

52, Market Square, Northampton.

SPECIAL OFFER

to intending Planters.

EVERGREENS up to 5 feet, well assorted, £5 per 100, consisting of Rhododendrons, Hardy Azaleas, English and Irish Yews, Box, Laurels, Cupressus, Arbor-vites, Junipers, Berberis, Lilacs, &c.

STANDARD PEARS, of choice varieties, in fruiting condition, £7 10s. per 100, or 15s. 6d. to 35s. 6d. each.

Also some exceptionally fine Specimen **PORTUGAL LAURELS**, 2 to 5 feet through, and bushy **ENGLISH YEW**s, 5 to 6 feet high, all fibrous-rooted and well prepared for moving. Prices on application.

POUNCE and SONS, Nurserymen, Hendon, Middlesex.

Autumn, 1880.

WOOD and INGRAM'S abridged Trade

LIST of Fruit Trees, Forest Trees, Ornamental Trees and Shrubs, Roses, and other Nursery Stock, is now ready, and will be forwarded (to the Trade only), on application, The Nurseries, Huntingdon.

BOX EDGING—10,000 Nursery Yards,

dwarf and fine. Sample and price from **J. B. YOUNG**, Landscape Gardener, Bridge of Allan.

FOR SALE, a quantity of good **STOVE**

and other **PLANTS**.

L. W., 2, Oatlands Villa, Weybridge, Surrey.

PRIMULAS and CINERARIAS, prize strain,

strong plants, 12s. 6d. per dozen, free by post.

J. GEO. HILL (late Scott), The Royal Seed Stores, Yeovil.

Flowers for Cutting.

PANCRATIUM ROTATUM.—A most useful plant for cutting for bouquets, or any other decoration. It produces snowy-white flowers, in clusters of nine to twelve, on stiff, erect scapes, deliciously fragrant and extremely elegant. Two guineas per dozen.

PANCRATIUM AMENUM.—White flowers, very useful for cutting, and deliciously fragrant. Two guineas per dozen.

PANCRATIUM FRAGRANS.—White and fragrant. Not only good for cutting, but one of the handsomest flowering plants known. Four guineas per dozen.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

SIX FILMY FERNS, 21s.—Fine plants, well established, and growing freely, of the following five rare and beautiful sorts, in 3 and 4-inch pots:—*Todea superba*, *T. pellicida*, *Trichomanes radicans*, *T. Andreanum*, and *Hymenophyllum demissum*. Carefully packed (to travel safely) gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.

JAMES DICKSON & SONS, NEWTON Nurseries, CHESTER.

Blooming Rhododendrons.

H. LANE AND SON, Nurseries, Berkhamstead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

A. M. C. JONGKINDT CONINCK begs to offer a large stock of

VERY SOUND, HOME-GROWN LILUM AURATUM.

Prices on application.

Dedemsvaart, near Zwolle, Netherlands.

SPRUCE FIRS.—100,000 for Sale, cheap, all sizes. Prices and samples on application to **J. GEO. HILL, The Royal Nurseries, Merriott, Somerset.**

To the Trade.

HYACINTHS, named; Double DAFFODILS, NARCISSUS, Double White and Poeticus. Special low offer of the above on application.

GEORGE REID, Seed Merchant, 20, Castle Street, Long Acre, London, W.C.

TWELVE EUCHARIS AMAZONICA for 21s.—The most lovely pure white flower in existence; each bulb has produced spikes of flower three and four times a year, and five to seven flowers on each spike; bulbs now offered will flower again at Christmas. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—**J. E. ALDERSON, Bell Farm, Hersham, near Walton-on-Thames, Surrey.**

FOR SALE, 1000 Common YEWs, for Hedges, &c., 3 to 6 feet; 500 Golden Queen **HOLLIES**, 1½ to 2 feet.—Apply **R. COLLYER, Cart House Lane, Woking Station, Surrey.**

Pansies and Violas.

HEATH AND SON beg to offer **PANSIES** in best named varieties, 20s. per 100. **VIOLAS**, do., 12s. per 100. **Florists, Cheltenham.**

NEW CATALOGUE for AUTUMN, 1880, post-free, of the finest and cheapest **DUTCH, FRENCH,** and other **FLOWERING BULBS.** For prices, see last week's large Advertisement.

SPRING FLOWERING PLANTS, 100,000 fine plants, now ready.

HARDY FLORIST FLOWERS, and the choicest **HERBACEOUS PLANTS** for Garden Decoration. See CATALOGUE and last week's large Advertisement.

WINTER FLOWERING PLANTS for Indoors. A fine stock of the best sorts, well set with bloom. See CATALOGUE.

PLANTS and ROOTS for forcing, very fine.

DWARF ROSES, well rooted, strong good plants.

FRUIT TREES, STRAWBERRY PLANTS, EVERGREEN and DECIDUOUS TREES and SHRUBS, &c.

For prices, List of sorts, and descriptions, see CATALOGUE.

WM. CLIBAN and SON, Oldfield Nursery, Altrincham.

SPECIAL TRADE OFFER

of **FOREST TREE SEEDLINGS, &c.**

APPLE, Crabs, 1-yr., very fine, 5s. 6d. per 100

PEARS, Stocks, 1-yr., very fine, 4s. per 100

ACACIA, 1-yr., fine, 2s. per 1000

ALDER, 1-yr., fine, 2s. 6d.; 2-yr., fine, 5s. per 1000

ASH, 1-yr., fine, 2s.; 2-yr., fine, 4s. per 1000

BEECH, 1-yr., very fine, 3s. per 1000

BIRCH, 1-yr., 3s.; 2-yr., 5s. per 1000

BRIER, Sweet, 1-yr., 4s. per 1000

BROOM, 1-yr., strong, 2s. 6d. per 1000

CHESTNUT, Horse, 2-yr., 10s. per 1000

Spanish, 1-yr., 4s. 6d.; 2-yr., 7s. 6d. per 1000

ELM, Scotch, 1-yr., fine, 3s. 6d.; 2-yr., fine, 6s. per 1000

HAZEL, 2-yr., drilled, 9 to 14 inches, 10s. per 1000

HOLLY, 1-yr., good, 3s. 6d.; 2-yr., good, 6s. per 1000

LABURNUM, 1-yr., extra strong, 3s. per 1000

OAK, 1-yr., fine, 4s. 6d.; 2-yr., fine, drilled, 7s. 6d. per 1000

SYCAMORE, 1-yr., fine, 3s.; 2-yr., fine, 5s. per 1000

THORN, or **QUICK,** 1-yr., 3s.; 2-yr., fine, 5s. per 1000

PINE, Austrian, 1-yr., 2s.; 2-yr., 5s. per 1000

Corican, 1-yr., 2s. 6d.; 2-yr., 5s. per 1000

LARCH, 1-yr., very fine, 4s. 6d. per 100,000; 2-yr., with leaders, 6s. per 1000, or 4s. 6d. per 100,000

PINE, Pinaster, 1-yr., 2s. 6d. per 1000

FIR, Scots, true Native, 2-yr., scarce, 6s.; 2-yr. 2-yr., 9 to 15 inches, 17s. 6d. per 1000

SPRUCE, Norway, 2-yr., 1s. 6d.; 3-yr., 2s. 6d. per 1000

JUNIPER, 3-yr., 6 to 12 inches, 10s. per 1000

Samples of any of the above per post free.

We can also offer a splendid general stock of transplanted **NURSERY STUFF**, including Larches, 2½ to 3½ feet; Scots Fir and Spruce, 9 to 15 inches; Austrian Pine, Pinaster Pine, and nearly all kinds of Hardwoods, and will be glad to send samples and quote prices to intending buyers.

PETER S. ROBERTSON & CO., TRINITY NURSERIES, EDINBURGH.

ONE HUNDRED STOVE and GREEN-HOUSE PLANTS for 42s., or, Extra Strong, 63s.—Good strong stuff in small pots, fit to pot-on at once, being full of roots for months past. Choice and valuable sorts included of Marantas, Crotons, Alocasias, Allamandas, Acacias, and all plants most desirable for an amateur commencing cultivation of plants. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

G. Braid's New Pelargoniums.

G. BRAID has much pleasure in stating that he is now sending out the following:

DECORATOR.—First-class Certificate. Royal Horticultural Society. White; purple spot. A mass of bloom. 7s. 6d.

DEFIANCE.—First-class Certificate. Royal Horticultural Society. The most brilliant scarlet; maroon spot on upper petals. Free and of good form. 10s. 6d.

ZULU BELLE.—First-class Certificate. Royal Horticultural Society. Pure white; intensely dark maroon spot on each petal. Quite a novelty. 10s. 6d.

J. BRAID.—Crimson; maroon spot; dwarf and very profuse. Although not certificated, still one of the best. 5s.

CRITERION.—After Rob Roy. Flowers twice the size. 5s.

VIVID.—Dazzling crimson. Quite a new colour. 5s.

The usual Discount to the Trade.

G. BRAID, Nurseryman, Winchmore Hill, N.

FRUITING PLANTS

OF PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

PINUS PINEA, producing the Edible Pine

Nuts, and a very ornamental hardy tree. Nice plants in pots, or any quantity from the border. Two small plants sent as sample for 1s.

T. CHRISTY, Malvern House, Sydenham, S.E.

NATURAL GRASSES.

The Subscriber has just completed his purchases of Natural Grasses in the Irish Markets. The Crested Dogtail, Foxtail, and Cockfoot, &c., are of fine quality. Samples and prices on application.

P. EGAN, 80, North King Street, Dublin.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—

White Garden LILIES, 12s. 6d. per 100; Winter ACONITES, 12s. 6d. per 1000; ANEMONE FULGENS, 16s. per 100; single French ANEMONES, 30s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to

SANDER AND CO., Seed Growers, St. Albans.

To the Trade.

DOUBLE FRENCH RANUNCULUS.

LEONARD ROOZEN AND SONS' superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)

LEONARD ROOZEN AND SONS, Bulb Growers, Overveen, near Haarlem, Holland.

RHODODENDRONS for POTTING.

nicely furnished plants, with from five to twelve buds, in good varieties. Hardy AZALEAS, including the beautiful double varieties and Mollis.

ANTHONY WATERER has a very fine lot to sell this autumn. They cannot fail to give satisfaction.

Knap Hill Nursery, Woking, Surrey.

STRAWBERRIES.

Strong Roots for Fruiting next year, 4s. per 100. Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

A Bargain.

ONE HUNDRED CHOICE and RARE

ORCHIDS for £10 10s., consisting of the most beautiful and fragrant sorts in cultivation, and forming in itself a select collection for the amateur. Could not be bought anywhere else in Europe for £50. This offer is for cash only, and during the present month, to make room before winter. Package included for cash with order. All correctly named, and packed to travel any distance safely. Will produce quantities of flower during winter and spring. Selected for cold or warm house, or mixed. Inspection requested. Nursery close to stations L. E. & S. C. R.; twenty minutes from London Bridge or Victoria.

JOHN H. LEY, Royal Nursery, London Road, West Croydon.

STRAWBERRY PLANTS, in small pots

for Planting, and in 6-inch pots for Forcing. **FRANCIS R. KINGHORN** has a splendid lot of these. Price and LIST of sorts on application.

Sheen Nurseries, Richmond, Surrey.

Azaleas, Camellias, Palms, &c.

A. D'HAENE, NURSERYMAN, Ghent, Belgium.—Special LIST, with full particulars, now ready. Sent gratis and post-free on application.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNs for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST OF FERNS," free on application.

To the Trade.

THE LAWSON SEED and NURSERY

COMPANY (Limited), Edinburgh, can supply several thousands of **BOUVDIARIS, Red and White; CYCLAMENS, GREVILLEA ROBUSTA, POINSETTIA, EPIPHYLLUMS, FERNS, DRACENAS, &c.,** in nice young plants. Special offers on application.

A B C Bulb Guide for 1880.

THOMAS S. WARE will have much

pleasure in posting to all applicants the above new, extensive, and most useful CATALOGUE, which contains complete collections of Hyacinths, Crocus, Tulips, Liliums, Narcissus, Gladiolus, &c.; Climbing Plants, Bamboos, Aquatics, &c.; also a selection of Hardy Perennials adapted for Autumn Planting.

Hale Farm Nurseries, Tottenham, London.

Specially Cheap Offer of

FINE SPECIMEN CONIFERS, &c.—Splendid specimen *Thuopsis dolabrata*, borealis, aurea; Cupressus, Austrian Pine, and about 1000 other Conifers, &c., from 4 to 9 feet. Choice Dwarf ROSES, sample dozen 4s. 6d. 200,000 fine transplanted QUICKS, from 12s. 6d. to 30s. per 1000. Fine SPRUCE FIR, 2 to 4 feet.

W. GROVE, St. Owen's Nursery, Hereford.

ANTHONY WATERER respectfully invites

the attention of intending Planters to the following

LIST of desirable and in every way First-class

Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWs, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

"Golden, many thousands, 3, 4, 5 to 10 feet high.

"Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

"laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

"Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

"Golden Queen, 4, 5, 6 to 10 feet high.

"Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

ARGENTEA, 4 and 5 feet.

LIBOCEDRUS DECURRENS, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

STRAWBERRIES IN POTS.

Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

H. CANNELL, Swanley, Kent.

TWELVE FLOWERING STOVE and

GREENHOUSE PLANTS for 21s.—Large, strong plants in 5-inch pots of *Anthurium Scherzerianum*, *A. Duchartrei* (the new white variety), *Eucharis*, *Allamandas*, *Jasminum grandiflorum*, *Bougainvilleas*, &c. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

Special Cash Offer

TO THE TRADE.—Spruce Fir, Quicks,

Oval-leaved Privet, Hazel, Limes, Maiden Apples and Plums, Dwarf-trained Fruiting Pears, Plums, Cherries, and Apricots; Standard Plums and Cherries, Gooseberries, Currants, Strawberries, Medlars, Nuts and Filberts, Globe Artichokes.

Special low prices on application to

J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

To the Trade.

OSBORN AND SONS are now booking

Orders for Forcing Roots of SEAKALE, of which they possess this season a very fine stock. Price on application. Early Orders solicited.

The Fulham Nurseries, London, S.W.

Fruiting Trees of

APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds.

Free LIST on application to

J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

Webb's Prize Cob Filberts.

MR. COOPER having succeeded to the

whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.

Calcot Gardens, near Reading, Berks.

Twelfth Edition,

"WEBB'S PRIZE COB FILBERTS, AND HOW TO GROW THEM."

This Pamphlet will be forwarded to any one sending Two Postage Stamps to

Mr. COOPER, Calcot Gardens, near Reading, Berks.

To the Trade.

GREEN HOLLIES.—1-yr. Seedlings, fine; also 2-yr. bedded Hollies, healthy good rooted stuff, 4 to 9 inches. Price and terms on application to

C. WHITEHOUSE, Brereton Nurseries, Rugeley.

CABBAGE PLANTS.—Very fine stocks of

Enfield Market and Rainham. Apply to

SEVEN THOUSAND CARNATIONS,
"THE BRIDE."

Pure White and highly Clove-scented.

In various sizes, specially prepared for winter blooming, 6s. 9s., 12s., 18s., 24s. and 30s. per dozen.

Sample Plants sent on application. Special prices quoted per 100 or 1000.

HEATH AND SON, Florists, Cheltenham.

DUTCH AND OTHER BULBS.**WM. CUTBUSH & SON'S**
CATALOGUE

Is now ready. Post-free on application.

HIGHGATE, LONDON, N., or BARNET, HERTS.

TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

No charge for packing. Sample dozen, 8s.

MAIRIS AND CO., Weston-in-Gordano, Bristol.

DUTCH FLOWER ROOTS.**PAUL & SON,**

The Old Nurseries,

CHESHUNT, HERTS,

AND

Departure Platform, Liverpool Street Station,
Great Eastern Railway.**HYACINTHS, TULIPS, CROCUS,**
And other Bulbs of Extra Selected Quality.

These Bulbs have been personally selected by the Advertisers, in Holland, this season, and the stock is believed to be unsurpassed by those of any house in the kingdom. The prices are very moderate.

PAUL AND SON'S CHESHUNT COLLECTION of BULBS for INDOOR CULTURE, 10s. 6d., 21s., and 42s.**PAUL AND SON'S CHESHUNT COLLECTION** of BULBS for GROWING in the OPEN GARDEN, 10s. 6d., 21s., and 42s.For particulars see **BULB CATALOGUE**, gratis and post-free on application.**PAUL AND SON'S BULB CATALOGUE** also contains **LISTS** of SPECIALITIES in SHRUBS for FORCING, Descriptive **LISTS** of SPRING FLOWERING HARDY PLANTS, of CAMELLIAS and AZALEAS and STRAWBERRIES.

THE OLD NURSERIES, CHESHUNT.

**DANIELS'****CHOICE FLOWER ROOTS.****OUR GUINEA BOX**Choice Hardy Flower Roots
for Outdoor Planting

Contains the following liberal assortment, all in sound picked bulbs, with full Instructions for Cultivation. Case, packing, and carriage free to any Railway Station in England or Wales:—

- 25 Hyacinths, choice mixed
- 200 Crocus, in variety
- 12 Tulips, Rex Rubrorum
- 12 " La Reine
- 12 " Double, mixed
- 12 " Single, mixed
- 12 " Parrot, mixed
- 25 Anemones, double, mixed
- 12 " scarlet
- 25 " Single, mixed
- 12 Polyanthus Narcissus, mixed
- 12 Double White Narcissus
- 12 Pheasant-eyed Narcissus
- 6 Campernelle Jonquils
- 25 Ranunculus, Scarlet Turban
- 25 " mixed Turban
- 50 Snowdrops
- 50 Winter Aconites
- 12 Spanish Iris
- 6 Triteleia uniflora
- 2 Lilies.

559 Roots in all.

Other Collections for Greenhouse and Conservatory, Window Boxes, &c., 12s. 6d., 21s., 42s., 63s. and 84s. Beautifully illustrated **CATALOGUE** post-free on application. From R. MORRIS, Esq., *Knaobon, April 6, 1880.*—"I am highly pleased with the box of bulbs sent. The Hyacinths and Tulips are really splendid, and quite a show in our neighbourhood."**DANIELS BROS.,**

The Royal Norfolk Seed Establishment, Norwich.

SOJA BEAN

(SOJA HISPIDA).

See "Farmer" of September 6,

AND

"Gardeners' Chronicle" of September 18.

CHARLES SHARPE & CO.

Have a small quantity of the above to offer.

Price on application.

SEED WAREHOUSE: SLEAFORD.

BEAUTIFUL FLOWERS**CHOICE COLLECTIONS**

OF

**HYACINTHS,
CROCUS, TULIPS,
NARCISSUS, &c.,**For Window Boxes and Greenhouse
Decoration,

From 10s. 6d. to 42s. each.

For Growing in Pots, Glasses,
Vases, &c.,

From 10s. 6d. to 105s. each.

For Spring Flowering, Outdoor and
Open Border,

From 10s. 6d. to 105s. each.

The above contain selections from the finest varieties in cultivation, and will compare favourably, both as regards the QUANTITY and QUALITY of the Bulbs, with those of any House in the Trade.

20s. value Carriage Free. 5 per cent. discount for cash.

FOR FULL PARTICULARS SEE

WEBBS' AUTUMN CATALOGUE,

Gratis and Post Free.

The Queen's Seedsmen,

WORDSLEY, STOURBRIDGE.**THE LARGEST ROSE GARDENS**
IN ENGLAND.**CRANSTON'S NURSERIES.**

(ESTABLISHED 1785.)

New Rose Catalogue for 1880-81,

now ready and may be had post-free on application.

Awarded over 60 First Prizes for Rose Blooms
this season.**CRANSTON'S NURSERY AND SEED CO. (LIMITED),**
King's Acre Hereford.**TWELVE NEW CROTONS** for 21s.—Fine

Plants in 5-inch pots; clean, well-grown plants, which will rapidly make specimens of most beautiful sorts, as majesticum, Disraeli, angustifolium, Rex, Andreanum, Mooreana, &c. Packages gratis for each with order.

J. H. LEY, Royal Nursery, Croydon.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this." Two Cuttings, post-free, for 1s. 2d.

One Plant, post-free, 1s. 6d.

The Home for Flowers, Swanley, Kent.

**Paul's Nurseries and Seed
Warehouse,**
WALTHAM CROSS, HERTS.**WM. PAUL & SON**

invite attention to the following articles, which they continue to make objects of special care and attention:—

A. ROSES.**B. EVERGREEN, CONIFERS, ORNAMENTAL TREES, CLIMBING PLANTS, &c.****C. FRUIT TREES, including GRAPE VINES, and STRAWBERRIES.****D. HYACINTHS, TULIPS, &c., CAMELIAS, &c.****E. Special List of the above for large Buyers.****F. NEW ROSES, GERANIUMS, PHLOXES, DAHLIAS, &c.****G. SEEDS, and every Garden Requisite.**

Priced Descriptive Catalogues free by post.

Important: Observe the Christian Name and Address,

WM. PAUL & SON,
WALTHAM CROSS, HERTS.**CH. VUYLSTEKE,**

NURSEYMAN,

LOOCHRISTI, near GHENT, BELGIUM,

Begs to call attention to his exquisite

STOCK of PLANTS,

Offered at Extra Low Prices,

viz:—

**AZALEA INDICA, AZALEA MOLLIS,
CAMELLIAS, HARDY GHENT AZALEAS,
KALMIA LATIFOLIA,
PALMS, FERNS, FICUS, AMARYLLIS,
SPIRÆAS, &c.,**As detailed in his **CATALOGUE**, which may be had gratis ofMessrs. R. SILBERRAD and SON,
25, Savage Gardens, Crutched Friars, London, E.C.**CABBAGE PLANTS—CABBAGE PLANTS.**

NOW READY FOR AUTUMN PLANTING.

W. VIRGO can now supply, in any quantity, very good, extra strong-grown, healthy Plants, of the following, for spring use, which cannot be equalled for sorts and growth. Seed from the very best stock:—Early Battersea, Early Enfield Market, Nonpareil, Sugarloaf, Wheeler's Imperial, Red Pickling, and Robinson's Champion Drumhead. All the above delivered free on rail at 3s. per 1000.

Brown Cos, Hardy Green Cos, and Tom Thumb LETTUCE, at 4s. per 1000.

N.B.—Samples forwarded if required.

Womersley Nurseries, near Guildford, Surrey.

GEO. JACKMAN & SON.
(ESTABLISHED 1810.)

Cultivators of

**FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
Conifers and Hardy Climbers.****THE CLEMATIS**
A SPECIALITY.

Descriptive Priced Catalogues free.

WOKING NURSERY, SURREY.**RICHARD SMITH & CO.**
WORCESTER**TWO HUNDRED THOUSAND HERBACEOUS and ALPINE PLANTS**, for Borders, Rockwork, &c. See Descriptive **LIST**, giving colour, height, time of flowering &c., free by post for one penny stamp.R. S. & Co.'s selection of 100 good showy varieties, for 25s.
RICHARD SMITH and CO., Nurserymen, Worcester.

Double White Primulas.

HEATH AND SON'S stock of the above is well established stuff, in 4 and 5-inch pots, and will make grand plants for winter blooming. 10s. per dozen, 75s. per 100; extra selected, 12s. and 15s. per dozen, 90s. and 110s. per 100. Florists, Cheltenham.

SPIRÆA JAPONICA, well-known, strong Clumps for Forcing, 10s. per 100, £4 10s. per 1000. Cash with order. Package free.

S. WERMIG, Kingfield Nursery, Woking (successor to Mr H. B. Smith).

FOR SALE, owing to alterations, Fourteen Pyramidical-trained PEAR TREES, and Three Standard NECTARINES, trained on wires in Peach-house, Young trees, in fine fruit-bearing condition. Excellent varieties.—For further particulars address

W. H. YEO, The Gardens, Cloughton Grange, Birkenhead.

Seakale—Seakale for Forcing. Splendid Large Roots.
NONE TO EXCEL.

ALFRED ATWOOD, MARKET GARDENER, having Removed to 12, Chaldon Road, Fulham Fields, S.W., begs to thank his numerous customers for their many years' patronage, and at the same time most respectfully to state that he is now prepared to take orders for SEAKALE ROOTS, which will be ready to send out in a few days. Price on application.

Note Prices

FOR AUTUMN PLANTING.

CABBAGE PLANTS Warranted free from Club-root.

Early Enfield Market
Early Nonpareil
Early (Dwarf) York
Early Battersea
Sugarloaf
Thousand-head
East Ham

Wheel's Imperial
Robinson's Champion
Robinson's Drumhead
Imperial Oxheart
Early Rainham
Red Picking

At 3s. per 1000.

LETTUCE PLANTS.—Hardy Hammersmith, Hicks' Hardy White Cos, Giant Brown Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.

Testimonials and samples on application.
EDWARD LEIGH, Wrotham Farm, Dunstond, Godalming. N.B.—Above Plants are from Messrs. Gibbs' Seed, and Purchasers may depend on good Plants, and true to name.

E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford. Extra Plants to compensate Carriage.

ISAAC DAVIES has the following to offer, in large quantities, at reduced prices:—

AZALEA MOLLIS, Seedlings, raised from the best named varieties, each variety kept distinct, twice transplanted, 3 to 5 inches high, 5 to 10 shoots, 25s. per 100, £10 per 1000.

PONTICA, transplanted, 8 to 12 inches, 16s. per 100; 15 to 18 inches, bushy, a portion with buds, 25s. per 100.

fine bushy plants, 2 feet high, with buds, 9s. per 100.
RHODODENDRONS, hybrid Seedlings, raised from the best varieties, and which can be supplied from various crosses to give variety of colours: strong bushes, 2½ to 3 feet, one-third in each dozen supplied with buds, 18s. per dozen; 3 to 4 feet, 24s. per dozen.

picture, white; roseum superbum, rose; Beatrice, light with dark spots, very bushy plants from layers, 2 feet high, a few with buds, 12s. per dozen.

ANDROMEDA FLORIBUNDA, fine bushy plants, 12 to 18 inches high, 9s., 12s. and 15s. per dozen.

SKIMMIA JAPONICA, 12 inches high, covered with flower-buds, 8s. per dozen.

POPLAR, Golden-leaved, extra transplanted, 5 to 6 feet, 18s. to 24s. per dozen.

BIRCH, Purple-leaved, extra transplanted, 1½ to 3 feet, 2s. to 3s. 6d. each.

AZALEAS, Greenhouse, fine bushy plants, well budded, 12s. per dozen.

LILIU AURATUM, home-grown flowering bulbs, 9s. per dozen, 70s. per 100.

Terms cash, or reference from unknown correspondents. Brook Lane Nursery, Ormskirk, Lancashire.

L. T. DAVIS offers to the Trade prime SEED of choice mixed PANSY and VIOLA; also of eighteen of the finest named bedding PANSIES and VIOLAS, separate.

Ogle's Grove Nursery, Hillsborough, Co. Down.

THUJA AUREA, T. ELEGANTISSIMA, T. SEMPER AUREA, T. ELLWANGERIANA, JUNIPERUS CHINENSIS, THUJA LOBBII, CUPRESSUS ERECTA VIRIDIS, &c., beautiful round bushes, 12 to 20 inches high, 40s. per 100.

W. JACKSON, Blakedown, near Kidderminster.

Deutzia gracilis.

WILLIAM FLETCHER has a fine stock of the above to offer, fine bushy plants, with from 10 to 20 branches, price 21s. per 100, £10 per 1000.

Ottershaw Nurseries, Chertsey.

Dutch Bulbs.

C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to

Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, Crouch Friars, London, E.C.

NEW ENGLISH ROSE, H.P. MRS. JOWITT (CRANSTON'S).

First-class Certificate awarded by the Royal Horticultural Society, South Kensington, July 27, 1880.

First-class Certificate awarded at Wirral Rose Show, July 24, 1880.

First-class Certificate awarded at Shrewsbury, July 28, 1880.

First-class Certificate awarded at Liverpool Rose Show, July 31 and August 2, 1880.

We are now booking orders for this superb New Rose, to be sent out this autumn. For description see our new Rose CATALOGUE, now published.

Extra strong ground plants, 7s. 6d. each. Usual Discount to the Trade.

CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

E. P. DIXON

Begs to state that he has made arrangements to send out the very desirable

NEW RASP,**BAUMFORTH'S SEEDLING.**

This splendid new and distinct variety was raised from a batch of Northumberland Fillbasket Seedlings, and has been exhibited for several seasons against all the best and approved sorts—always carrying off the 1st Prize. It received a First-class Certificate at the "Leeds Horticultural Exhibition" this year, as well as the Judge's "Commendation" at many of the leading shows.

The fruit is of an immense size and fine quality, in shape more round and larger, of a darker crimson colour, and the seed pods considerably more developed and prominent than the parent. It is of vigorous growth, with large dark green foliage, and from its strong and prolific constitution frequently throws out a second crop from the present season's young wood.

Orders are now being booked, and will be executed and sent out, in strict rotation, in October. Each purchaser of two dozen Canes, and upwards, will receive a beautifully coloured lithographed plate of the fruit.

Price, 10s. 6d. per dozen.

A few extra strong Canes at 18s. per dozen.

USUAL DISCOUNT TO THE TRADE.

The Nurseries, Hull.

NEW BEDDING PLANT.**ALTERNANTHERA PARONYCHIOIDES MAJOR AUREA.****MESSRS. JAMES VEITCH & SONS**

Are now prepared to send out this splendid Bedding Plant, which has been a special feature during the past season in the brilliant "Carpet" Bedding in Battersea Park.

The plant has the dwarf dense habit and robust constitution of the well-known *A. paronychioides* major, with foliage of a bright golden-yellow, which colour it retains throughout the season.

"The effect produced by this variety as a bedding plant is thus described in the *Journal of Horticulture* for September 2:—"A circular bed attracts primary notice, as it is planted with the new golden *Alternanthera* as a groundwork. The prevailing colour is reddish-yellow, or almost the 'old gold.' It is totally dissimilar from all others of the genus, grows freely, and produces an uniformly level surface."

Mr. WESTLAND, Gardener to Earl Dudley, at Witley Court, writes:—"I can, with every confidence, recommend *A. paronychioides* major aurea as the most splendid variety in the section of decorative plants to which it belongs. I have thoroughly tested it, and find that its brilliant yellow colouring is sustained throughout the season. The habit of the plant is compact and pleasing, and in every respect it is most satisfactory."

Good, Established, Spring-struck Plants, 18s. per dozen.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

**NEW COLEUS**

offered for the first time.

The following are beautiful and distinct kinds, of rich and diversified colours, such as can be strongly recommended:—

ANNIHILATOR, rich dark velvety maroon; the centre of the leaf beautifully rayed with bright magenta-crimson, and the serrated margin tipped with green; a very showy variety.

ATTRACTION, ground colour of the leaf, golden-yellow, reticulated and blotched with rosy-crimson; in some leaves the lower half is entirely of a rich rosy-crimson colour; the leaves are narrowly edged with crimson.

BRIGHTNESS, rich bright crimson with slight purplish shade; the leaf is margined with chocolate, and tipped with green on the edge; it is a bright looking and effective kind.

CHAMPION, chocolate colour; the midrib and side-veins marked out with lines of bright magenta-crimson, margined with greenish-yellow and slightly spotted with green; a beautiful variety.

CUPID, the leaves of this variety are of a very light pale green shade with creamy-white centre, which radiates outwards in the course of the veins towards the margin.

DELIGHT, centre of the leaf soft rosy-purple, ornamented with patches of bronzy green between the veins; the margin of the leaf is bronzy-green and the teeth are tipped with bright green.

DIAMOND, ground colour of leaves soft rose with slight violet tint veined with purple, and occasionally blotched with bronzy-green; the margins tipped with yellow.

FIREBALL, intensely bright reddish-crimson; the serrated margin tipped with gold; the centre of the leaf slightly marked with bronze.

ILLUMINATOR, centre of leaf rich rosy-magenta, surrounded with dark velvety bronze colour, and margined with green.

MAGNIFICENT, rich velvety bronze, the whole surface of the leaf attractively veined and blotched with magenta-rose, and the margins tipped with yellowish-green.

NIMROD, the leaves of this showy variety are of a bright green colour, veined with rich magenta-crimson, and marked on each side of the midrib with dark crimson-maroon; the outer part of the leaf is slightly spotted with maroon.

NONSUCH, small green centre blotched with maroon; outer portion of leaf of a rich velvety-crimson colour with chocolate markings; margined with golden-yellow.

SOVEREIGN, rich dark velvety-bronze with feathered centre of magenta-rose; the edges of the leaf tipped with green.

SPANGLE, rich bright amaranth-crimson, with small greenish centre, and bright golden-yellow margin; a rich velvety looking leaf.

SULTANA, a showy variety with foliage of a rich bright velvety crimson colour, shaded with maroon and irregularly blotched with golden-yellow; the margin of the leaf toothed and tipped with greenish-yellow.

Price 3s. 6d. each, or the Collection of Fifteen Varieties for Two Guineas.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

To the Trade and Large Buyers.

EWING AND CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and FILBERT BUSHES; ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees, MYROBELIA (PRUNUS MYROBALANA), for fencing, &c.

The Royal Norfolk Nurseries, Eaton, near Norwich.

TWELVE NEW DRACÆNAS for 21s.—Beautiful plants in 5-inch pots, of most valuable decorative or exhibition sorts, such as Tellingii, Baptisti, terminalis alba, hybrida, pulchella, &c. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

J. MALLER, Brunswick Nursery, Tottenham, begs to inform the Trade that he has still many thousands of unsurpassed SOLANUMS, ERICAS of sorts, BOUVARDIAS, POINSETTIAS, Double PRIMULAS, EUPHORBIAS, and the usual assortment of Winter-blooming Plants. Prices (which are low for cash) on application.

The Nursery adjoins the White Hart Lane Station, Great Eastern Railway. An inspection respectfully invited.

Cyclamen—Good Stuff.

CYCLAMEN.—Several hundreds now in bloom. Good stuff. Price 18s. per dozen, for cash.

J. PALMER, Lodge Nurseries, Isleworth.

Dr. Denny's Splendid White Zonal Pelargonium, "PRIMA DONNA."

GEORGE SMITH begs to announce that, by an arrangement with Dr. Denny, he has the honour of sending out the first really pure White Zonal Pelargonium raised. "Prima Donna" was exhibited at the Royal Horticultural Society's Gardens, June 29, on the occasion of the Pelargonium Society's Show, when it received the award of First-class Certificate of Merit, also First Prize in the Premier Class for Novelties, and attracted universal attention and admiration, and was pronounced by all who saw it to be the finest White Zonal ever exhibited.

Price 10s. 6d. per plant.

Double Zonals.

GEORGE SMITH will at the same time distribute a selection of thirteen distinct varieties of the free-flowering type of Doubles raised by Dr. Denny. These varieties were all contained in the First and Second Prize-taking Exhibits of the Pelargonium Society's Show; and four of the varieties were awarded First-class Certificates of Merit. Price 3s. each, or 30s. the set of thirteen varieties. Usual discount to the Trade. The following is a brief description of the above, viz:—

GORGEOUS, a large brilliant Scarlet.

DAUNTLESS, First-class Certificate, a dark Scarlet.

FANCY, soft Orange-Scarlet.

HOPEFUL, a dark Magenta.

REFINEMENT, White edged with Magenta.

PIONEER, First-class Certificate, a dark Cerise.

CHARMING, a bright blush Magenta.

PROGRESS, First-class Certificate, a dark Scarlet.

CONSTANCY, a Lavender-Magenta.

SPARKLING, a Cerise-Scarlet.

PERFECTION, an Orange-Scarlet.

ILLUMINATOR, a brilliant Scarlet.

ENCHANTING, First-class Certificate, a brilliant Magenta.

The above are now ready, in good strong plants.

All orders from unknown correspondents must be accompanied by Money Orders.

Tollington Nursery, Hornsey Road, Islington, London, N.

SPECIAL NOTICE.

THE
GARDENERS' CHRONICLE

FOR

SATURDAY NEXT, OCTOBER 16,

WILL CONTAIN A

DOUBLE-PAGE COLOURED PLATE

(18 inches by 13 inches.)

From a Painting by FITCH, representing

THE POET'S NARCISSUS.

(A Plate of DAFFODILS will be Published in due course,
the two forming a Pair.)

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THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 9, 1880.

CHERRYBURN.

"TIS a bonny world; go out into the fields!" These were the words of Thomas Bewick, engraver and naturalist, and Cherryburn was his Northumbrian residence—a house well seated on a slope, with fine timber for shelter, and a commanding view of a river below. And what a river! England does not contain such another, and such another outlook as that from Cherryburn. The extraordinary scene which meets the eye from the site of Bewick's home includes that part of Tyneside, 10 miles above Newcastle, where the collieries begin to master the green fields. There is a feudal castle close at hand, that of Prudhoe, owned by the Percies, in succession to the Umfravilles, a picturesque and stately pile, placed upon an unsmudged brow of the river bank. Opposite, the village of Ovingham (called locally Ovinjum) blots the view with colliery smoke. Yet who dare blacken Ovingham, since it was the birthplace of Mabel Carr, wife of Robert Stephenson, engine-man in an adjoining colliery, and father of George Stephenson?

We stand here on classic ground in the history of modern commerce. Steam has rendered all things possible—all things, that is, connected with speed. Running on the rails of Stephenson, who is remembered in this place as a "grit barelegged laddie," who was always trying things, it brings the trains from London to Newcastle in seven hours, distributes the products of nurseries and market gardens, whirls the man of business to his country-house, and, more than forty years ago, gave occasion for a weekly *Gardeners' Chronicle*, and rendered this journal a success. The antiquated ruin of Prudhoe Castle may be accepted as the type of a world whose speed of locomotion the "big laddie" born beneath its turrets altered so strangely. Here, at Mr. Blackett's colliery at Wylam, the next village to Ovingham, was the waggon-way where "Puffing Billy" roared and snorted past old Mr. Stephenson's red-tiled house in the High Street Road. A stranger met it flaming and panting in the dark, with its piston working up and down and its nostrils breathing smoke and fire; he bolted through the hedge and across a field or two, calling out that he had met the devil, or, as he described the monster, "a terrible deevil," on the High Street Road. The first locomotives were not very successful. The roadway was in bad order and the rails defective. "How do you get on?" some one asked the stoker. "We don't get on—we only gets off," was his reply.

Wylam is one of those retired places which long remained entirely sylvan, and would still be so but for the discovery of the smoke-producing mineral beneath the surface. At the birth of Stephenson, in 1781, or at the time of his marriage here in 1802, it was the favourite retreat of birds, whose nests abounded in the

copses and hedge-rows. Stephenson's cradle was rocked within hearing of the unpolluted waters of the Tyne, and at the farmhouse where he lodged at the most impressionable time of life, and among the surrounding fields, he acquired a particular attachment for birds and birds' nests, and for gardens. At the Killingworth Colliery, a little north of Newcastle on the Morpeth Road (of rails), where he came as brakesman in 1804, and where he invented the locomotives "Puff" and "Blow," he took great delight in the cultivation of his garden. With the exception of one great gardening genius whose Cabbages sometimes outshone his, his garden crops excelled those of all his neighbours. He was as fond of "trying things" as ever. He grew gigantic Leeks, and protected his surprising crops by a still more surprising contrivance which moved its arms with the wind. He fastened his garden door by a piece of mechanism, so that no one could open it but himself. He mended clocks to obtain the means of educating his son, and, as the baby crop in Killingworth was annually a large one, which never failed, he delighted the women by connecting their cradles with the smoke-jacks of the cottages and making them self-acting. He built with his own hands nearly the whole of his cottage by the road leading from West Moor Pit to Killingworth, and you may still know it by the sundial over the door, dated 1816, and constructed by himself at the cost of much thought. The plan of "trying things" turned out well. The perpetual motion machine failed, but the sundial rewarded his pains; and his safety lamp, a little ruder than Sir Humphry Davy's, preceded it and proved effective. It is still called the "Geordy" at Killingworth, where it is in regular use in preference to "the Davy." Another lamp of his was contrived for burning under water, and was carried by the inventor into the fish-pond at Gosforth Hall, much to the amusement of the Brandlings, who resided there, and to the amazement of the fish, who rushed towards the flame and found themselves clutched and made captive. In 1812 Stephenson was appointed engine-wright to the colliery, at a salary of £100 a-year. He had already "restored" an engine and pulled another one to pieces many times on Saturday nights for practice, laying the foundation, by these performances, of his mechanical knowledge and celebrity. And as the method by which a successful contriver accomplished his purposes and succeeded, sometimes after many failures, cannot be too much published, I venture to refer for the full detail to Smiles' life of him, and so leave him gardening or constructing his first locomotive with rude instruments and untried workmen, or among his models in his "curiosity shop" at home, where his tame blackbird would follow him about the cottage or perch on his finger when called.

Returning to Ovingham and Prudhoe Castle, Bewick was buried in the churchyard, at home, as a naturalist should be, close to the river which he loved so well, on Tyneside—that "bonny world" which his pencil has immortalised in many a vignette and "tail-piece." The burial-place of the Bewicks is under the west wall, where Thomas, who died in 1826, and Isabella, his wife, lie beneath two slabs within a railed enclosure. The Bewicks of the present day are squires of the coal district, and their carriage has been known to set down a visitor at some distance from the door, but as near as it could be brought, in consequence of a sudden sinking of the earth from the mining operations underneath. If the traveller is bound for the Castle, a ferry-boat puts him across the river. The maiden in the old song complains—

"I can n'a get to my love if I would dee,
The water of Tyne runs between him and me,
And here I must stand with the tear in my e'e,
Both sighing and sickly my sweetheart to see,
O, where is the boatman, my bonny hinney?
O, where is the boatman?—bring him to me
To ferry me over the Tyne to my honey,
And I will remember the boatman and thee."

Robert de Umfraville held the Castle "by the service of defending it for ever against enemies and wolves." His successor accordingly did defend it bravely against William the Lion of Scotland in 1174, till succour from the south arrived, when William and his men retreated, and spitefully stripped the bark from the trees as they went. The Percies gained Prudhoe by marriage. Gilbert de Umfraville married Matilda de Lucy, and left her a widow, when she married Henry Percy, first Earl of Northumberland. Algernon Percy, fifth Duke of Northumberland, was created Baron Prudhoe in 1816.

George Stephenson has inaugurated a period when the current of men's lives runs more swiftly than of old, emulation being far more keen. Will the long-descended families outlive their new temptations? It was said formerly that the gentlemen of the North avoided the evils of London life, and that the gentry of the North were older and kept their estates longer than the same class in the South of England. George Stephenson, however, has deprived them of their advantageous isolation, and put them all abreast of each other, with rivals pressing forward in the shape of "new men" and millionaires. Let us hope that the owners of Prudhoe Castle may hold their own by prudence and by marrying heiresses in the future as they have done in the past. *H. E.*

New Garden Plants.

ANGRÆCUM KOTSCHYI, *Rchb. f. (GRANTII, Bat.)*.

If somebody had predicted when I put down my then MS. name (published by the illustrious Schweinfurth) for the Vienna Museum in 1879, that I should have one day at Hamburg a fresh inflorescence on my table, I should have looked very doubtfully on the prophet. At that time my single hope for tropical African Orchids was founded on the exertions of the Jesuits. English pioneers did the work. Our plant was discovered by my late dear friend, Theodor Kotschy, as early as January, 1838, nestling on trees belonging to the Capparidæ. T. Kotschy was then travelling with Russegger. After Kotschy came C. J. Meller, who gathered it with fine inflorescences in the lower valley of the River Shire, May, 1861.

After Meller came our gallant Scotch hero, Captain Grant—December, 1862. He collected this with one of the smallest Orchids of the world, a tiny little *Polystachya*, sitting on its roots, but alas! not with a good flower, so that it lurks unnamed in the vast Kew Herbarium. Nobody dares touch it. It grew near Madi (I suppose this means the Madi Mountains, South Gondokoro).

After Grant came my dear German friend, the excellent T. M. Hildebrandt, who first dried very satisfactory rich specimens with glorious zigzag inflorescences and spurs twisted in the most fantastic way, sometimes contorted one around the other. He collected the plant on the seashore of Zanzibar (Suakeli) in March and April, 1876. It is No. 1352b of his glorious collection, which may be had from Herr Rector Rensch, (Berlin, S.W., Nostitzstrasse 14).

Now came the view of Dr. Kirk. He wrote to Gerald Waller, Esq. (the introducer of *Angræcum Scottianum*), these notes:—"I have sent my native bird-collector off for a lovely Orchid, a very fine flower, they brought from the mainland, and which I flowered here (Zanzibar). No one knew it. It is a fine flower, and probably rare or new. I have told them to bring me all they can find. They have to go a good way into Africa, however, to get it, and I will have a job to bring it down alive and uninjured." Specimens came to Mr. Gerald Waller, and from this gentleman they were sent to Messrs. Veitch, who have just flowered it.

First of all, the stem being short, it is quite an English plant, not taking up much precious room. So long as it has its twisted roots alone, and its very polymorphous spatulate, unequally bilobed, shining thick leaves, it may be overlooked, at least by a superficial observer. When, however, its flower-stalks appear, it becomes a dangerous rival to *Angræcum Ellisii* itself. The firm ivory-white flowers look much like those of Rev. Mr. Ellis' plant, but the long, often very curiously twisted reddish spur is different and most remarkable by its length. The lip is quite pandurate, and by the retroversion of its apiculus it appears emarginate at its point, where two short teeth fit on the base of this organ in front of the column. Messrs. Veitch had the satisfaction of flowering one peduncle with three, the second with ten flowers. The plant has the fault of not being new, since it was recommended and destined to bear the name of a great lover of plants—an English lady; yet, if we look nearer to the matter—*à quelque chose malheur est bon*. We may hope that

those English pioneers may now look out all the sharper for fresh novelties, and thus we may finally come to the *point de corriger la fortune*. Africa is great and rich, and if not *semper*, yet *sæpe aliquid novi ex Africa*. *H. G. Rchb. f.*

CATASETUM TABULARE (Lindl.) VAR. BRACHYGLOSSUM, n. var.

A highly curious variety, with shorter flowers, much shorter lip and broader callus, more tapering to the top. It came from the Pine-apple Nursery of Messrs. Henderson, Maida Vale, London, W. I learn from Mr. O'Brien, that the *Catasetum tabulare*, Lindl., was named *Catasetum punctatum* at a Sanderian sale in the celebrated rooms of Mr. Stevens, October 4. *H. G. Rchb. f.*

CATASETUM TABULARE (Lindl.) VAR. VIRENS, n. var.

A new variety, with greenish flowers, blotched and washed with light purple-brown. It came into my hands from Mr. J. Day, who has during the last months flowered as many curious novelties as in the first years of our long correspondence. *H. G. Rchb. f.*

A WEST INDIAN SUGAR ESTATE.

FIRST IMPRESSIONS.—Not easily shall I forget the moment I first set foot on the little island wherein my lot was to be cast, and of which previously I had hardly ever heard more than the name. Five weeks passed as only weeks on board a small sailing-ship can be, and I came to look upon my cabin as my very home, and had the desire to get acquainted with life within the tropics not been so strong, I should have regretted leaving the ship and her obliging captain.

Coming on deck after dinner we had the first sight of the island whose outlines appeared in faint colours on the horizon. A few hours later we dropped anchor in a fine bay densely bordered with Cocoa-nut Palms. Our little gun was fired and awakened the echo among the green hills before us; soon afterwards the answering shot from the estate-house was heard. It was getting dark as we approached the shore in the gig; two ponies were ready for the captain and myself to ride up to the manager's house, and for the first time in my life I had the pleasure of trying to preserve my equilibrium on horseback. We rode on in complete darkness through the cane-fields, accompanied by a regular swarm of negro-boys, who unhesitatingly criticised my poor horsemanship. Innumerable fireflies appeared everywhere, like so many sparks, and before the negro-houses burned here and there a blazing fire, around which some grinning faces looked at us. A few minutes' ride brought us to the works; from there a rather uneven path led up the hill to the manager's house. We had reached it somehow, I know not exactly how, and I found myself in a kind of open hall, where dinner was served. The manager and his son were in town we heard, and the only European present was the overseer, with whom I was to live and work. The same evening I was introduced to my future home—a small wooden house a little lower down on the hill, and divided into two rooms, the one inhabited by my future companion, and the other to be occupied by myself. The first night, however, I passed in the "house," as the manager's habitation is emphatically called. I passed a very comfortable night in a large four-poster shut in with mosquito-nets, about the only comfortable night I did pass in the island!

Next morning I strolled about on the hill, looked into the works, tasted my first bit of Sugar-cane, and when under the large trees on the side of the hill I found the first specimen of a Fern (a species of *Adiantum*) I could not help putting it in my pocket-book as number one of the splendid collection I hoped to get together during the three years I had agreed to pass here. After breakfast another ride down to the bay; my boxes had been landed, and a mule-cart was ordered to bring them up to the overseer's house. I now saw the road we had taken overnight. From the works on the foot of the hill a straight road led to the bay; on both sides a long row of negro-houses, little wooden boxes raised a few feet above the ground, and covered with dry cane-leaves. Everybody had a look at the new "bushy," as they call the overseers, and I had to do my best to appear as unconcerned as possible among all these women and children staring at me. Round the negro-houses grew a few trees, among which stood some clumps of Bananas. A fine old Bread-fruit tree I recognised at once. Further on a broad

expanse of cane fields, and on either side of the road Cocoa-nut Palms planted at equal distances and forming a very graceful avenue. In the background the dark blue sea and our ship with folded sails riding at anchor.

The remaining part of the day I employed in unpacking my trunks and arranging my things in my room. The accompanying sketch of the house I inhabited (fig. 87) may give an idea of an overseer's home in the West Indies. Like all similar structures it was exclusively built of wood, and raised above the ground to keep off snakes and ants. A narrow corridor formed the entrance; the room given to me was the first on coming in, and seemed comfortable enough. The only thing I missed was a frame for mosquito-nets I had seen round the beds in the "house." I did not know then that overseers are supposed to be sufficiently tired in the evening to sleep in spite of mosquito bites. My predecessor had fenced in a piece of sloping ground on the side of the house, intending to make a garden of it. He had been called away to another estate before anything had been planted, and, as it was, the future garden contained—besides a fine Cocoa-nut Palm and a Cashew tree (*Anacardium occidentale*, L.)—nothing but some cane-stocks, whose vigorous shoots covered the ground almost com-

pletely. I decided of course on converting this jungle into a little horticultural paradise. Before the house stood a group of West Indian Lilies, an amaryllidaceous plant with broad ensiform leaves which might have been planted there by some former occupier of the overseer's house. On the path leading up to the "house" stood a tree I did not know then (the Cogwood-tree of the negroes); on its stem grew a splendid clump of Orchids (*Epidendrum bicornutum*) with long single spikes beset with white flowers. With the exception of a small terrestrial species and the Vanilla that perfumes the woods everywhere, though it is seldom found, this was the only Orchid I met with. The slope of the hill was bare pasture-land, and the grass constantly kept short by the feeding cattle: here and there a small Guava bush and a few shrubs covered with the slender twining shoots of *Abrus precatorius*, whose brilliant red seeds contrasted well with the light green foliage. The manager's house showed some signs of a garden. Outside the corridor stood a small-leaved shrub with profuse white fragrant flowers which seemed to belong to the genus *Citrus*, and a large Frangipani tree (*Plumiera*) with most of its leaves eaten off by a splendidly coloured caterpillar, 4 inches long; some Hibiscus shrubs with crimson flowers, and in a corner a few Pepper bushes (*Capsicum*).

river some tall Lantana shrubs. Along the water stretched a regular border of the delicate *Mimosa pudica* (or perhaps *M. sensitiva*—I do not know whether both species belong to the West Indian flora), with its rose-coloured flower-heads; and a little further on stood a fine young Cabbage-Palm, which would have delighted any amateur of this interesting order.

Any one who has seen tropical vegetation will understand how easily the new-comer is bewildered by the crowd of strange and interesting plants he sees everywhere. The first day I felt as if I had passed my time in a museum where the number of objects exhibited makes one feel confused, and it was only after a few weeks that I began to look about me with anything like a calm mind. G. L. M.

(To be continued.)

MARKET PELARGONIUMS.

(Concluded from p. 426.)

We were now favoured with several sorts raised by Mr. Wm. Bull, and which were introduced into market by various growers; the following are the varieties that became distinguished, and were grown for some years:

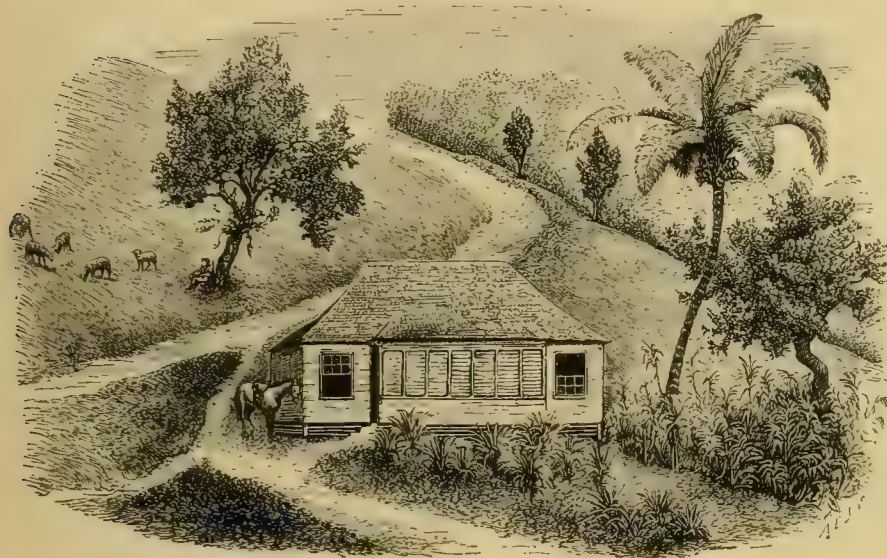


FIG. 87.—A BOTANIST'S HOME IN TOBAGO.

Behind the "house" descended a narrow foot-path between old trees down to the river. Here I saw the first climbing Aroids and Cacti, and near the

—Castanet, Enthusiast, Watchful, Angelina, Baltic, Leonardo, Niagara, and Princes, the five latter sorts becoming the most popular, the gem of the batch being Princes, a sort in the way of Grand Duchess, but in all respects better: it is a very attractive flower, and a first-rate late sort. I saw it in the market two or three seasons since. I am desirous to regain this variety, and have been on the look-out for it this season without success. One grower tells me that he has Niagara, and intends working up a stock of it, and, being a good doer, and very pretty distinct flower, no doubt he will find it remunerative. Reflection (Wetherill) is an early flowering sort, prized chiefly on this account, and still grown in quantity for early work.

Empereur des Pelargoniums, the first of the fringed whites, was now brought in, but proved too shy of bloom to attain much favour: although this variety did not become famous, it was the founder of renowned sorts, notably so Duchess of Edinburgh (Braid), and was awarded one, if not two, First-class Certificates. On its first appearance in the market it did not seem destined to make much headway, but it has gradually so risen into favour that it will take a very meritorious sort to displace it. This is certainly a good-tempered kind, and one that looks happy under any reasonable conditions. Example, Exhibitor, and Mary Hoyle, all shows orts, are now on trial: they are three very pretty varieties, but they are found wanting in the indispensable requisites of a market Pelargonium. Exhibitor

perhaps is deserving of some commendation; I have seen it grown the very model of what a plant should be, so that it has the necessary essentials. It is a favourite with me; as it makes very little wood but few cuttings are obtainable, therefore it is not a profitable sort to grow, hence my reason for discontinuing its culture. Beauty of Edmonton, or, as distributed by Messrs. Henderson & Son, Prince of Pelargoniums, originated as a sport from Pliny, with Messrs. Hayes, and was grown for two or three seasons and then discarded. Amazon, also known as Lord Raglan, a good French sort, was now, and is still grown, though to a limited extent.

Minnie (Shoult) was now brought in: it is not a very meritorious sort, nevertheless it was grown largely for a few years. Kingston Beauty (Jackson) was introduced into the market by Mr. Anderson, and found favour with some growers and buyers; its culture is still continued by a few. Digby Grand, distributed, I think, by Mr. Turner or Mr. Fraser, was now a candidate for favour, and soon took up a position in the front rank. It is still grown, but its popularity is fast waning. Mrs. John Wood (H. & G. Wright), was a very good white, but did not secure much distinction.

Triomphe de St. Mandé was first brought into market in quantity by Messrs. Beckwith & Son, and is a sort much lauded by some. It was famous for two or three seasons; its fame is gradually diminishing, and I think it will ere long be amongst other sorts that are consigned to oblivion. Mermerus (W. & A. Brown) was next introduced, and was speedily established as a favourite, and still continues to hold that position. Then from the same source came T. A. Dickson, Fascination, Vivid, Mirror, and a few others of lesser excellence, the first sort being the most popular. Mabel (Foster) was first brought to market by Mr. Sweet. It is a very pretty show flower, and a good all-round sort; it produces a good head of bloom, yet but few buyers seem to appreciate it: at some future time it is probable that its merits will be duly estimated. Duchess of Bedford, a sport from Digby Grand, originated with Messrs. Beckwith & Son, and was awarded a First-class Certificate of the Royal Horticultural Society. It is a pretty, nearly pure white flower, and was grown by the originators in enormous quantities, but it did not meet with the patronage it would have done had its rival, Duchess of Edinburgh, which sort it somewhat resembles, been absent. Mermerus Improved, a sport from Mermerus, originated with W. & A. Brown, having the character of the typical form, but with much darker flowers of quite a distinctive hue, and a colour much appreciated. I have tried annually since its origin to obtain seed from this kind, but to my disappointment without success; although the organs of reproduction appear perfect, it does not produce pollen so freely as some other sorts, and this, I think, is not fertile, for I cannot trace its parentage in any of the numerous seedlings which I have raised. Why should this anomaly exist?

Robert Green and Harry Buck, both raised by W. & A. Brown, and introduced into the market two years since, are steadily making their way to the front; as also are Morning Star, George Beckwith, George Strudwick, and Trophy, sorts raised by W. Brown; Starlight (Page), John Bright, a sport from Integrity, originating with Mr. Seabrook, and a seedling from Digby Grand (Thomas Dodd). The raiser sent this latter bantling forth without a name, but being a sort likely to attain rank amongst the favourites it is entitled to a distinctive appellation; growers have, therefore, christened it Tommy Dodd. The foregoing are the candidates sent in this season for approbation, and yet await the verdict. Volonté Nationale has not yet put in an appearance for sale that I am aware of a it is spoken of as having the essentials necessary for becoming a market favourite.

There are numberless other sorts that have been introduced into the market from time to time, but, wanting some indispensable requisite, they have failed to become established. I have noted only those sorts that have made any stand, and which have been grown largely for two, three, or more years. These I have noticed consecutively, as nearly as memory serves me. Some dozen sorts of decorative Pelargoniums have been certificated this year. Three sorts were also selected from a batch of French origin, on trial at Chiswick this year, and received this distinction, and have been very favourably reported on. Should any of them appear in Covent Garden their merits will, I am sure, be duly recognised. Pelargoniums do not make their appearance

in market so early now as formerly, the old early flowering sorts being quite discarded. The earliest bloomers now grown, and which are brought in towards the end of March, in limited numbers, and onwards, each day producing an increased supply, are *Reflection*, *Triomphe de St. Mandé*, *Digby Grand*, *Duchess of Bedford*, *Mrs. Bradshaw*, *Duchess of Edinburgh*, *Monte Christo*, *Rob Roy*, and *T. A. Dickson*; these followed by sorts as enumerated, and good plants are procurable to the end of July.

A correspondent in a recent number of the *Gardeners' Chronicle* expressed a hope that a Foster or Hoyle would arise and do for the decorative what these gentlemen have done for the show section; he may, if these comments meet his eye, derive some consolation from the fact, that there are many ardent and enthusiastic raisers amongst the market growers, and their past productions speak well for future results; nine of the decorative *Pelargoniums* certificated this year were from this source. In your issue of August 21 is a communication headed "Market *Pelargoniums*," from Mr. Baines, in which he says, "As to who were the raisers of several of the varieties of *Pelargoniums* cultivated by the market growers, that is a question for the growers to decide amongst themselves, for I have heard several lay claim to having produced more than one variety that is largely grown." I much regret that Mr. Baines should be enabled to make this statement. The facts are so well known in the market, that any such attempted inaccuracies there would be quickly called in question. During a long experience of market work, I have never known a grower assume to be the originator of any sort which was the production of another. If of any interest to Mr. Baines, he may be assured that where the raiser's name is affixed to any of the sorts quoted, he was the genuine originator. *W. Brown, Hendon, Sept. 13.*

CHARLWOOD HOUSE, HUYTON,

THE residence of M. Sparke, Esq., is about seven miles from the centre of Liverpool, and is situated in a very pleasant neighbourhood, where a number of houses with fine gardens attached to them, the seats of gentlemen engaged in business in the city, are now becoming noted for the fine collections of plants to be met with, and for the extending process that is now observable in many of them. There is no doubt that the Liverpool Horticultural Association has largely influenced gentlemen in this matter.

As an exhibitor, Mr. Sherwin, gardener to Mr. Sparke, has been very successful both with fine-foliage and flowering plants, as well as with Orchids. For these latter some five or six houses are set apart, and though other plants are admitted in one or two of them, still for all practical purposes they may be termed Orchid-houses. In the stove, which is a half lean-to, are some well-grown *Crotons* of good colour and form, including *Jonghii*, *Weismanni*, and *majesticus*; *Ixoras*, *Allamandas*, &c.; whilst on the roof a nice plant of *Dipladenia boliviensis* was blooming profusely. Here were a number of *Dendrobes* hanging from the roof, a position in which some of this genus do the best; *D. crystallinum*, a plant with fourteen growths, some 20 inches long; *D. Pierardi latifolium*, with a number of growths, some 4 feet in length: these will certainly be very beautiful when the growths are well in flower, next April or May. A house similar in form joins this, filled with half specimen sized *Azaleas*, amongst which we noticed a fine plant of *obtusata*. From this we pass into an intermediate Orchid-house, in which some plants of *Bollea* and *Pescatoreas* were in robust health. *Odontoglossum vexillarium* and *Roezlii* were doing freely; *Oncidium crispum marginatum*, in baskets, were also blooming well; branching spikes and flowers of large size were hanging, and were very fine. *O. Rogersii*, *tigrinum*, *aurosum*, were likewise blooming well; and *ornithorynchum* was also good, one plant having twenty, another thirty spikes, of its pretty and strong-scented flowers. *Zygopetalum maxillare* on a block was in flower. This plant is in some cases difficult to manage; a block, or basket, in which it can be hung near to the light, appears to be the best way of succeeding with it. A fine piece of *Lælia albidia* on a block had produced a number of breaks, and will no doubt in due time push up its spikes of bloom.

From this we pass into the East India-house, and are attracted at once to some well-bloomed plants of

Dendrobium formosum giganteum; some have produced six and seven blooms on a bulb. When thus flowered it is very effective. Here, too, we noticed *Dendrobium cretaceum* with twelve growths, very strong. Several nice *Phalenopsis* were growing well. *Grammatophyllum Ellisii* had just gone out of flower. *Eulophia scripta* was a fine plant; the same may be said of *Cypripedium levigatum*, *navium*, *villosum*, and *Parishii*. Of *Aerides*, *Vandas*, *Saccolabiums*, there are some nice healthy pieces, but in this section the collection is decidedly deficient. It is to be hoped that this weak point may be soon strengthened, for, whether in flower or not in bloom, this class of plants always adds very considerably to the richness and select character of a collection of Orchids. A range of low span-roof houses, with side-tables and walk up the centre, are next inspected. Three houses in this block are filled with Orchids, the first we enter containing a fine lot of *Odontoglossums*. Here we saw again the plant of *O. odoratum* that Mr. Sherwin exhibited in Manchester and at Kensington last spring. The plant has grown well since; it is now finishing up three strong growths. Here also were strong plants of *O. Halli* just showing fine spikes of bloom. *O. Rossii majus* in baskets were strong and plump; so, too, were about a score of *madrense*, many of which were in bloom. *Nanodes Medusæ* was here doing freely; so, too, were the showy varieties of *Masdevallias*.

The next house is devoted to *Lælias* and *Cattleyas*, and many healthy and vigorous pieces are here to be seen; *Lælia anceps alba*, *Cattleya exoniensis*, and *Dowiana*, were free and clean. The summer variety of *Cattleya labiata* was in flower, as well as *C. intermedia*. *Cymbidium eburneum*, *Cypripedium caudatum*, were in this house, and were healthy and a good colour. *Oncidium lanceanum* had grown well, and was just bursting its showy blooms. The next house was devoted chiefly to *Dendrobes* and *Calanthes*; of these latter many are grown, and the fine bulbs give good promise of a winter display of flowers.

A range of vineries 100 feet long, divided into three divisions, were in excellent condition, some *Muscats* hanging being of a rich colour, large in berry and also in bunch. Outside in the pleasure grounds we noticed some very pretty beds filled in the carpet style of bedding; among the shrubs were a number of *Lilium auratum*, which had bloomed well outside. The whole of the garden, inside and outside, was in excellent order, and reflected great credit upon Mr. Sherwin, who is very fond of his work, ever anxious to please, and desirous, so far as his opportunities go, to be ever adding to the pleasure and enjoyment of those in whose service he is. *W. Swan.*

SWISS HOTEL GARDENS.

ONE of the many luxuries of the age is the modern Swiss hotel. This is a feature peculiar to the last quarter of a century. As a rule it would be difficult to find a want of the tourist not anticipated and ready to be supplied on demand. But besides the internal arrangements, outdoor comforts and luxuries are by no means forgotten. There are few hotels, probably none, which admit of it, which have not their well-arranged gardens and shrubberies, where visitors sit out, smoke, chat, and take unlimited refreshments in the way of *Medoc, café complet*, or a more substantial something à la *fourchette*, while listening to the hotel band, which is often really good. They are not all equally well kept, but they are all more or less enjoyable. As might be expected, they show certain differences of taste or custom from our English ideas, and produce flowers in luxuriance, which are not often seen in the open air here.

One of the commonest of favourites, not only in Switzerland but France, is the *Oleander*. Placed in boxes they stand sentinel at many a hotel door, but are often far from being picturesque, at least when in dusty streets, as at Rouen. Their narrow-leaved foliage gives them a poverty-stricken look, but when well grown and with plenty of blossom they may be effective enough.

Another and much more beautiful shrub sometimes takes their place—the large white trumpet-flowered *Datura arborea*, or *La Trompette* de Jugement, two fine specimens of which stand on either side of the broad flight of steps leading down to the garden facing the Lake of Geneva from the Beau Rivage Hotel. They are semi-double, very sweet-scented and very

effective. Similar shrubs in pots, standing 8 to 10 feet high, and laden with blossoms, but single in this instance, are in front of the Schweizerhof at Lucerne. At the former hotel they are backed up with fine plants of a variegated species of *Solanum* having large leaves of the shape of those of the Oak, but prickly; these add greatly to the general effect, heightened as it is by a luxurious mass of *Pelargoniums*, *Ageratums*, *Begonias*, &c.

Carpet bedding is sometimes attempted, but not to any great extent, though the name of the hotel, boldly conspicuous in *Echeverias* or something else, rather detracts from the purely æsthetic aspect. Bedding out is pursued to some extent, but everything grows so luxuriantly that comparatively close flat borders are almost out of the question. A very common plant for bordering is the *Begonia*. A small whitish flowered sort is often used, but it has too much foliage, and is not at all effective. One bed of *Begonias* at the Beau Rivage, Ouchy, was composed of a great many scarlet and orange varieties, but all much inferior to the splendid forms lately exhibited at South Kensington. The same remark applies to the *Coleus*, a favourite plant for producing masses of colour in Swiss gardens; but, although I counted some fifteen to twenty different varieties, they were all more or less "dingy," and mostly of the same type of variegation. The new forms lately raised by Mr. Bull, Mr. King, and others are evidently unknown, and a thing of the future for Swiss gardeners. Similarly the many forms of Zonal *Pelargoniums* were conspicuous by their absence.

A very common and favourite plant standing alone or in the centre of a shining border is the *Castor-oil* (*Ricinus communis*), the glossy foliage of which is often very effective. They are not usually tall, but some at Versailles were at least 12 or 15 feet high, and with abundance of blossom. *Cannas* are abundant, mostly of one scarlet type, but often forming very effective masses.

A bed entirely of *Coxcombs* at Lauterbrunnen was curious, but the reverse of beautiful, for they were so badly grown that there was very little crimson to be seen at all, for the stems had become green and fasciated after the ordinary type of such an abnormal condition.

There have been some remarks in the *Gardeners' Chronicle* about combinations of *Salvia patens* with other flowers; one bed I noticed contained a mixture of this with the tall scarlet *Lobelia cardinalis*, and the bed certainly afforded a very rich combination of blue, scarlet, and green.

At Thun I observed a fine *Cassia* in full bloom, spreading its graceful branches with large golden flowers over a trellis. A native seeing me stop in front of it, came up and asked me if I knew what it was. I told him, but he was evidently prepared to find a stranger ignorant of its name.

Asters, Asters everywhere—in the gardens of the rich (hotels), and in the little plots round the chalets, and remarkably fine ones, too. A long border of *Asters*, *Gladioli*, and *Pentstemons* are still holding up their heads to gaze at the eternal snows of Mont Blanc at Chamounix. Amongst trees the ubiquitous *Plane*, which sheds its bark so much more freely than its ally in this country, thereby giving its trunk and branches a curiously naked appearance, affords a welcome shade everywhere. Fine *Catalpas* laden with pendulous pods, suggestive of rooting *Rhizophoras*, may occasionally be noticed; while in Paris, apparently in consequence of extreme heat (as occurred in this country in 1868), several Horse Chestnuts, which had shed their leaves, were again in full blossom discounting next year's buds! Those trees which have retained their foliage are not unnaturally forced in this way, as along the banks of the Seine.

It is vain to look for lawn grass as we know it. This shows the difference of taste between foreigners and ourselves. We like it cut as close as possible: foreigners think it perfect when they see the green blades just able to wave in the breeze. Hence it does not admit of being trampled upon, and so we are strictly cautious not to walk on the *gazon*, but keep to the pebbly paths (binding gravel being generally an unknown luxury).

The last indispensable article to all hotel gardens is a fountain, sometimes indoors as well as outside; and it is by no means an unwelcome addition. When lit up by the beams of the sun, they often throw out the most gorgeous "bows" imaginable, as at the Kursaal of Interlaken. *Tourist.*

EPHING FOREST CLUB— FUNGUS FORAY.

THE first fungus foray of the season was held by the above-mentioned Club on Saturday last at High Beech and "Monk's Wood," Epping Forest. The cryptogamic conductors were Dr. M. C. Cooke, the writer of this notice, and Mr. James English, the well-known fungus preserver (in wax), of Epping. The President of the Club, Mr. Raphael Meldola, and the Secretary, Mr. William Cole, were, of course, on the spot.

Dr. Cooke, furnished with a large leather travelling trunk (in place of a hand basket or tin collecting case), was one of the first to arrive in the Forest. By 4 o'clock the Doctor's phenomenal portmanteau was full of funguses. Where one generally looks for a tooth-brush might be seen a Phallus, in place of a sponge was a bloated Boletus, in lieu of writing paper sheets of dry-rot. Shirts were shirked, and fungi both fresh and frouzy were in all the compartments of the valise. No one but an advanced fungologist could so treat a portmanteau.

The writer of these notes started, solitary, by a mid-day train, by Stratford, one of the most unpleasant railway junctions in England. Stratford junction is situated in the midst of the blood-manure, bone-boiling and chemical interests of the East. The odours from the Stratford works are commonly diversified by dripping train-loads of stale fish and farmyard manure drawn up at the junction. Whilst waiting sorrowfully at this lugubrious spot (which, however, produces drift implements), the train from Liverpool Street crawled slowly into the station. It was now delightful to see extended from one of the carriage windows the smiling face of our friend Dr. Maxime Cornu, of Paris. With the Doctor was Mr. Thomas Howse, the Woolhopean, together with Mr. E. M. Holmes, the Pharmaceutist, and two or three friendly ladies. So all things went on pleasantly as far as Loughton.

Here had already assembled the President, the Secretary, the Verderer of the Forest, Mr. Andrew Johnstone, a large number of amateur fungussers, and the pleasant man, the unpleasant man, and the man with the big head. These three Representatives of these three types are always seen at Hereford, and they each have a habit of looking at things in a light reflected from their own idiosyncrasies. For instance, the pleasant man said at once that he was glad to see I had my "candle-box" with me; the unpleasant man directly asked if this remark really referred to my "cryptogamic vasculum." The man with the big head here confessed that he cared nothing for the nobler or the economic species of fungi; what he wished most to discover was some minute new *Peziza* with spores ("sporidia," said the unpleasant man) a millionth of an inch shorter or longer than the sporidia of some other dung-borne *Peziza*, and so, new to science, as it could then be published for the first time in the *Transactions of the Tottenham Triflers*. The pleasant man hoped the new *Peziza* would be good to eat, "and so belong to the restricted cohort of mycologic esculents," said the unpleasant man.

A walk of about two miles brought the party to "Monk's Wood." During the walk fungological matters were discussed, as, for instance, the recent rediscovery of the magnificent "Earth-star," *Geaster coliformis*, by Mr. Plowright (see p. 439). The fungologist with the big head had never heard of it. He asked if it had anything to do with the genus *Myriostoma*, as the old genus *Geaster* had long, he said, been divided into three sections, and the old *Geaster coliformis* was now only known to the select as a *Myriostoma*, from its "numerous orifices." The disagreeable man knew nothing of "orifices," so he was told they were the same with his "ostiola of the inner peridium."

The American murrain of the Vine—*Peronospora viticola*—was also discussed at some length. This resting-spore-carrying *Peronospora* is gradually invading Europe, and ere long it will no doubt make an onslaught on to British Vines: we shall then (or before then) probably hear all about it in the *Gardeners' Chronicle*. It is just now working great mischief amongst the Vines of Bordeaux and Cognac, where it is known as the "false Oidium," the "false" organism being in this instance far more powerful for evil than the real one. The physiological and anatomical fungologist with the big head had never

heard of it: he had, however, heard of *P. urticae*, which he regretted to say was destroying all the nettles in his flower garden: he also knew *P. obliqua*, which was decimating all the Docks in the cultivated fields belonging to his farming friends: he too, had deeply studied *P. arenaria*, which was now sweeping off all the Chickweed from the gutters of his district: so that ere long a physiological cryptogamist might look in vain for the graceful form of Nettle, Dock, and Chickweed in the neighbourhood of Tottenham. "Thank Providence for the Nettle, Dock, and Chickweed murrains," said the pleasant man; "but have you ever heard of *Peronospora infestans* and the conidia which carry from three to eight zoospores?" "There is no such plant as *Peronospora infestans* known to men of science," struck in the disagreeable man; "the old *P. infestans* is now proved to be a true *Phytophthora*, and as for the conidia and the three to eight zoospores—when the former burst they are now known to always produce 200 spores "in a characteristic manner." The pleasant man said he didn't believe it. "If you look to the last page of the House of Commons report," said the disagreeable man, "you will see the fact recorded." Dr. Max Cornu did not believe in the "200 spores in a characteristic manner," but he believed in the Schwendenerian hypothesis.

By this time the party had reached "Monk's Wood," and at the very moment of arrival there came down such a terrific and unexpected storm of rain that half the party got wet through to the skin in the first two minutes. The ladies (poor things) were taken under a tree and covered over with newspapers. Mr. Howse, more foreseeing than the rest, had provided himself with three coats, and one of these (a small and rough one) he was good enough to loan to the writer. It was somewhat small, and provoked a few irreverent remarks, being much too short in the arms and skirt and too straight-waistcoat-like for a mycologist. The edible *Hydnum repandum* was growing here in abundance, and Dr. Cornu said it was sold in French vegetable markets at 3d. per pound. *Agaricus mappa* was common with the poisonous *A. semilanceatus*, phalloides, cervinus, spectabilis, the edible *campestris*, and the somewhat uncommon *A. sericellus*. Here on dung the writer gathered numerous specimens of undoubted *A. sphinctrinus*, which (as far as he knows) is new to Britain. Further on were *Agaricus lacrymabundus*, *pyxidatus*, *rhodopoliis*, *pascuus*, *fastibilis*, *muscarius*, *saponaceus*, *tener*, *amethystinus*, *mollis*, *squamosus*, *fumosus*; the three edible species—*rubescens*, *procerus*, and *excoriatus*—and many common species too numerous to mention.

The edible *Boletus*, ever crying "O eat us," was growing in enormous quantities, one specimen 2 feet 4½ inches in circumference, and *B. luridus*, changing to blue when touched or broken, was common: Dr. Cooke thought this species was designed by Providence to indicate "blue ruin" to whoever cooked it. Of the *Russulas* found mention may be made of *R. cyanoxantha*, *furcata*, *foetens*, and *lutea*; of the *Lactarii*, *L. insulsus*, *quietus*, *piperatus*, *vellereus*, *serifolius*, and *subdulcis*. On the trees *Polyporus cuticularis*, *Dædalea quercina*, *Trametes gibbosa*, *Tremella albidula*, and *Agaricus mucidus*. Amongst notable forms may be mentioned *Agaricus sublateralis* with deeply decurrent gills; *A. radicosus*, with pink gills, and exceedingly like the true Mushroom in general appearance. The edible Apricot-smelling *Cantharellus cibarius* was common, as were a few Puff-balls, *Paxillus involutus* and *Clavaria pistillaris*. The rain continued to pour down in such a pitiless way that the whole party had to run into the "Foresters' Arms." It, however, soon cleared up, and the mycologists once more ventured into the woods; but they had no sooner got half a mile from the house than the rain returned in more drenching torrents than before, and so another hasty retreat had to be made again to the "Foresters' Arms." The pleasant man went into the kitchen to get his edible funguses cooked by the girls; the man with the big head tried to get up a discussion on the "perigenesis of protoplasm;" whilst the unpleasant man went into the parlour to study what he termed his specimens of "pileate and non-pileate Hymenomycetes."

A meat tea was provided at the "Foresters' Arms;" the tea and joints not at first appearing in sufficient quantities the pleasant man said, "The times were out of joint," and asked for the "Ciborum Index." The man with the big head did not understand this, so he was told it was the same with the "Charta prandiosa." The Chairman said the first object for

consumption was a joint dressed with sauce Robert;* the pleasant man immediately said he would have none of it: he preferred Potatoes with *Peronospora infestans*, salmon with *Saprolegnia ferax*, cheese with *Penicillium crustaceum*, and a glass of claret with *Zasmidium cellare*. The room was so crowded and the guests so numerous that it was impossible to secure a full list of the comestibles consumed. At one table, however, the gentlemen (as far as the twilight would allow us to see) appeared to have—

Agaricus Oreades in modo Bolt un.
„ odoris sicut apud Taurum (Hereford).
„ *excoriatus* à la Schæff (*chef*).
„ *procerus*, sauce à la Citron (*uch* Sower = sour).

At another—

Coprinus à la Potage (Dr. Cooke).
Marasmius à la Beurée (the pleasant man).
Lactarius à la Salmi (man with the big head).
Boletus à la "Bifteck" (Max Cornu).

The sweets were peculiar. Apples with *Helminthosporium pyrorum*, *Tremella mesenterica*, *Hydnum "Tremelldon"* (said the unpleasant man) *gelatinosum*—"They eat this in the Jura—with sugar," said Mr. Howse, *Delirium tremellas*, Jew's ears, *Exidia glandulosa* (large lumps of thin shivering black jelly from rotten Oak trunks)—("They eat this at"—he could not quite remember where—said Max Cornu.)

An Epping beginner brought the following list of *Agarics* to the writer, and asked if they were edible, viz. 1, *Agaricus meat-ochrus*; 2, *A. gravy-olens*; 3, *A. Le-veal-ianus*; and 4, *A. Ham-bust-us*.

After tea Dr. Cooke delivered an admirable extemporaneous lecture on the discrimination of fungi, especially adverting to the edible and poisonous species; the leather portmanteau was brought into requisition, and the rich, odorous, and dripping fungi were taken from the valise and commented upon. Dr. Cooke directed particular attention to *Boletus edulis*, *B. luridus*, *Cantharellus cibarius*, and *Lactarius deliciosus*. The writer of this notice then followed with some remarks on the habits and habitats of fungi, and on the form, size, and colour of the different species. Dr. Max Cornu addressed the meeting in French, and a few words were said by Mr. Howse and Mr. Holmes.

During all this time the rain had been beating on the roof in the most disheartening and foreboding manner, but at last the time arrived for going homewards, and all turned out into the Loughton Road. The rain had ceased, but a deep, impenetrable darkness enveloped the whole country, whilst the wind blew cold and wet. So overpowering was the intense darkness that no one's eyes got accustomed to it during the whole walk to the station. In reference to darkness Max Cornu said that Dr. Quelet could recognise several species of *Hydnum* in the dark by merely squeezing the hymenial surface between his fingers and noting the amount of moisture exuded. Some one else said he could always make out *Phallus impudicus* in the dark even without touching it, and Mr. English said he always knew the poisonous *Russula emetica* from any other species because the red colour of the pileus invariably got washed out and dissolved over the gills by his hot wax process—a character, as far as he knew, peculiar to this species. He also said *R. emetica* turns brownish-black in drying. These characters (if they are to be relied upon) are very valuable, as no species is more difficult to make out with certainty than *R. emetica*, its characters being closely "mimicked" by several other red *Russulas*. *Worthington G. Smith*.

THE PALM GARDENS OF ELCHE. — The Palm gardens of Elche are far-famed. Although the Dates are inferior to those of Africa and the East, they have a ready sale throughout Spain, where the other products of the tree are also largely utilised. The small leaves, which grow on the top of the tree, are tied for several months, till they blanch and lose all colour; they are then cut and sold, to be dressed with ribbons and blessed, carried in procession upon Palm Sunday, or hung for the rest of the year on the balcony of a house. Other leaves are used in the manufacture of spurious cigarettes, while the timber of the trunk, a firm, hard wood, is in request among the carpenters and handicraftsmen. But the Date fruit is the chief product, and the annual harvests of them are worth many thousands of pounds. It is amusing to watch the activity and hardihood of the gardeners, who still ascend the tree to pluck the Dates as they did a thousand years ago. A loose rope passed round their waists is tightened by the pressure of their feet against the bark of the tree; their hands are thus left free to help them in their upward climb. *Picturesque Europe*.

* This is equivalent to roast pork and Onion sauce: Onion sauce is known at French tables as "sauce Robert"—probably from some celebrated *chef* named Robert being at one time an adept in preparing Onions with milk for roast pork. *W. G. S.*

AGRICULTURAL CHEMISTRY.

(Continued from p. 436)

SOURCES OF NITROGEN.

IN a certain general sense it may be said that the success of the cultivator may be measured by the amount of carbon he succeeds in accumulating in his crops. And as, other conditions being provided, the amount of carbon assimilated depends on the supply of nitrogen in an available form within the reach of the plants, it is obvious that the question of the sources of the nitrogen of vegetation is one of the first importance. Are they the same for all descriptions of plants? Are they to be sought entirely in the soil, or entirely in the atmosphere, or partly in the one and partly in the other?

It will be remembered that De Saussure's conclusion was that plants did not assimilate the free or uncombined nitrogen of the atmosphere, and that they derived their nitrogen from the compounds of it existing in the atmosphere, and especially in the soil. Liebig, too, concluded that plants do not assimilate nitrogen from the store of it existing in the free or uncombined state, but that ammonia was their main source, and he assumed the amount of it annually coming down in rain to be much more than we now know to be the case.

Referring to our previous papers for full details respecting most of the points in question, I will state, as briefly as I can, the main facts known—first in regard to the amount of the measurable, or as yet measured, annual deposition of combined nitrogen from the atmosphere; and secondly as to the amount of nitrogen annually assimilated over a given area by different crops—so that some judgment may be formed as to whether the measured atmospheric sources are sufficient for the requirements of agricultural production, or whether, or where, we must look for other supplies?

First, as to the amount of combined nitrogen coming down as ammonia and nitric acid in the measured aqueous deposits from the atmosphere.

Judging from the results of determinations made many years ago, partly by Mr. Way, and partly by ourselves, in the rain, &c., collected at Rothamsted; from the results of numerous determinations made much more recently by Professor Frankland in the deposits collected at Rothamsted, and also in the rain collected elsewhere; from the results obtained by Doussingault in Alsace; from those of Marié-Davy at the Meteorological Observatory at Montsouris, Paris; and from those of many others made in France and Germany—we concluded, some years ago, that the amount of combined nitrogen annually so coming down from the atmosphere would not exceed 8 or 10 lb. per acre per annum in the open country in Western Europe. Subsequent records would lead to the conclusion that this estimate is more probably too high than too low.

And here it may be mentioned in passing, that numerous determinations of the nitric acid in the drainage water collected from land at Rothamsted, which had been many years unmanured, indicate that there may be a considerable annual loss by the soil in that way; indeed, probably sometimes much more than the amount estimated to be annually available from the measured aqueous deposits from the atmosphere.

It should be observed, however, that the amount of combined nitrogen, especially of ammonia, is very much greater in a given volume of the minor aqueous deposits than it is in rain; and there can be no doubt that there would be more deposited within the pores of a given area of soil than on an equal area of the non-porous even surface of a rain-gauge. How much, however, might thus be available beyond that determined in the collected and measured aqueous deposits, the existing evidence does not afford the means of estimating with any certainty.

The next point to consider is—What is the amount of nitrogen annually obtained over a given area, in different crops, when they are grown without any supply of it in manure? The field experiments at Rothamsted supply important data relating to this subject.

Thus, over a period of thirty-two years (up to 1875 inclusive), Wheat yielded an averaged of 20.7 lb. of nitrogen per acre per annum, without any manure; but the annual yield has declined from an average of more than 25 lb. over the first eight, to less than 16 lb. over the last twelve, of those thirty-two years;

and the yield (it is true with several bad seasons), has been still less since.

Over a period of twenty-four years, Barley yielded 18.3 lb. of nitrogen per acre per annum, without any manure; with a decline from 22 lb. over the first twelve, to only 14.6 lb. over the next twelve years.

With neither Wheat nor Barley did a complex mineral manure at all materially increase the yield of nitrogen in the crops.

A succession of so-called "root-crops"—common Turnips, Swedish Turnips, and Sugar-Beet (with three years of Barley intervening after the first eight years)—yielded, with a complex mineral manure, an average of 26.8 lb. of nitrogen per acre per annum over a period of thirty-one years. The yield declined from an average of 42 lb. over the first eight years, to only 13.1 lb. (in Sugar-Beet) over the last five of the thirty-one years; but it has risen somewhat during the subsequent four years, with a change of crop to Mangels.

With the leguminous crop, Beans, there was obtained, over a period of twenty-four years, 31.3 lb. of nitrogen per acre per annum without any manure, and 45.5 lb. with a complex mineral manure, including potash (but without nitrogen). Without manure the yield declined from 48.1 lb. over the first twelve years to only 14.6 lb. over the last twelve; and with the complex mineral manure it declined from 61.5 lb. over the first twelve to 29.5 lb. over the last twelve years of the twenty-four.

Again, an ordinary rotation of crops of Turnips, Barley, Clover, or Beans, and Wheat, gave over a period of twenty-eight years an average of 36.8 lb. of nitrogen per acre per annum without any manure, and of 45.2 lb. with superphosphate of lime alone, applied once every four years, that is for the root crop. Both without manure, and with superphosphate of lime alone, there was a considerable decline in the latter courses.

A very remarkable instance of nitrogen yield is the following—in which the results obtained when Barley succeeds Barley, that is when one gramineous crop succeeds another, are contrasted with those when a leguminous crop, Clover, intervenes between the two cereal crops. Thus, after the growth of six grain crops in succession by artificial manures alone, the field so treated was divided, and, in 1873, on one half Barley, and on the other half Clover, was grown. The Barley yielded 37.3 lb. of nitrogen per acre, but the three cuttings of Clover yielded 151.3 lb. In the next year, 1874, Barley succeeded on both the Barley and the Clover portions of the field. Where Barley had previously been grown, and had yielded 37.3 lb. of nitrogen per acre, it now yielded 39.1 lb.; but where the Clover had previously been grown, and had yielded 151.3 lb. of nitrogen, the Barley succeeding it gave 69.4 lb., or 30.3 lb. more after the removal of 151.3 lb. in Clover, than after the removal of only 37.3 lb. in Barley.

Nor was this curious result in any way accidental. It is quite consistent with agricultural experience that the growth and removal of a highly nitrogenous leguminous crop should leave the land in high condition for the growth of a gramineous corn crop, which characteristically requires nitrogenous manuring, and the determinations of nitrogen in numerous samples of the soil taken from the two separate portions of the field, after the removal of the Barley and the Clover respectively, concurred in showing considerably more nitrogen, especially in the first 9 inches of depth, in the samples from the portion where the Clover had been grown, than in those from the portion whence the Barley had been taken. Here, then, the surface-soil at any rate had been considerably enriched in nitrogen by the growth and removal of a very highly nitrogenous crop.

Lastly, Clover has now been grown for twenty-seven years in succession, on a small plot of garden ground which had been under ordinary garden cultivation for probably two or three centuries. In the fourth year after the commencement of the experiment, the soil was found to contain, in its upper layers, about four times as much nitrogen as the farm-arable land surrounding it, and it would doubtless be correspondingly rich in other constituents. It is estimated that an amount of nitrogen has been removed in the Clover crops grown, corresponding to an average of not far short of 200 lb. per acre per annum, or about ten times as much as in the cereal crop, and several times as much as in any of the other crops growing on ordinary arable land; and, although the yield continues to be very large, there has been a

marked decline over the second half of the period compared with the first. Of course, calculations of the produce of a few square yards into quantities per acre can only be approximately correct. But there can at any rate be no doubt whatever that the amount of nitrogen annually removed has been very great; and very far beyond what it would be possible to attain on ordinary arable land; where, indeed, we have not succeeded in getting even a moderate growth of Clover for more than a very few years in succession.

One other illustration should be given of the amounts of nitrogen removed from a given area of land by different descriptions of crop, namely, of the results obtained when plants of the gramineous, the leguminous, and other families are growing together, as in the mixed herbage of grass-land.

It is necessary here to remind you that gramineous crops grown separately on arable land, such as Wheat, Barley, or Oats, contain a comparatively small percentage of nitrogen, and assimilate a comparatively small amount of it over a given area. Yet, nitrogenous manures have generally a very striking effect in increasing the growth of such crops. The highly nitrogenous leguminous crops (such as Beans and Clover), on the other hand, yield, as has been seen, very much more nitrogen over a given area, and yet they are by no means characteristically benefited by direct nitrogenous manuring; whilst, as has been shown, their growth is considerably increased, and they yield considerably more nitrogen over a given area, under the influence of purely mineral manures, and especially of potash manures. Bearing these facts in mind, the following results, obtained on the mixed herbage of grass-land, will be seen to be quite consistent.

A plot of such mixed herbage, left entirely unmanured, gave over twenty years an average of 33 lb. of nitrogen per acre per annum. Over the same period another plot, which received annually a complex mineral manure, including potash, during the first six years, but excluding it during the last fourteen years, yielded 46.3 lb. of nitrogen; whilst another, which received the mixed mineral manure, including potash, every year of the twenty, yielded 55.6 lb. of nitrogen per acre per annum. Without manure, there was some decline of yield in the later years; with the partial mineral manuring there was a greater decline; but with the complete mineral manuring throughout the whole period there was even some increase in the yield of nitrogen in the later years.

Now, the herbage growing without manure comprised about fifty species, representing about twenty natural families; that growing with the limited supply of potash comprised fewer species, but a larger amount of the produce, especially in the earlier years, consisted of leguminous species, and the yield of nitrogen was greater. Lastly, the plot receiving potash every year yielded still more leguminous herbage, and, accordingly, still more nitrogen. *From Dr. Gilbert's Address at the British Association.*

(To be continued.)

SUCCULENTS AT KEW.

RANGED along the side stages of the Succulent-house (see p. 461) are the more pigmy examples, which, however, carry a degree of interest about them that gets more marked as you proceed in investigation. The *Sempervivums* first pass before the eye, the most distinguished looking amongst them being *holochrysum* and *canariense*; then small *Agaves*, of which *schidigera*, adorned with its white broadish needle-like filaments, is always distinguished; then *Shawii*, prominent with its self-protecting blood-red spines. *A. xylonacantha* and the allied *Fourcroya Lindeni* are nice ornamental subjects; *A. Saundersii* is very choice, and *Rozeana* has a singular variety of shades of green on the surface of its leaves with spines placed at long intervals—indeed it would be difficult to find an allied race so full of variety and interest as these *Agaves* are.

The *Gasterias* and *Haworthias* have now been completely separated into sub-sections from their chief clan *Aloe*, and they form quite a captivating band of the dwarfer race of succulents. Chief among the *Gasterias* we noted *fasciata*, *nigricans*, *latifolia*, and the profuse flowering *Croucherii*, and the Lizard's Tongue (*verrucosa*) in its broad and narrow forms—very showy and handsome when in flower. Although a great number of the species have sub-opposite leaves, some of them are irregular, such as

strigata and trigona. Among the miniature Aloes was an unnamed one with creamy blotches on a dark-green leaf: this and the irregular-habited abyssinica are sure to arrest attention.

Small growing Cereus are numerous, strigosus being especially notable; as also the East Indian Euphorbia lactea, which has leaves having a green groundwork with yellow spreading bands, solid at the midrib, and spines as white as bones bleached in the summer's sun. A very curious and somewhat rare subject was in flower, named Decabelone elegans. It is quite a miniature succulent, not above 6 inches high, but having a comparatively large tubular flower of stiffish texture decorated on the interior with spotting like a Foxglove, and having a faint odour of decaying flesh.

Next come the species of Rhipsalis, like miniature plants of Cactus Ackermanni; although some of the

Mr. Peacock's collection has been relegated to one of the octagonal divisions of the Temperate-house, and is altogether a very select assortment of beautifully cultivated plants. Unfortunately the house is far too lofty to do them proper justice, and in time many of them must consequently suffer. It seems a pity, from a national point of view, that such a lot should remain where they are. If a house could be built for them as appropriate as is the Succulent-house proper, their fine ornamental qualities would be all the better conserved. The principal group of large plants is arranged in the centre, and comprises a mixed assortment of species suitable for centre grouping.

Prominent among the groups are Agave (Fourcroya) cubensis, great-leaved, with fine golden bands; the prominent long-leaved A. Kerchovii, with white

the prominent Richardsii, the picta form of macracantha, which has leaves with white centres and broad green margins, each leaf being minutely serrated. Ellemetiana and Mooreana are very choice, the latter with dusky looking leaves and brown prominent spines. Altogether this collection of Agaves may be pronounced unequalled.

The Gasterias and Haworthias are also in fine condition, and in great variety. Among Gasterias may be named Bowiana, glabra, the curious spiralis, and the singular discoloured marmorata. Among Haworthias we could not help noting the major variety of fasciata, the small form of tessellata with beautiful reticulated leaves, as also mutabilis, attenuata, papillosa, erecta, coarctata, crowded together on tuft-like growths, with Reinwardti and the warted-like granata—all very singular and very beautiful examples

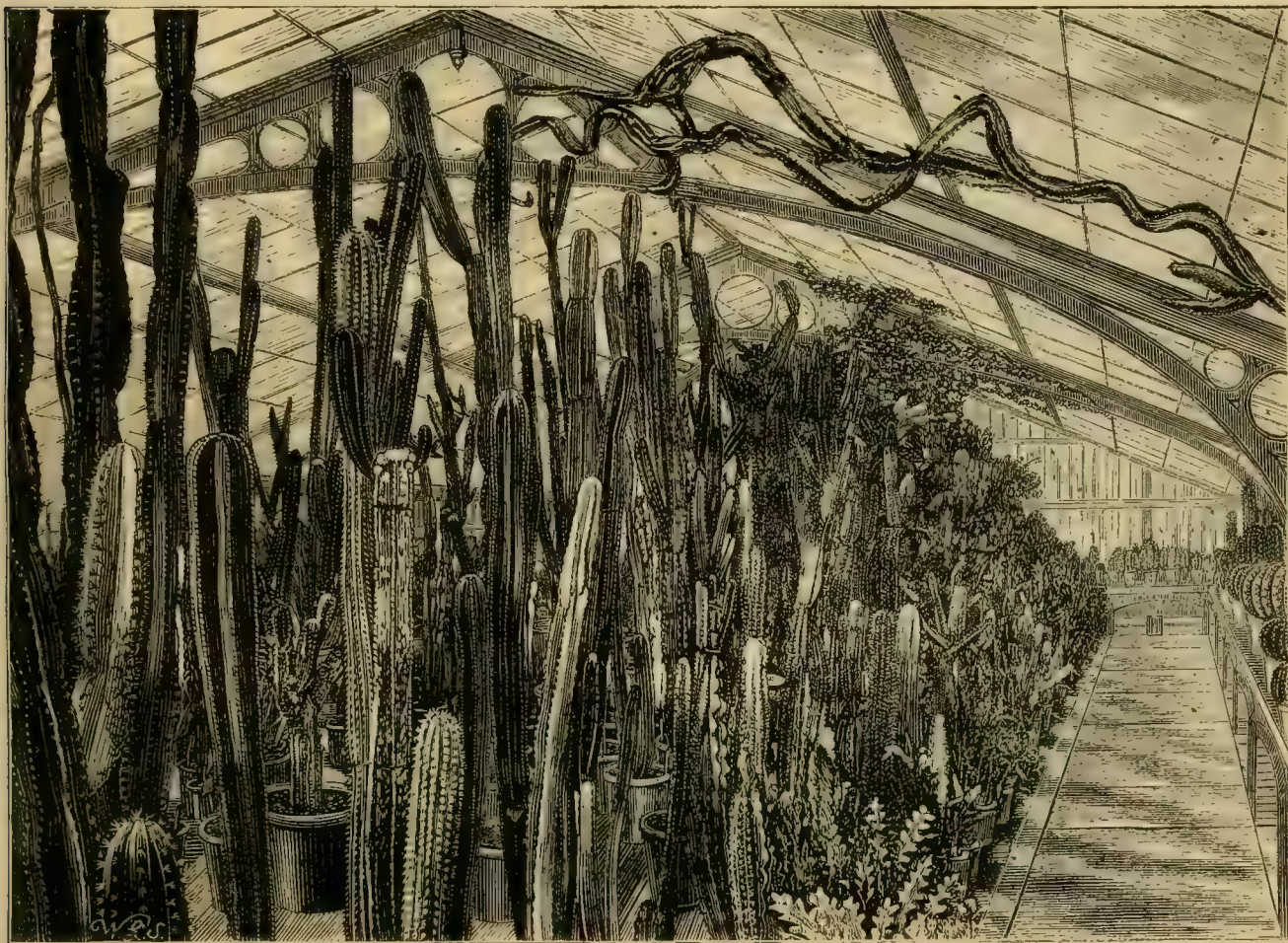


FIG. 88.—THE SUCCULENT HOUSE AT KEW.

species have attenuated leaves, R. rhombea, pentaptera, crispata and others are all noteworthy. The Phyllocactus are in variety, the singular Pilocereus senilis and Fosterii being among the most prominent of their group. A collection of the miniature Mammillarias in a case would form an attractive subject for peering eyes and painstaking investigation. Dyckias and Hechtias are handsome foliage plants, nothing being in my opinion more exquisitely beautiful than Dyckia argentea, which has a more beautiful coating of silvery-like texture than the most pronounced silver foliage-plant we have in cultivation.

Kleinias, Sedums, Senecios, and Kale-looking Kalanchoes are numerous, and so are the Cotyledons, the Mexican atropurpureus catching the eye with its claret-coloured leaves among the more sombre-hued subjects. Crassula arborescens is a stylish-looking plant, with all but reniform leaves, growing in tufts, and spotted with green on a glaucous ground. What adds to their singularity is their brownish margin; it is altogether a stiff and formal species,

margins and whitish spines—a splendid ornamental plant; the handsome white and gold-leaved picta, the equally prominent Beaulauriana and Karwinskii, as also Regelli macrodonta and xylonacantha and applanata, the latter having splendid glaucous leaves with brown spines; the handsome Peruvian geminiflora, and the Mexican filifera, throwing up its flower-spike. These, along with Yucca filifera, de Smetiana, with its deep shaded leaves, and the variegated aloifolia and quadricolor, make an imposing centre-piece, most of them being raised for general effect.

Amongst the smaller plants round the sides are Agave Palmerii, Beaucarnei, like the species of the genus of that name; the nigrescens form of filifera and also filifera rupestre—stylish plants; then Besseriana, heteracantha, Nissonii, Leopoldii, and Peacockii, both exceedingly choice—the latter having spatulate leaves with blackish spines crowded together, one large and one small one turning up about alternately: the slender form of de Smetiana, the very choice A. Veitchii and Victoria Regina;

of the Aloe race, although only forming a moiety of the collection which we are passing under review.

Next come Euphorbias, chief among which are cœrulescens, Caput-Medusæ, grotesque growing whip-looking subjects, among which the handsome grandicornis proves not the least taking object to the eye. The Mammillarias are in great numbers, the choicest of them being Parkinsonii, cirrhifera, megacantha, rhodantha, the crested form of bicolor, the singular Peacockii, sulphurea and stellaris, or rather the Central American stellata. Then came Echinocactus, bristling with miniature spines, puny looking objects beside many of their fellows, but many of them bearing lovely coloured flowers; the Mexican ingens being still good amongst the lot, and a giant among its fellows, if we do not count in visnaga, or the Toothpick-plant, which also arrests attention. Kochii is odd-looking, and grandicornis is odder still, with its abnormal-looking hook-like spines, some of them springing out as much as 3 inches from the base. Longihamatus is also of the same

character; indeed, this comprises a group of natural curiosities. *Pilocereus* and *Cereus* are in quantity, and in the rarest and best species; indeed, to collect such a lot as this is, would be a work of labour and time, not to speak of money. That there is a vast multitude of these rare and interesting plants in this country, those who have seen this, as well as Mr. Peacock's collection at Sudbury House, and the lot at the Alexandra Park, can well bear testimony. It is to be hoped that in time they will be more generally dispersed. *James Anderson.*

COLONIAL NOTES.

CALCUTTA.—The following extracts are taken from the report of the Royal Botanical Garden, Calcutta, for 1879-80:—

Experience appears to have shown that *Rheea* cannot be produced in Lower Bengal as cheaply or as plentifully as was supposed. The plant makes little progress in the cold season, and the stems produced at that period of the year are short and woody. To secure even a moderate yield of well-sized stems, deep hoeing, manuring, and irrigation are necessary, and it is only on good land, and at a considerable outlay, that three cuttings in the year can be looked for. At present the practical importance of this inquiry depends in a great measure upon the result of the attempts to produce an efficient machine for cleaning the fibre.

The results of the trial in England of certain coarse grasses of Orissa, to test their suitability for paper making are not discouraging. It seems that the two varieties known as *Ranikharra* and *Tiansi* are little inferior to *Esparto*-grass, which is so largely exported from Spain for this purpose.

Among the economic plants of which trials have been made in the garden, the *Carob*, the *Eucalypti*, the *Pará* rubber, and the *Fodder-tree*, *Symphytum peregrinum*, must now be pronounced failures. The *Ceará* rubber, on the other hand, promises very well. It is extremely hardy, and is readily propagated. Dr. King anticipates that *Indigo* and *Tea* planters in the plains will find it to their advantage to cultivate this valuable and hardy tree. He has made a *Ceará* plantation "in expectation of large demands for young plants and seeds." Dr. King makes the following observations regarding the *Guango* or *Rain-tree* (*Pithecolobium saman*):—"This wonderful tree grows faster than any hitherto introduced into Bengal, with the single exception of the *Casuarina*. It gives a beautiful shade and yields a pod with a sweet pulp, which is greedily eaten by cattle. For avenues, can- tonments, squares, and situations where dense shade is wanted, no tree is more suitable than this."

Florists' Flowers.

GREENHOUSE FLORISTS' FLOWERS.—**AZALEAS.**—When from stress of weather these must be taken into the greenhouse, see that all loose and decayed leaves are removed, the surface of the soil in the pots stirred up, and the pots washed. Place the plants near the glass, and not too close to, or overshadowed by other plants. After placing them indoors, keep a rather moist atmosphere, and admit plenty of air.

BOUVARDIAS.

The plants have plenty of bloom on them now, which lasts a long time in a dry, airy greenhouse. I noticed a number of plants in a heated house in the North. They were flowering certainly, but the growths were weak, and the flowers of *Hogarth* very pale in colour—a great contrast to those of the same variety in a greenhouse, where they are fully exposed to the sun. As the days become shorter and the nights colder, it will be necessary to heat the hot-water pipes a little to keep up a night temperature of about 55°, but as long as that temperature is maintained without artificial heat it will be unnecessary.

CALCEOLARIAS.

It is very pleasing to those who admire these showy plants to observe the rapidity with which they grow at this season. The plants must be potted on as they require it, using good turfy yellow loam with rotten stable manure and leaf-mould, a fourth part of each. Drain the pots well, as the plants require a goodly supply of water at the roots, but none on the leaves. Do not give too much water to the plants until the pots are well filled with roots. This is an essential part of the management of all classes of plants. The plants should now be placed in a greenhouse or pit near the glass, but not where they are fully exposed to the sun. I find they do well at this season on a

shelf near the glass on the north side of a span-roofed house. Carefully remove decaying leaves, and fumigate occasionally to prevent the appearance of greenfly.

CHINESE PRIMULAS.

The plants have a tendency to produce flowers in a very early stage of their growth, and, if allowed, will bring them to perfection; but then the plants will not increase in size. If large specimens are required the flower-buds must be pinched off as they appear, and the plants be potted on till they are in 8-inch pots. In these they may be allowed to flower. The plants have a tendency to damp off at the neck, but this is usually caused through their being at a considerable distance from the glass in a damp, badly-ventilated house. The young plants may yet be potted on in larger pots as advised at p. 302.

CINERARIAS.

These require much the same treatment as *Calceolarias*. Let the young plants be potted on as they require it. The work must be done carefully, as the leaves, like those of *Calceolarias*, are easily injured. The plants like a good shift. If they are growing, for instance, in a 6-inch pot, the next shift ought to be into an 8-inch one. Like the *Calceolaria*, the plants are very liable to be attacked by greenfly, and it is as well to fumigate before the pest appears. Black thrips also attack the leaves on the under-sides, but may be kept off by tobacco smoke.

CYCLAMENS.

The plants have been removed into the greenhouse, where they are showing flower, and making vigorous growth. Like most other plants they do best near the glass. Apply the water without wetting the leaves. One or two flowers or buds will also become mouldy, and these will speedily make havoc with the others unless they are removed. Weak manure-water once a-week is helpful to the plants, and causes a stronger growth and bloom.

CHRYSANthemums.

The flower-buds are now mostly set and swelling rapidly. The plants will take liberal supplies of manure-water, and should have a second dressing on the surface of the soil with rich compost. Some of the earliest varieties have the flowers nearly open, these of course must be placed under glass at once, but it will be as well to leave the others out-of-doors as long as the weather continues favourable. Tie the stems to the sticks, to prevent injury from wind. The specimen plants must also be trained into the shape intended for them. The exhibitors tie down the stems during the summer months, and the flowers are now tied separately to neat sticks. Well grown healthy specimens that have not been subjected to this objectionable training, but that have been neatly tied to sticks, are more attractive for decorative purposes. The distorted specimens have an artificial appearance, which is objectionable to many persons. Continue to thin out the flower-buds, if particularly large and fine flowers are required.

FUCHSIAS.

The small plants in 5 and 6-inch pots make a fine show, placed near the edge of the stage with the bunches of flowers hanging gracefully over the paths; mixed with *Bouvardias* and other seasonable flowering plants they have a striking effect. The flowering period is lengthened and the quality of the flowers improved by repeated applications of manure-water. As the older specimens go out of bloom let them be removed into a secluded corner of the greenhouse, or a vinery from which all the *Grapes* have been cut, and gradually dry them off.

PELARGONIUMS.

We place the plants near the glass and water only when it is required, taking care not to apply any to the leaves. Too much water and a close atmosphere may cause spot. We have not yet shaken all the plants out, but shall do so immediately. These will be the very latest to flower. If the earliest flowering plants are not yet potted into their blooming pots see to it at once. Refer to p. 302 for further instructions. We treat *Fancies* the same as the large-flowered section, except that they require a little more warmth, and to be potted in lighter soil.

ZONAL PELARGONIUMS.

As the plants in the open ground go off those under glass will now come in, and be most valuable both for decorative purposes and for cutting from. At present

they will produce moderately good flowers in almost any kind of glass structure, but when the long nights and cold and foggy days of November set in they require a light airy house, and a moderate degree of warmth. Cuttings put in a month ago and intended to flower next year must also be removed under glass; a shelf in a vinery or any other cool house will do well for them. Keep the roots rather dry, and attend periodically to the removal of decaying leaves.

ROSES IN POTS.

As a greenhouse florist's flower the *Rose* should be first, not last. The *Tea*-scented varieties are most valuable at this season. Those who can afford a house for them will be cutting good blooms now, but it must be a light well-ventilated house, and the plants must stand up well to the glass, and as a rule the plants give more satisfaction cultivated in pots than planted out. Mildew and greenfly are both troublesome at this season. If the plants have not been repotted, see to it at once. Drain the pots well. All *Roses* to be flowered in pots next season should be now under glass. See that the pots are clean, and the surface of the soil stirred up a little. *J. Douglas, Loxford.*

Garden Operations.

KITCHEN GARDEN.

A slight frost which occurred here on the 3d inst. left its mark on the foliage of the tender subjects in this department, sufficiently to point out the necessity of not postponing whatever preparations remain to be made in the way of shelter or protection that may be required, as until these subjects become more inured and hardened to cold they will naturally be much more susceptible to damage from such influences than later on. Amongst the other matters which require immediate notice here will be the crop of out-of-doors *Tomatos*. In the ordinary course these ought to be plucked as they ripen, but at this period it will no longer be safe to leave them on the plants, and therefore all those which have attained to a fair size should be gathered and be bunched and hung up, or otherwise laid out singly in a place where a constant circulation of warm and dry air is kept up. It cannot be expected that these will acquire a degree of excellence equal to those which finish on the plants. These should therefore be used for cooking purposes, and those which are required for salad or table use be gathered from plants grown for the purpose. *Celery* is another subject which also at the present time should, for a similar reason, be moderately well earthed-up, and it will further be necessary to be wary in regard to coming frosts in respect to the crop of *Beet*; no material damage may be apprehended from slight frosts, but a severe one would be highly injurious, and in all probability affect the keeping quality of them afterwards; these can with safety be stored away in a cool place soon after they are lifted. In the ordinary course of operations, *Carrots*, *Parsnips*, *Salsify*, and *Scorzonera* should as soon as convenient be taken up, and after having been exposed in a dry airy place for a day or two they can be stored away; care, however, should be exercised to stack them together in a manner so that fermentation does not ensue. Towards the middle of the month we shall lift our supply of *Lettuce* and *Endive*, which was planted out for this purpose in quantities sufficient to fill the frame accommodation we can afford; these plants will be taken up with a good ball of earth attached to the roots, and be well watered immediately afterwards to re-establish them in the fresh quarters. Now-a-days salading is so much required and appreciated—particularly when it is scarce—that extra attention should be given to this subject, in order to keep the plants hardy and render them capable of enduring a considerable amount of frost without injury. No coverings should, therefore, be applied excepting when circumstances are such as to actually make their use necessary; at the same time these appliances should be ready at hand in case of any sudden emergency. Look over the breadths of *Cauliflower* and *Broccoli*, which are coming in now, and either tie up the leaves over the heads to protect them, or otherwise lift them and store them away beyond the reach of frost. *Peas*, *Beans* and *Scarlet Runners* will by this time have become nearly exhausted and useless out-of-doors; if seed is to be saved this should be plucked and placed in a vinery or dry place where they will harden before being shelled. When the weather is dry and open, divest all such plants as *Broccoli*, *Winter Greens*, &c., of the useless leaves about their stems, so that by more exposure these may become hardened and better able to withstand adverse weather when it comes. It will also be wise to remove the stems from the stools of *Globe Artichokes* where the chokes have been cut; and before the seed on the *Asparagus* begins to fall

off the stems should be cut down and taken away, after which all weeds should be cleared from the surface of the beds, and these should be well dressed with the best rotten manure that can be procured. A showery period will cause much time to be taken up in the destruction of slugs and grubs, which will more or less abound about recently planted subjects, as Cauliflowers, Cabbages, and Lettuces. Deficiencies which occur amongst these should be kept made up regularly, so that the crops may not become gappy and mar the appearance. As soon as the winter-sown Onions are ready for thinning out, let this process be proceeded with, leaving the plants at about 3 or 4 inches apart in the lines. It not unfrequently happens that when these plants are transplanted they do better than those which remain where they were sown.

FRAME DEPARTMENT.—As the season advances the work here will increase. At the present time every care should be exercised to harden as much as possible the inmates of cold frames by fully exposing them to the elements, excepting when frost prevails. Timely attention should also be given to secure in readiness beforehand a store of manure for mixing with leaves as soon as they are attainable. Radishes coming into bearing will need plenty of air when favourable weather exists. Make another sowing of these at once.

FORCING DEPARTMENT.—At this season French Beans will be the objects of most attention. Those which are coming into bearing in close, confined pits will need to be slightly ventilated almost constantly, in order to get them to set and prevent them from damping off. Sowings of these should now be made at regular intervals, according to the space at command for them. Mustard and Cress sowings should also be resumed in like manner, to keep up a constant supply. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

ORCHARD HOUSE.—The trees to be started early in January with a very little artificial heat must now all be ready, and going through the resting period; although it may be said that unless the roots are in a very low temperature indeed they are never at rest. I have lifted the pot-trees from the open ground, where they had been plunged in cocoa-nut fibre refuse at mid-winter, and found all the roots in an active state, plenty of them running into the fibre. I would have all the trees out-of-doors now. Potting should all have been finished before this time, and if any of the trees have to be repotted now, I would not reduce the balls, or in any way disturb the roots. Those that have not been repotted should be top-dressed. This is done by using an iron instrument resembling a stout screwdriver, to dig out a portion of the exhausted soil. Work down the side of the pot to nearly half the depth of soil; then, with a pointed instrument, work a considerable portion of the soil from amongst the roots, and replace it with good loam and rotten manure in about equal parts, ramming it in firmly. We are now removing the trees from the late house out-of-doors; but before this is done it is better to have all the trees repotted and surface-dressed. We plunge ours out-of-doors in an open position; and they do not require any water after this until they come back again into the house. The only variety that hangs on the trees after this is Salway; this is certainly a fine-looking Peach, and in some seasons is very good; we have gathered fruit of it in November of large size and very fair quality.

ORANGE TREES IN POTS.

The fruit that is ripe now is usually very good in quality, and is most valuable as an extra dish, served with the leaves attached to the fruit, and if a few sprays of blossom can be placed round the fruit it will be so much more attractive. When rightly managed, the little Tangerine ripens its fruit six weeks before St. Michael's, which is the next most useful variety to it; but the Orange has the advantage over some varieties of fruit that it will hang on the trees many weeks, and still remain juicy and of good flavour. Trees with ripe fruit may be removed to a cooler house, to make room for those trees on which fruit is ripening. The fruit may also be gathered from the trees and placed in a cool room, where it will also keep for a long time; but it is not desirable to gather it in this way, as it ought to be placed on the table with the fresh green leaves attached. The ripening fruit should have a night temperature of 65°. If the trees are clean it is better not to syringe them after this time. I alluded, some time ago, to some of the trees being attacked with mealy-bug. A good plan to destroy this pest is to take the trees out of the hot-house as soon as the fruit has been gathered, and to winter them in a house where the temperature is kept very little above the freezing-point all the winter. The leaves and stems must, at the same time, be well washed with soft-soapy water. *J. Douglas, Loxford.*

PINES.

Tan unquestionably forms the best fermenting material as a heating medium for the roots of plants

such as these, and if it can be procured at a reasonable rate, of about 4s. or 5s. a ton, it may surely, considering the many advantages connected with its use, be pronounced the most effective agent in this way, and superior to others for this particular purpose. In fact I use it, and prefer it to any other substance, for plunging the pots. I also use it where artificial heat is applied rather extensively as the sole means of giving bottom-heat to such subjects as rootless suckers or plants, and for the successional ones also, until they attain a certain stage of growth. Beds composed of this material occasionally require to be renewed by an additional supply of fresh stuff about this period, and this should be attended to at once, before the season is too much advanced and too precarious for such operations to be safely performed. The effect produced by 12 or 18 inches of fresh tan being well incorporated with the rest will be to afford adequate warmth and supply new life to a bed for a considerable period onwards, and without the danger which would attend its being used more profusely. Now is a seasonable time to make up new tan beds, which in the first instance should be made from 3 to 4 feet in thickness. In doing this it is a good plan to previously prepare the tan for it by laying it in a dry airy place where it can be turned over a few times, as by this process it becomes somewhat drier, and the risk of violent heating is, to a great extent, abated. However, it should be borne in mind, that in beds of this description the heat demands daily notice or much mischief may happen at the roots of the subjects plunged therein before it is discovered, when it is too late to be amended. The season has now so far advanced that artificial heat in this department must be steadily increased. Although we do not advocate a high night temperature in any of the compartments, we nevertheless deprecate sudden transitions in temperature at any time or season; see, therefore, that the fires are fit for the work which they have to do when there is a probability of an emergency; 55° to 60° at night will suffice for rooted suckers which are required to advance in growth slowly, 60° to 65° about successional plants, and about 70° in the fruiting compartment. *G. T. Miles, Wycombe Abbey.*

FIGS.

As soon as the early pot Figs have cast all their leaves the trees should be pruned, well washed, and properly dressed preparatory to tying them in to new stakes. If repotting is considered necessary, directions contained in my last paper will apply, but no time should be lost in getting it done, and everything made ready for a new start. Unlike many other kinds of fruit under pot culture, the Fig seems to become prolific in proportion to its age, every short spur being literally covered with embryo fruit ready to start into life when heat is applied to the trees. In course of time the trees become too large for removal from the house, as is the case with some fine old examples of Brown Turkey which I have forced for nearly twenty years. These occupy 20-inch pots, and instead of turning them out annually I allow them to remain on the permanent pedestals, and build solid walls of new turf and old lime rubble round each pot from the base of the pedestals to the rims of the pots. This is done as soon as the trees are cleansed and tied. When the time arrives for forcing, fermenting Oak leaves and fresh stable manure well worked together are used for filling up the pit. This soon draws new roots into the turf; more top-dressing is added as the fleshy feeders show on the surface: the mass is regularly watered with tepid liquid, and we rarely lose a fruit when the change takes place for ripening. Moreover, the steady growth which this cramping and high feeding process produces results in a steady succession of fruit throughout the early spring and summer months. Permanently planted trees in succession-houses will now be sufficiently advanced for lifting and replanting where they are too strong and show an inclination to make gross, unfruitful wood. When dealing with these trees the principal points are good drainage, rough calcareous compost, and firm ramming to insure the even passage of water.

Trees in late houses and wall cases are still producing good fruit, but the time has now arrived for withholding water and encouraging them to ripen up the wood and go to rest. If it is inconvenient to apply fire-heat in very severe weather the branches may be loosened from the wall or trellis, tied up in small bundles, and drawn down from the glass. If any of the young pot trees are still out-of-doors they may be stowed away in a dry airy shed or late house, where, well packed in dry Fern, the roots will not require any water until the time arrives for starting them into growth.

We are told that Figs on open walls do not require protection in winter; in fact, that they are much better without it. In dry warm places where the wood ripens well this advice may be sound, but in cold damp situations it is by no means unusual to see fine trees killed to the ground, or so severely injured that they have to make new wood before they show fruit. *W. Coleman, Eastnor.*

PLANT HOUSES.

ORCHIDS.—The dwarf-growing *Lælia Dayana*, now flowering in the cool-house, is one of those charming, useful plants which all gardeners that possess the use of an intermediate or cool-house would do well to advise their employers to purchase. Although at one time a very rare and expensive plant, it may now, owing to the large number imported, be obtained for about as many shillings as formerly it cost pounds. It would grow well suspended near to a ventilator at the cool end of any ordinary stove, as a basket plant. A small quantity only of peat and sphagnum should be given it to root in, and it must be kept moist the whole year round. Its flowers just at this season of the year are sure to be appreciated, especially where good button-hole flowers are in request. A very near ally to the *Lælia*, and a still more desirable plant, is *Cattleya marginata*, good varieties of which have flowers at least three times larger than the *Lælia*, and of excellent shape and colour. Both these plants we have now grown for several years in the cool-house through the summer, always wintering them in the intermediate-house, as in every case we found the young breaks and leaves suffered if subjected even for a short time to a temperature anything below 50°. One of the worst enemies to these plants is the white scale, which, whenever it appears, must be diligently brushed off. Those plants of *Odontoglossum Phalæopsis* which have been growing in the cool-house for the last four or five months, must now be got near to the roof-glass of the Cattleya-house. They still require plenty of water at the roots, and also abundance of air on all mild days. *O. vexillarium* is quite 5° cooler than *O. Phalæopsis*, and consequently will still be quite safe in the cool-house, unless sharp weather sets in. The moment fire-heat has to be used, in order to keep the night temperature of the cool-house up to 50° it will be time to shift them, along with *O. Warszewiczii*, *O. nævium*, *Masdevallia Chimera*, *M. bella*, *M. Nyctarina*, and *M. tovaensis*, into the Cattleya-house. Choose for them the coolest and most airy end. As one and all of these plants are, as a rule, greatly troubled with yellow thrips, no effort must be spared in the meantime to get them thoroughly clean, or this pest in the warmer house will prove a constant trouble, not to say, perhaps, the means of ruining the good looks of the plants. Nicotine soap, used at the rate of 2 oz. to the gallon of warm soft water, is an excellent and safe cleansing mixture for one and all of these plants. Every care must be taken that not a drop of the mixture gets to the roots, and also that it is thoroughly washed off within ten minutes after dipping. The flower-spikes of the fine *Ceologyne barbata*, which for many weeks will have been at a standstill, will now rapidly push out their flower-buds. Keep the plant well to the light, but not where it will get the least sunshine, and, as at all other times, give it frequent supplies of water at the root. *C. elata*, which grows and flowers much in the same way, requires exactly the same treatment. The spikes of *C. ocellata* will be in the stationary stage, and as they are very easily injured by anything touching them, it will be wise to give the plant a position well out of the way. The Brazilian *Oncidium*, *Forbesii*, *crispum*, and *varicosum*, will now be gay with bloom; strong, well-rooted plants may carry all the flowers they throw up, but it will prove especially advantageous to small and weak plants if a great portion of the flower-buds are removed. Every one who has grown this class of *Oncidium* knows what splendid spikes can be easily obtained from them within a few months of their being imported. Many also know to their cost that after bearing such spikes, the plants have gradually but surely dwindled away, and that in spite of everything that has been done for them in the way of care and cultivation. The moral is, first establish your plant, and then enjoy the flower. *O. concolor* will by this time have made up its bulbs, and will not require anything like so much water as when growing; at the same time do not keep this plant nearly so dry as a resting *Dendrobium*. *Oncidium Papilio* and *O. Krameri*, where grown in a light airy position in the *Dendrobium* or similar house, will now be opening their much appreciated flowers. Every one who has a warm stove should grow one or both these Orchids. So long as they have a light position they are content to grow either on a bare block, or with a little peat and sphagnum to root in, in either pot or basket. As is generally known, the flower-stems of both these plants will continue to send out flowers for a very long period; as each flower dies, another bud takes its place, and even if the knotted spike is cut or broken, a lateral carrying flower-buds will soon start from a joint. This is very accommodating of the plant, but those who wish for strong plants and big butterflies will cut each spike clean away after it has thrown four or five flowers. The following should be the night temperatures:—Cool-house, 50° to 55°, or warmer, if no fire-heat is required and the bottom ventilators are open. Cattleya, intermediate, and Mexican houses, 60° to 65°; East Indian, 65° to 70°. *Dendrobiums*, *Thunias*, &c., resting in a vinery, not lower than 50°. *J. C. Spyers, Burford Lodge, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Oct 11	Sale of Dutch Bulbs, at Stevens' Rooms; and at the Auction Mart, by Protheroe & Morris.
TUESDAY,	Oct 12	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Sale of Nursery Stock at Ponsford's Nursery, Brixton, by Protheroe & Morris. Sale at Ponsford's Nursery continued. Sale of Camellias and Azaleas from Thent, Dutch Bulbs, &c., at Stevens' Rooms.
WEDNESDAY,	Oct 13	Sale of Nursery Stock, at the Bell Street Nursery, Tringbury, near Rochester, by Protheroe & Morris.
THURSDAY,	Oct 14	Sale of Anthurium Andraeanum, Orchids, Crotons, Dracenas, &c., at Stevens' Rooms.
FRIDAY,	Oct 15	Sale of Established Orchids, Stove and Greenhouse Plants, at the Castle Nursery, Lower Norwood, by Protheroe & Morris.
SATURDAY,	Oct 16	Sale of Dutch Bulbs, at Stevens' Rooms.

FRUIT GROWERS, especially about London, have, of late, been much troubled by a peculiar disease making itself manifest in the first place by a milky-white appearance of the leaves, and subsequently by the decay and death of the branch, and ultimately of the whole tree. The disease is not confined to Plum trees, but is met with in Apricots and Peaches, and in the Portugal Laurel. Lately, too, we have observed it specially destructive to the Almond trees, which are so commonly grown in the suburbs of London. Nor are its ravages confined to trees out-of-doors, for we have on various occasions seen it in Peaches grown under glass. On microscopic examination of the leaves, not much is to be seen except the raising of the epidermis or skin from the underlying tissue—a circumstance due probably to shrinkage of the green cells. To this the milky appearance of the leaves is due. The leaf being thus unhealthy speedily becomes the prey of insects and fungi, which, in this case, seem, so far as the leaves are concerned, to be the consequence not the cause of the disaster.

We have seen this diseased condition showing itself in various localities under varied conditions of soil, exposure, and the like, so that at present we have not been able to connect the presence of the disease with any special conditions of soil or locality. Lately Mr. HARRISON WEIR has been good enough to submit to our examination specimens of the trunk and roots of a Plum tree so affected, and these presented such interesting appearances that we forwarded them to our excellent correspondent, the Rev. M. J. BERKELEY, whose knowledge and vast experience in such matters render him the great authority on them, and who writes as follows:—

"Two sections of a Plum tree have been forwarded to us, affected with that milky appearance of the leaves which is due to the separation of the cuticle from the cellular tissue of the leaf. This affection is very common in Apricots, and occurs also in other members of the same natural order. It is seldom so obtrusive as to render the destruction of the tree advisable, and therefore we are glad of the present opportunity of examining the sections. Only a very small portion of sound wood and bark remain to carry the proper quantity of sap to sustain life, and it is obvious that the necessary functions can only be very imperfectly performed. The causes of the condition of the stem may be various. One point observable in the sections is, that the heart-wood is decayed. The cause of this is fortunately clear enough, for since the arrival of the section, very carefully packed, and without any accession of moisture, there has been a plentiful development of the mycelium of *Polyporus igniarius*, a fungus which is so common and so destructive to Plum trees. With the sections came roots from the side of the tree which was affected with the peculiar disease, and also from the unaffected side. In the former we find the wood of the thicker roots showing that foxy colour which is the sure indication of disease, and often the forerunner of fungus growth, as is well known in the case of Oaks which have been raised from old stumps; in both the young roots are either dying or so decomposed as to prognosticate death. All healthy tissue is soon, by contact with the affected part, highly diseased, and is not in a condition to carry pure sap, and without healthy sap we can scarcely expect healthy growth. The effect of the spawn is to cause the contiguous bark to split, and this soon appears outwardly, and is conspicuous even in small branches, an attempt being made at first to produce a new growth of bark. M. J. B."

— **INJURIES AND LOSSES SUSTAINED IN THE WINTER 1879-80.**—The Royal Horticultural Society being desirous of obtaining trustworthy information as to the effects of the late exceptionally wet summer and severe winter on trees, shrubs, &c., would be glad to receive reports from gardeners, florists, and others. Schedules for recording such injuries as may have occurred will be forwarded to any one who may be willing to assist the Society. A small number of returns have already been received, but as it is desirable to render the report as complete as possible, it is hoped that every county in the British isles may be represented by at least one return. Reports have been received from the following counties, &c.:—Arran, Bucks, Cornwall, Derbyshire, Dorset, Dumfriesshire, Essex, Gloucestershire, Herts, Roxburghshire, Kent, Kilkenny, Leicestershire, Middlesex, Mid-Lothian, Somersetshire, Suffolk, Surrey, Sussex, Sutherlandshire, Warwickshire, Wicklow, Isle of Wight, Yorkshire. Communications should be addressed to Rev. G. HENSLOW, 6, Titchfield Terrace, Regent's Park, N.W.

— **EARLY FROST.**—The first frost of the season about London took place on Sunday morning, October 3, doing considerable damage to tender things, dwarf and runner Beans, Nasturtiums, Balsams, and similar things. The preceding day was marked by a cold rainfall, evidence of a break-up of the delightful autumn weather we had been experiencing. At night the sky was clear and the air cold, and in the morning there was a very white frost. Warnings of this kind usually come unexpectedly, and often settle for the season all the outdoor tender plants. Probably this frost has but given a warning which few gardeners will neglect to notice. Its worst aspect is the evidence it gives of the near approach of winter.

— **PHYTOLACCA DECANDRA.**—A correspondent lately asked us if this singular and handsome plant, the berries of which are so conspicuous at this season, was poisonous. We presumed not, but had no certain knowledge. We now find from an article in the *American Gardeners' Monthly* that in New England the young shoots of the Poke-weed are considered a very delicate vegetable, and are, during the spring months, always to be found on sale in the markets. The young succulent shoots, when from 4 to 6 inches in length, are cut off near the ground, tied in bunches, and offered for sale in the same manner as Asparagus.

— **POSTAL CONGRESS.**—A meeting of representatives from various countries is to be held in Paris on the 9th inst., under the Presidency of M. COCHERY, Postmaster-General of France, assisted by sundry other government and railway officials. The object is to regulate the transport by post of small packages. This may be of great moment to those desirous of sending or receiving small packets from the Continent.

— **DOYENNÉ BOUSSOCH PEAR.**—Mr. HAYCOCK, of Barham Court Gardens, Maidstone, has sent to London some very fine examples of this fine Pear; large beyond its usual size, very handsome in shape, rich lemon-russet on the under side, and streaked with wine-brown on the sunny side. This Pear finds great favour with Mr. W. INGRAM, at Belvoir Castle Gardens, and it may therefore be fairly assumed is suited for general cultivation. It has a soft, luscious, and very juicy flesh, and a very agreeable flavour, but should be eaten before it is too ripe; indeed, when it is apparently hard it is most delicious for eating purposes.

— **CHIONODOXA.**—The glory of the snow is likely to become the benefactor of the Gardeners' Benevolent Institution. Some time since we mentioned that Mr. GEORGE MAW proposed to dispose of his surplus stock of bulbs of this very lovely spring-flowering plant, and to present the amount received to the Institution above-named. We have now the satisfaction to announce that Mr. MAW has sent to us, for the benefit of the Society, the first fruits of his liberal action.

— **PRIZE GOOSEBERRIES.**—Mr. E. SALSBUURY, of Melbourne, near Derby, has kindly sent us the weights of the heaviest Gooseberries shown during the past season, as taken from the Gooseberry

Growers' Register:—Lord Derby, red, 29 dwts. 19 grs.; Garibaldi, yellow, 31 dwts. 17 grs.; Stockwell, green, 27 dwts. 14 grs.; Careless and Hero of the Nile, white, 27 dwts. 9 grs. each.

— **GILBERT'S CABBAGE-BROCCOLI.**—Mr. GILBERT requests us to state that he intends exhibiting his new Cabbage-Broccoli before the Fruit and Vegetable Committee of the Royal Horticultural Society on the 12th inst. It has already obtained a First-class Certificate, and he exhibits it again that the committee may have an opportunity of confirming their previous opinion. The Cabbage-Broccoli will be shown in a cooked and also in a raw state.

— **THE SECKEL PEAR.**—In the current number of the *Gardeners' Monthly* is given a woodcut with an interesting article relating to the original Seckel Pear tree. The tree still stands on a farm near Philadelphia, and which was once the property of the SECKEL family. The meadows, it appears, were more than 150 years ago reclaimed by throwing up dikes to keep out the water. "Who munched the Pear," says the author of the article, "and thoughtlessly dropped the core over the side of what vessel as she passed the Back Channel? And when? It must have been between 1682 and 1720, for that core floated to fast (firm) land, seeded, and inaugurated its celebrated distinct variety far inside the old dike that more than 150 years ago first barred back the waters from their accustomed flats. . . . Who shall say it was not PENN himself who cast overboard the unconscious seed of the landmark of the two centuries then to come." The half trunk is now a mere shell, at least half the circumference being decayed. At 3 feet 6 inches from the ground it measures 5 feet 4½ inches in circumference, and is about 26 feet in height.

— **THE GREATEST ENDURABLE COLD.**—According to the reports in the daily papers, the members of the FRANKLIN Search Expedition, under Lieutenant FREDERICK SCHWATKA, travelled over 2819 geographical, or 3251 statute miles, during a period of eleven months and eighteen days. The Expedition withstood the greatest amount of cold ever encountered by white men. On January 3 of the present year the thermometer sank to -71° Fahr., or 103° below freezing point, and during the whole of that day it did not rise above -69°. During sixteen days the average temperature was 100° below the freezing point, and during twenty-seven days it was more than 92° below. The party, however, never halted for a single day on account of the cold. The figures, we imagine, must be taken with some doubt as to their correctness.

— **THE AMERICAN WATER WEED.**—Mr. DAVID DOUGLAS describes in the current number of *Science Gossip* the male flowers of *Anacharis alismatum* (*Elodea canadensis*), which have not previously been noticed in this country. There are three sepals and as many petals, with nine stamens, the pollen grains are in clusters of four.

— **ORNAMENTAL GRASSES AT KEW.**—In the large collection of grasses, ornamental and otherwise, there are several which combine both grace and elegance in a remarkable degree. Some of them, indeed, merit a place even in the most select collections of hardy plants, and their wonderfully varied and beautiful forms might be used with great effect in the corridor or cool conservatory. The following are amongst perhaps the least known but the most striking at Kew. There *Erianthus fastigiatus* is represented by plants of 3 or 4 feet high; are of reed-like habit, and their long, somewhat arching leaves are rendered doubly charming by the white or pinkish colour of the broad midribs; the strict dense panicles of silvery-white flowers are decidedly pretty. *Erianthus strictus*, another United States grass, of similar habit and size, has reddish panicles, which contrast well with those of the first-named species. *Chloris barbata*, an East Indian plant, is extremely floriferous. It grows about 1 foot or 1½ foot high, and its long naked flower-stalks, crowned with from six to ten or more long spikes radiating from the centre like the spokes of a wheel, produce an effect strange and curious as well as pretty. *Pennisetum longistylum* is certainly a very handsome species—grows about 2½ or 3 feet high; it has long, slender green leaves, and its dense, brush-like, whitish spikes are borne well up above the leaves. *Pennisetum compressum*, an East

Indian species, has broader leaves than the last, and the brownish-red colour of the numerous bristles gives quite a different shade to the spikes, which are longer and narrower than in the previous species. Both are very ornamental grasses. *Panicum maximum*, a tall growing reed-like plant, 5 feet or more in height, has foliage tinged with coppery-red, and its large graceful drooping panicles are composed of numberless reddish florets. *Andropogon furcatus*, about 4 feet high, has narrow light green leaves, and a lax inflorescence of rather long spreading spikes; the purple-red styles and anthers render the flowers quite conspicuous at the present time. Besides its own merit, the species is interesting on account of its being a hardy member of the genus which includes the sweet-scented Lemon-grass of Malabar, and—according to several com-

KNIGHT, Esq., the cultivator. The flower of this plant was 7 inches in height, and 18 inches in width; it was thick and full, and of a most intense purplish-red colour. We do not get beyond these dimensions in these days, though we show fine Cockscombs. Many failures occur with the Cockscomb through the seedling plants, when in a young state, becoming drawn and spoilt. The best strain under the sun will be disappointing under such unwise treatment. The first object of the cultivator should be to retard the progress of the flower-stalk, so as to give it as much strength as possible, and then good combs can hardly fail to result. The German strains of Cockscombs yield several varieties of quite new, or at least novel colours. What are grown in this country are the purple, crimson, and scarlet. The practice of

that when the colour of a flower has been isolated, by putting it in spirits of wine, one may, by adding an acid or alkaline substance, obtain all the colours which plants present. Flowers of *Pæony*, *e.g.*, give, when placed in alcohol, a red-violet liquid. If some salt of sorrel (oxalic acid?) be added, the liquid becomes pure red; while soda changes it, according to the quantity, into violet, blue, or green. In this latter case the green liquid appears red by transmitted light, just as does chlorophyll (the green colouring matter of leaves). The sepals of *Pæony*, which are green with a red border, become wholly red when put into salt of sorrel. These changes of colour, which can be had at will, may quite well be produced in the plant by the same causes, for in all plants there are always acid or alkaline matters. Further, it is certain that the transfor-



FIG. 89.—THE OLD CHESTNUT AT TORTWORTH. (SEE P. 466.)

mentators—it is the "sweet calamus" and the "rich aromatic reed from a far country" mentioned in Holy Writ.

— THE COCKSCOMB.—We have seen, during the summer, at various horticultural exhibitions, some very fine examples of the Crested Amaranth, *Celosia cristata*. They represented considerable skill on the part of the cultivators, and also a very fine strain of the plant. There was about them that balance of qualities that goes to form a perfect Cockscomb—viz., a moderate height, large and fresh rich-coloured combs, of fine symmetry, and foliage down to the soil in the pot, with bold and clean leaves of healthy hue. About fifty years ago a drawing was published of the most perfect plant of this kind grown in England, which was sent to the Horticultural Society of London by THOMAS ANDREW

cutting off the crests, placing them in pots of soil, and causing them to strike root, is scarcely to be commended, as it tends to dwarf the plants below their natural proportions; and it is far preferable that the plants be grown in the usual manner throughout, with the skill of the cultivator bringing about pretty well the same result as if the combs had been cut off and rooted.

— THE COLOUR OF FLOWERS.—At a recent meeting of the Vaudois Society of Natural Sciences, Professor SCHNETZLER, as reported in the *Times*, read an interesting paper on the colour of flowers. It has been generally supposed that the various colours observed in plants were due to so many different matters, each colour being a different chemical combination without relation to the others. Now Professor SCHNETZLER shows by experiments

mation from green into red, observed in the leaves of many plants in autumn, is due to the action of tannin which they contain with chlorophyll. Thus, without wishing to affirm it absolutely, Professor SCHNETZLER supposes *a priori* that there is in plants only one colouring matter—chlorophyll—which, being modified by certain agents, furnishes all the tints which flowers and leaves present. As to white flowers, it has been found that their coloration is due to air contained in the cells of the petals. On placing the latter under the receiver of an air-pump, they are seen to lose their colour and become transparent as the air escapes from them.

— A NEW NERINE.—In the Cape-house at Kew there is now in bloom a new and charming species of *Nerine*. It differs from the other cultivated species of the genus in its very narrow and slender

Rush-like leaves. The hairy scapes bear umbels of charming rosy-pink blossoms, undulated like those of *N. humilis*, but somewhat paler in colour than those of that species.

— THE WEIGHT OF PRIZE POTATOS.—Mr. CRUMP, of Blenheim, has kindly sent us the following statement of the weights of the eighteen different dishes of Potatos shown in his collection which won the 1st prize on the 22d ult. at the Crystal Palace. We should add that there were nine tubers in each:—International, 4 lb. 12 oz.; Woodstock Kidney, 4 lb. 3 oz.; Porter's Excelsior, 4 lb. 11 oz.; Schoolmaster, 4 lb. 1 oz.; Beauty of Hebron, 4 lb. 7 oz.; Snowflake, 4 lb. 13 oz.; Webb's Surprise, 4 lb. 15 oz.; Sutton's King of Potatos, 4 lb. 5 oz.; Bedford Prolific, 4 lb.; Early Vermont, 4 lb. 11 oz.; St. Patrick, 4 lb. 11 oz.; Vicar of Laleham, 4 lb. 10 oz.; Triumph, 3 lb. 9 oz.; Rector of Woodstock, 3 lb. 12 oz.; Mona's Pride, 3 lb. 12 oz.; Radstock Beauty, 3 lb. 13 oz.; Blanchard, 3 lb. 13 oz.; Grampian, 3 lb. 8 oz.

— ACORNS.—It is a curious fact that, whilst last year should have proved so very unfavourable to the production this season of hardy edible fruits, yet there should be found a marvellous crop of acorns almost everywhere, and the sample of fruit very fine indeed. We have previously deplored that so large a crop of a product that could be easily converted into good wholesome meat, should apparently be almost wasted or lost to the nation. Rural life in this country, as far at least as the labourer is concerned, has never yet reached the height of felicity which poets have loved to picture, but there were days when most of that badly paid class did at least keep a pig or two, and when that was the case, acorns were in the autumn, and about the time of the early white frosts, gathered up by sacks, and stored for the delectation of the domestic grunners during the winter, as indeed they still are to some extent. Then there was at least less waste than now, and meat was cheaper in the country. Various causes have led to the decline in peasant pig-keeping. The farmer frowned upon it. Murrain played havoc with the swine, and the needful food purchased at the millers reached a price that rendered pig-keeping no longer profitable. Then the acorns were no more in demand, and now they lie beneath the trees that bore them, of no use themselves, of no value to any one. In the same direction even perhaps a worse evil has befallen both the labourer and the public in the entire decline of cow-keeping on the part of the rural poor, and the consequent waste on the roadsides of thousands of acres of good feed that now, because landowners prohibit and the police are officious, are ungrazed and entirely wasted. How many thousands of cows could be so kept, and how many children might be fed and reared on good wholesome milk if things were different, no statistics can tell, and we can only surmise. In poultry also there is a sad falling off. Myriads of these might be kept in our rural districts by poor people if they did but know and perhaps dared. It is in directions of this kind that the chief additions to our present short food supplies should be looked for.

— THE CEANOTHUS AT CHISWICK.—Among the objects of interest which Mr. BARRON grew at Chiswick during the past summer was a collection of the newer varieties of the Ceanothus, obtained from the Continent. They appeared to be seedlings from the Gloire de Versailles type, but there were marked differences in the robustness of their growth, height, character of foliage, and colour of their flowers. Probably a report will be given in the Society's *Journal*, with something like a scientific classification; meanwhile we may indicate a few of the leading varieties, and commend them to the attention of lovers of flowering shrubs. One of the best is Sceptre d'Azur having large and very fine spikes of pale blue flowers—an improvement on Gloire de Versailles, fine, free, and a vigorous grower. Gloire de Versailles was near it, and is still a good and useful form. The darkest of all in the blue-flowered section is Firmament—the flowers rather smaller in size than in the case of the before-mentioned, but quite deep in colour. Gloire de Varte is also a blue-flowered form, dwarf in growth, but very fine, free, and good. Léon Simon is of a delicate blue shade, a good grower, and very free. Margardoule Audusson is of a very pretty and pleasing lavender-mauve hue, a most desirable acqui-

sition. Bleu Céleste is worthy of note as having the dwarfest habit of all, and should make a pretty pot-plant. Celestial appears to be later in flowering than some of the others, and is of a good deep colour. There are also several varieties with rose-coloured flowers; and among these there is, as might be expected, a certain sameness of character, though the cultivator would be certain to notice palpable differences when grown. Marie Simon stands at the head of this section, having what the Frenchmen call "carmin-rose" coloured flowers, but to our eyes they are of a pinkish flesh colour; very pretty indeed, and very free and good. This is a decided novelty, and will repay cultivation. Le Géant is a little paler than the foregoing, but decidedly good; and this and the foregoing decidedly lead in this section. The plants from which these notes were taken were all growing in the open air, and were quite small in spring when planted out in the open ground. One pleasing characteristic was the freedom with which they bloom in a young state. They will be lifted this autumn, housed for the winter, and be planted out again next spring, and then fuller opportunity will be offered for comparison, and for forming an estimate of their merits. Monsieur VICTOR LEMOINE's catalogue contains a large assortment of Ceanothus, which attest to the activity of the Continental raisers. It is well there should be some place like Chiswick where new plants should be submitted to an impartial test. Mr. BARRON is entitled to thanks for his constant endeavours to bring useful novelties before the attention of the public.

— COLCHICUMS AND CROCUS SPECIOSUS.—Charming to the eye and most welcome as these *avant couriers* of the autumn are, they yet proclaim that the summer is ended and the winter hastening on. Patches of both, undisturbed for a few years past, are now exceedingly pretty, thrusting up their flowers from amid the carpet of leaves rained down from the trees. *C. speciosus* is especially noticeable because of its bright and pleasing shade of blue, and probably owing to the genial weather the blooms appear unusually fine. Unfortunately it appears to find its way into gardens with but slow steps, though such a thrice-welcome inhabitant.

— THE WEATHER.—General remarks on the weather during the week ending October 4, issued by the Meteorological Office, London:—The weather this week was dry, cloudy, and foggy during the first few days, but wet and unsettled in nearly all places during the latter part. In Scotland snow showers occurred on the 2d. The rain at our south-west stations was exceptionally heavy, and at Falmouth on Monday the amount measured was 2.6 inches, of which 1 inch fell within an hour. The temperature was about equal to the mean in "Scotland, E." and "Ireland, S." but below it in all other districts. During the first part of the week the thermometer was comparatively high, but on October 2 it fell rapidly, and remained low till the close of the period. The highest of the maxima occurred on September 28, when the thermometer rose to 72° at York, and 73° at Loughborough. The lowest of the minima were registered either on October 3 or 4, when the thermometer fell to 27° at Markree Castle and 28° at Blackpool, and in many other places to between 30° and 33°. On the grass readings were, of course, much lower, and at Sillith 21° was recorded. The rainfall was less than the mean in Ireland, "Scotland, W.," and "England, N.W.," equal to it in "England, S." and "Scotland, E.," but more in all other districts. Bright sunshine was much less prevalent over England than in Scotland or Ireland, the percentage of possible duration varying from 43 in "Ireland, S." and 41 in Scotland, to 22 in the Midland Counties. The wind at first was very light and variable in all parts of the country; on October 2 and 3, however, a moderate north-westerly current prevailed in the south, and a strong north-westerly wind at the more northern stations. At the close of the period the wind had shifted to the east (except on our east coast), and, though light or moderate in most places, blew with the force of a gale at many of our Channel stations.

— GARDENING APPOINTMENTS.—Mr. FREDERICK PRINCE, who has been with Mr. MILLER, of Combe Abbey, as Foreman, three and half a years, has obtained the appointment of Head Gardener to the Earl of DARTREY, Dartrey Castle, Co. Monaghan, Ireland.

TORTWORTH COURT.

(Concluded from p. 436.)

OUTSIDE the garden wall is a considerable piece of ground, used as a nursery, wherein quantities of young stock are coming on, amongst which are a collection of young Oaks in many varieties, ten or a dozen sorts raised from Acorns sent to Lord Ducie from San Francisco and Montreal, ultimately to be planted out; Pansies, Violas, Saxifrages, and numbers of other subjects for filling the flower garden in winter. Here also is the herb ground, one of the largest and best stocked I have ever met with; it occupies a long border 40 yards by five, clean and orderly. Roses are here grown in considerable quantities to furnish cut flowers, and a large collection of Chrysanthemums for the conservatory is very well done. In this reserve ground is the finest specimen on the place of *Araucaria imbricata*; it is one of the handsomest trees I have ever seen, not a particle of brown branches or rusty leaves about it. The lower branches lie for some yards all round flat on the ground as fresh and green as when the tree was in its infancy; it is 40 feet 6 inches high; spread of branches, 33 feet; circumference of stem, 6 inches above the collar, 7 feet 3 inches; at 6 feet from the ground, it girths 5 feet 4 inches, and is growing as freely as a Willow. There are some young plants of *Araucaria* raised by Mr. Shingles from seeds grown on the place. A beautiful lot of Morello Cherries occupy the north side of the wall which separates this nursery garden from the inner department. The wall devoted to Peaches is a good and extensive one; a portion of it has a fixed glass coping—here, as in many other places, evidently a mistake, the trees not looking near so well as those on the uncovered part. Peaches and Nectarines were a thin crop, as also Apricots; the trees of all are in good order. There is a great amount of wall covered with fruit trees in addition to the kinds already mentioned, including Pears, Plums, and Cherries. The first of these were, as elsewhere, generally thin; Plums and Cherries a good crop.

The kitchen garden and orchard occupy about 10 acres. The sides of the walks are planted with Plums and Pears, of which a very complete collection is grown. The trees are in good condition, some of the Plums bearing plentifully. The Plums, except those on the walls, are bush-shaped, of medium size. A fine lot of Cherries on the east wall have this year borne good crops. The vegetable department is really well done, the crops being uniformly fine, everything orderly, and the ground remarkably free from weeds—a condition which the wet spring and early summer through which we have passed has made difficult to secure. The orchard adjoining is one of the most complete I have met with in the selection of good varieties of Apples; they are all clearly and legibly named, and grown in the form of large bush-shaped trees. Unfortunately, like most other places this year, only a few of the freest kinds are bearing anything beyond a sprinkling of fruit; the branches are kept well thinned out, and the general condition, like that of the other departments in this well-managed place, does credit to Mr. Shingles. Considerable numbers of the best herbaceous plants are grown near Mr. Shingles' house, which is situated not far from the kitchen garden; amongst them I noticed a large bed some 24 feet by 6 of *Primula rosea*, many of the plants 10 or 12 inches across. On a wall here there is a fine plant of the *Chusan* twiner, *Akebia quinata*.

The fruit-room is deserving of notice, for its position and construction are such as to give the best results in the keeping of late Apples and Pears without shrivelling. It is on the north side of, and forms part of the basement of, Mr. Shingles' house; it is arched overhead, the walls substantial, so that the frost does not enter it so as to necessitate the use of any fire-heat. It is just what a fruit-room ought to be, very different from the too dry, boarded-floored places, with often little or nothing to counteract the fluctuations of temperature where there is no apartment between the room and the slate or tile roof overhead.

Any account of Tortworth without mention of its world-wide renowned Chestnut tree would be an omission of one of the most notable representatives of old trees in the country. It stands at a short distance to the eastward outside the Park, in near proximity to the church, not far from where stood the old mansion existent before the present building

was erected. It is a grand old monument of the remote past, still hale and full of life and vigour. Here is an account and description of it from what Loudon says in his *Arboretum*, vol. iii., pp. 1988 and 1999:—"The old Chestnut tree at Tortworth may, indeed, possibly have been one of those planted by the Romans. . . . Lord Ducie, the proprietor of the estate on which it stands, had a portrait taken of it, from which an etching was made in 1772, and under it is the following inscription:—"The east view of the ancient Chestnut tree at Tortworth, in the county of Gloucester, which measures 19 yards in circumference, and is mentioned by Sir Robert Atkins in his history of that county as a famous tree in King John's time; and by Evelyn in his *Sylva* to have been so remarkable for its magnitude in the time of King Stephen (1135) as then to be called the great Chestnut of Tortworth, from which it may reasonably be presumed to have been standing before the Conquest (1066)." At the time the etching was made, it appears that the tree was barely included within the garden wall, which bore hard upon it, but this wall has since been removed, and a top-dressing of fresh soil applied to the roots, which seems to have invigorated the tree. The native soil in which it grows is a soft clay, somewhat loamy, and the situation is on the north-west side of a hill. Sir Robert Atkins is of opinion that it was originally several trees, and Marshall thinks that it is two trees grown together. In 1791 Mr. Lysons found it 44 feet 4 inches round in the thickest part, which is considerably less than the dimensions given by Sir Robert Atkins, who makes it 19 yards (57 feet); or by Bradley, who makes it 51 feet at 6 feet above the ground. An engraving of the tree by Strutt will be found in his *Sylva Britannica*, reduced to the scale of 1 inch to 12 feet. Its present measurement at 5 feet from the ground, Mr. Strutt observes, writing in 1820, is 52 feet, which shows an increase of 2 feet since 1766, when at the same height it measured only 50 feet. The body is 10 feet in height to the fork, where it divides into three limbs, one of which at the period already mentioned measured 28 feet 6 inches in girth at the distance of 50 feet from the main trunk. The solid contents of the tree, according to the customary method of measuring timber, are 1965 feet; but its true geometrical contents must be much more. Young trees have been raised from the nuts which it bore about three years ago. Lord Ducie informs us in a letter, dated 1836, 'that the tree is still much in the same state as it was when drawn by Mr. Strutt'; and the Rev. W. P. Bree, who saw it in the September of that year, characterises it as a fine and most interesting relic. I wish, he continues, that Strutt had given us a figure of the whole tree, instead of the lower part only; for though the perfect head is but a modicum, or perhaps no part at all of the original head, it yet makes a beautiful object altogether."

When I saw it it was full of bloom, and although the huge limbs composing the head do not all produce shoots of equal strength, or foliage alike deep in colour, there is nothing, so far as I could make out, to support the suggestion that it might possibly be composed of two or more trees grown together. There are now two younger growths that have sprung from the collar on a level with the ground. They grow out quite clear of the main stem; the largest of these girths 9 feet: the other is much smaller. Near it stands a portion of the old building, clad in a mantle of Ivy. How many centuries this remnant of masonry is younger than the tree none can tell. And to all appearance a good many generations yet may come and go before any can say which of the two has braved time the longest. *T. Baines.*

CLUB-ROOT: FINGER-AND-TOE.*

LAST year at Forres I had the honour of directing the attention of the Cryptogamic Society to the fungus recently discovered by M. Woronin, which is supposed to be the cause of clubbing in the roots of various cruciferous plants. The point of the subject more particularly dwelt upon was, that this fungus, which has been named *Plasmodiophora brassicæ*, was a parasite in the strict sense of the word; not an organism attaching itself to decaying, or dead, or enfeebled vegetation, but a living thing, requiring a living and healthy host plant in the tissues of which to work out its career. The subject, I need hardly say, is not exhausted; and therefore I hope to

be excused in again laying before the Society some further remarks on the club-root fungus.

Although Cabbages, Mustard, and other less important plants are liable to the disease in this country, the results are seldom fatal or of a very serious character; and it is in connection with the Turnip crop that it presses itself on popular, as well as scientific attention. The present Turnip season began with great promise of an excellent crop. Throughout Scotland the greater part of the seed was sown in exceptionally good condition. The growth of the young plants was rapid, and all that the farmer could wish. And now in many districts club-rooting has made alarming and destructive progress. Many bulbs are already rotting, and many more have either their tap-roots or lateral roots covered with clubs full of the ripe spores of the fungus. If ever there were healthy plants, this season certainly presented them; and the fact of so extensive an attack at the same time seems to be a clear proof that vigorous health in the host plant is no shield from this enemy. Rapid growth, indeed, seems favourable to its progress. Some botanists, no doubt, are of opinion that such cultivated plants as the Turnip are always in an unhealthy and unnatural condition. The logic of all such assertions when analysed will be found of the feeblest character. Cultivation is merely the supplying a plant with plenty of food. Within historic times the Turnip has been a Turnip. It was in cultivation by the old Romans; and the "nepe" of the Anglo-Saxons was probably identical with the most improved varieties of the present day. And, besides, there are Cruciferae which are not cultivated, which are yet as liable to the attack of this clubbing fungus as the Cabbage or the Turnip.

The roots of the common Turnip and the Swede are affected by at least three or four kinds of malformation, which have all to be investigated before the distinctive character of any one of them can be made out. The Turnip-gall weevil (*Curculio pleurostigma*) deposits an egg immediately below the skin; one or more medullary rays are released, push outward, and a mass of cell tissue enclosing the rudiments of a bud is formed, while a gall appears on the root. Again, and especially on the roots of the Swede, many root nodes are naturally formed without any disease. Various other plants produce nodes or clubs on the roots. The Alder produces root nodes clustered in vast numbers, and so generally that the conclusion is strongly suggested that these clubs are a natural and normal product of its root. They have vascular centres which throw out a succession of similar clubs; they seem to be simply tubercled roots, and the axis of the cellular mass terminates within the node. The nodes again which appear on the roots of many leguminous plants, such as the Bean, the Pea, the Vetch, the Clover, the Broom, the Whin, are mostly solitary at their insertion in the supporting root, although in numerous cases they subdivide during their growth into two or many points. These are entirely different in structure from the Alder nodes, and also from the weevil nodes. In the Alder, the vascular skeleton on which the shell tissue and its contents are hung runs along the centre of the node; but in the Leguminosæ many vascular rays arising from the heart of the supporting root near the same point, form a cone in the middle of which is secreted a deposit of starch and other kindred substances. These nodes are all systematically and regularly constructed, and most probably have their true cause, not in the attack of any fungus, but in certain peculiarities of the fibro-vascular system of the plants on which they grow. Each class requires separate investigation, and all hasty generalisation is dangerous.

A third kind of malformation on the root of the Turnip is that which is called club-root, finger-and-toe, and anbury. Now, while the nodes before spoken of are each separate unities, single things organised on a systematic plan, a club of the anbury character is not a single organism, but may extend for a greater or less length along the root of which it takes possession; but it does not occupy the termination of a root, except it may be when grown to a very small size in water.

In its mature condition the fungus which gives rise to club-root consists of globular spores, which have a yellowish tint when aggregated in the cells of the club. In diameter I find them to be .0044 mm., or nearly three times the size assigned by Woronin. Many of them are mature in August and September, but clubbing goes on throughout the winter; and the spores, at whatever time ripe, are capable of resisting

all meteoric influences, such as drought, rain, and frost, remaining bright and intact during their period of rest, if indeed it be rest and not some occult progress, and ready for action, either when a certain time has elapsed or when a certain degree of solar influence has been applied. The spores then, on the application of moisture, rapidly give rise to variously shaped amoeboid forms, and when a few of these coalesce they aggregate into what seems a mere plasm. Although I have seen these forms escaping from the spores after a wriggling struggle, they were always more or less blunt at all points, not presenting, so far as I could detect, the whiplike cilium attributed to them by Woronin. I will not dogmatise, as the point has not been sufficiently observed, but I think it is probable that it is in a condition of plasm [?] that the root-hairs or epidermal cells come in contact with this fungus and absorb it into the root.

A period of rapid growth in the Turnip after genial rains, such as characterised this season, is peculiarly favourable to the demands of the fungus. The moisture is sufficient to bring the spores disseminated in the soil into a plasmodic condition, and the rootlets running out in all directions are sure to come across the ambush of some of the burglars—for experiment has shown that earth mixed up with the spores contained in rotten clubs reproduces clubs on the plants grown in it. And it seems quite certain that it can only be in a state of fluid plasm that the material of the fungus can be conveyed by osmotic action from one cell of the root to another. In the earlier stages the fungoid matter fills the host cells with a plasm gradually becoming more and more granulated. Woronin is of opinion that the ripe spores are aggregations of plasm. Various considerations seem to me to militate against this opinion. Were the spores mere aggregations, there seems no reason why they should all be so nearly of one size. The spores seem to be organic unities. But better than these general considerations, I have caught and measured masses of half-grown spores. Many Turnip roots in April, 1880, supplied good examples of the plasm in half-way stages towards maturity, in which condition, after separating the granules in water, they were easily measurable with a "tenth," and found to be about half the ultimate diameter, viz., .0019 mm. If the ripe spore emerged from an aggregation of plasm, the phenomenon of half-grown spores could never present itself. Each granular particle is an organic unity by itself; and if retaining vitality, grows and ripens from the starch and other matter contained in Turnip cells, till it becomes a matured spore seventeen hundred-thousandths of an inch in diameter.

Probably the same principle will be found at work in many other muculent fungi. The particles which seem, in an early stage of growth, to form a mass of mere plasm, are in reality each an individual spore; many may die in the granular stage, but the mature spore is not an agglomeration, but an organised evolution. And thus spores and seeds in their earlier stages are indistinguishable.

What now is the nature of the clubs or nodes originated by this fungus? But first a word as to the nature of the club called a bulb, which naturally originates on the Turnip root. In most cases a Turnip or a Swede under ordinary cultivation has but one bulb or club; but in many cases two or more of the roots furcate and each forms a bulb or club by itself. No disease is necessarily attendant on such bulbing. The tap-roots of Turnips at an early stage are two or three-hundredths of an inch in diameter and without bulbs; and unless plenty of food be supplied they may grow to maturity and produce fertile seed without bulbing. Where manure is supplied, bulbing or natural clubbing soon begins; the cotyledonary envelope is shed; the regular central axis begins to be disrupted by the deposit of cell tissue and large quantities of starch granules; the fibro-vascular rays run away out in fantastic directions surrounded by masses of fleshy tissue, and thus a club of healthy brassicaceous material is formed, the size of which depends on many circumstances.

Now, I think we are not quite so far advanced in evolutionary insight as to be able to say that the *Plasmodiophora brassicæ* has learned by experience what roots will club and what roots will not club, but probably the cruciferous roots are the only roots which will absorb this plasm, or the only roots which afford it a fertile ground to work out the problem of a life little advanced above physical motion.

Woronin thinks it is a weak point in his discovery

* Paper read by E. Stephen Wilson, Esq., at the Sixth Annual Conference of the Cryptogamic Society of Scotland, held in Glasgow on Monday, September 27, and five following days.

that he did not actually see the entrance of Myxamœbae into the root-hairs of the Cabbage plants with which he experimented. No one who has worked with high powers of the microscope will wonder at this failure. But I think when we find the plasmodium and the spores of this myxomycetous fungus taking the place of the natural plasm of the Turnip cells, it is an inference of very few steps that either in the form of a Myxamœba, or in the form of a plasm reduced to fluidity by some special function of the cell walls, it has entered. I do not know that the sharpest chemist ever actually saw a soluble phosphate enter the root of a Turnip; but who doubts that it has entered?

Well, when this fertile plasmodium has found a lodgment in the first cell of a thin root, what takes place? The clubs arise frequently upon very thin rootlets, and at considerable distances, such as 9 or 12 inches from the centre of the bulb or tap-root. Or, when the attack is early in the season, very often the tap-root itself is the seat of the attack, and a fatal result to the host plant speedily ensues. But a root of one-hundredth of an inch in diameter may have a club on it of two-tenths of an inch in diameter; or a root of one-tenth may have a club of an inch or more in diameter, and also of indefinite length. These relationships seem to be infinite, and there appears as yet to be no law determining the relative diameters of clubs and roots. In a case measured, the transverse sectional area of the club was 180 times that of the rootlet on which it had grown.

But it is impossible to admit that the fungus can be the direct cause of the growth of the club, because the club consists of a mass of cellular tissue, which is not fungoid, with lines running through it of the broken-up and separated vascular fibres of the central axis of the root; while in the earlier stages of growth the cells contain large quantities of starch grains. The fungus cannot give birth to these. And it would, therefore, seem that the direct effect of the entrance of the fungoid parasite into the cells of the root is to arrest the course of the sap, and to set up a local centre of bulbing. Here the sap is dammed up; cell-multiplication takes place, and large quantities of starch grains are at first lodged in the cells. The Turnip has a natural tendency to bulbing, and the effect of the entrance of this plasmodium is to set up bulbing at points where, apart from it, no bulbing would have taken place; the materials collected by the roots under review being carried on to the central bulb.

We have various illustrations in other departments of Nature of the principle of a parasite setting up that kind of action in its host which gives rise to a supply of its proper food, and forming a nidus in which it may work out a part of its life. As already noticed, the Turnip-gall weevil has the capacity of producing artificially a tubercled bud, the leaves of which constitute the food of its larva; but this it probably could not do unless the Turnip itself had a natural tendency to produce similar buds and tissues. That the tubercled root-buds produced, especially by the Swede, are not, as supposed by Woronin, of fungoid origin, I infer from never having found Plasmodiophora spores in them; and also from having cultivated many of them last year in stalks of several feet in height, carrying flowers and seed. Nothing of the kind can possibly arise from a true fungoid club.

Again, one of the gall flies makes an incision in the vein of an Oak leaf in August or September, and such action is set up in the natural tissues that vascular pencils are thrown outward, covered and connected with a fleshwork of common cells, forming a round ball or gall, in the interior of which a deposit of starch is formed, of which the young grub takes advantage; and although in these examples the actors are animal, the principle involved seems precisely analogous to that by which the Brassica fungus sets up the action of clubbing or bulbing, to which its maintenance and perpetuation are due.

Clubbing is thus artificial bulbing produced by a fungus of the very simplest type. The plants call up bulbing by natural laws; the parasites call up bulbing by their enchantments. That the cause of clubbing is really a fungus or vegetable parasite under some class cannot, I think, be doubted by any one who will look at a few sections of Turnip roots; for in these the development is much more easily observed than in the woodier roots of the Cabbage. The spores do not rupture the parenchymal tissue; but they fill groups of cells in irregular ramifications, in countless multitudes of the most uniform size. An application

of iodine reduces them all to a brown tint, while the few starch grains which have not been consumed lie here and there in relief of a deep purple. The change which takes place in the starch grains of grass seeds during germination, and which produces granules giving the brown reaction with iodine, has a certain resemblance to the change which takes place in a Turnip cell when the starch is converted into fungoid spores. But if the change of Turnip starch is a chemical change into spherical albuminoid cells, there are some startling things yet to be learned.

It is not in one or two years that the life-history (biography) of an obscure organism can be fully investigated. But I have ventured to lay these few points before the Society, the importance of the subject to agriculture being the apology for their immaturity. The loss arising every year from finger-and-toe must amount to many thousand pounds. For several years cryptogamic botanists have been employed at the instance of the planters of Ceylon to trace out the character of the Coffee-leaf fungus, so as, if possible, to suggest a cure. For more than thirty years the Potato fungus has been plundering the farmers of this country of millions of their money. We have now in the Plasmodiophora brassicæ a disastrous addition to the fungi of the farm. Is it too much to expect that before long the agriculturists of Great Britain will appoint one or more cryptogamic botanists solely devoted to the fungi of the farm? The one question which the agriculturist has to ask of the cryptogamist is—not what is the nature and what are the properties of a destructive fungus: no, he does not want knowledge, he wants money, and he asks, Can you give us a cure? I would ask agriculturists, Have they done anything to deserve a cure? Let them take such measures in this matter as the large interests of agriculture demand, and, if cures are not forthcoming, the knowledge will be gained that agriculture must adopt methods under which cures are unnecessary.

WEST INDIAN FRUITS.

MELICocca BIJUGA, L., commonly known as the Genip, is a naturalised tree, now quite common. It sometimes reaches a height of 60 feet, with a trunk 3 or 4 feet in diameter. It sheds its leaves very quickly, and then, remaining but a few days bare, bursts forth again into leaf and flowers, the powerful perfume of which attracts insects of many kinds, producing an incessant hum while daylight lasts, only to be succeeded at night by the more subdued tone of its nocturnal visitors. The fruit is produced from terminal racemes of whitish flowers (which are on some trees ♂ and on others ♀), and is of the size of a pigeon's egg, with a rind easily ruptured, inside of which, adhering tenaciously to the seed, is an agreeable gelatinous sub-acid pulp. It is a fruit which can never take high rank until improved, from the scantiness of the edible pulp in proportion to the large seed it contains. Had this fruit been improved at the same rate as European products have been during the last century, we should have doubtless been able to give a higher estimate of its value, but it may be mentioned that the need of improvement in this and others of the West Indian fruits is now becoming recognised, and that labourers are already in the field for the attainment of that object. *J. Hart, King's House, Kingston, Jamaica, Aug.*

THE PRETTIEST ROAD IN ENGLAND.—Some years ago, at a famous hostelry not many miles from the fashionable town of Leamington, or, as the hotel proprietors and lodging-house keepers call it, "Royal Leamington Spa," a party of wanderers were enjoying themselves one night around the festive board—I do not allude to the Bohemians of the Zingari, but those suave, good-natured, and most obliging members of society who are said to be in possession of the key of the road, and who are known to the world as commercial travellers—when, according to local tradition, a discussion arose as to which was "the prettiest road in England." Being, however, unable to decide the question, it was referred to two of the number, who were to write the name of the road on slips of paper, neither to see what the other wrote. On the two pieces of paper being handed to an umpire for his decision, it was found that one paper contained "The road from Coventry to Warwick," and the other "The road from Warwick to Coventry." The road in question is about eight miles in length, and is as rich in historic and legendary lore as it is in luxuriant scenery. *Cassell's "Family Magazine."*

Home Correspondence.

Percentage of Starch in Potatoes.—It may prove interesting to state that I had the Champion analysed at a Versuchsstation, and find the 22 per cent. of starch confirmed. It would prove very interesting to know whether Champion grown with you contains the same quantity of starch. [We have no Versuchsstation. Eds.] I do not know yet its capacity as a cropper. This kind being very late we have not yet taken them up. If they prove prolific, Champion will be the Potato for distilling purposes for growers on heavy soil, as this Potato is the only one which appears to resist the blight. I had some planted on purpose, on a very wet undrained spot, but cannot find any sick ones. Magnum Bonum is also very resistant against blight, but not so much so as Champion. Magnum Bonum proves a very heavy crop. *O. Mooyer, Angermünde.*

Gladioli.—Referring to Mr. Henslow's remarks as to the raising of Gladioli with erect flowers (*vide Gardeners' Chronicle*, Oct. 2, p. 438) I have before me a spike of Admiral Wiles, a fine, bright crimson flower, raised by myself and put into commerce in 1877-1878. This flower is a model of what a Gladiolus should be as regards the disposition of the blooms—the whole of the blooms coming well to the front. The spike in question I enclose for your inspection. You will observe the first or lower bloom has three pencilled petals (not the whole streaked or pencilled as described by Mr. Henslow); the three stamens erect and regularly disposed round the pistil. The next bloom on the opposite side of the spike, having the pencillings on the two side petals of the lower divisions—the stamens drooping below the pistil in the usual form. The next bloom on the side of the first having the lower or centre petal only pencilled: this form is repeated in all the blooms on this side upwards. I do not think it at all probable that we shall get the erect form fixed, and it certainly would not improve the beauty of the Gladiolus if we could. *James Kehway, Langport.*

Orchids at Feniscowles.—The Phalenopsis grown here are something marvellous, not so much in number, but in quality. I think I may say they surpass all that have ever come under my notice in one collection. There are some of the Schillerianas carrying 6 leaves some of which are 14 inches long, and 4–4½ inches wide. The varieties grown are Schilleriana, amabilis, grandiflora, Borneo variety, rosea, and Luddemaniana—about 130 specimens altogether. I saw them first twelve months ago, and the greater part were then only small plants, showing the rapidity of growth. The leaves are exceedingly firm and well finished, to resist the dark days of winter they have to fight against in the North of England. There is not a vestige of spot to be seen amongst them. Odontoglossums, Masdevallias, and the cream of Orchids, are grown extensively, as are also Dracenas, Crotons, Gleichenias, and Filmy Ferns, which are all in fine condition. I also noticed Lapageria alba: one growth was carrying, in the space of 3 feet, fifty good flowers. *S. Johnson, Ascot.*

The Season and the Crops.—Bad as the spring was for the setting of fruit blossoms, it has been made up to us since, for never do I remember to have seen vegetables of all descriptions so abundant and fine, the growth having gone on uninterruptedly; and this rendered them of first-rate quality. As to Potatoes, the ground is, or has been full of them, and had it not been for the disease attacking them just as it did, the tubers would have been of great size and the produce, as regards measure, something enormous. Even as it is, the yield in many places about here has been a sack to the rood, which is something like that of the good old times some thirty odd years ago, before the country was afflicted with the murrain, when such crops were not at all uncommon. Now they are looked on as something prodigious, and rejoice the heart of the cottager as he sees in the huge heaps—he can pile up in his garden plenty for his household consumption and some to provide for the payment of rent or the feeding of pigs. The favourite sort with labourers around here, and one they can always sell freely in the town, is the Red Regent, which from the rough nature of its leaves and hard stems resists the disease well and is of very fair quality. Magnum Bonum, however, is likely to take the lead, as it is found that, although the leaves do not quite escape the dread spot, the tubers are but little affected, and as it is an excellent Potato when cooked and so flat-eyed and handsome, it is to be hoped that it will be more widely distributed and more largely grown than it has been. Clergymen and others connected with rural districts would do a good work by bringing it under notice, as cottagers are about the last to hear of and profit by any improved kind, and go on from year to year growing the same, seldom or never changing the seed, and the wonder is that under such adverse conditions the crops are as good as they are. Not only

have Potatoes and other summer vegetables been abundant and good, but winter stuff gives every promise of being equally so, as Brussels Sprouts and the Kales are almost as high as one's head, and are still rushing up in the full tide of vigour. The only fear is that these and Broccoli will be too soft and succulent to stand much frost, and more especially as regards the Broccoli, which it will be wise to give a check to by partly heeling them in, when the flow of sap will be lessened, and this will cause a hardening of the stems and crowns, the vital parts, which in severe seasons get riven asunder. The plan of growing the rows at wide distances apart is a good one, as dwarf Beans or anything else may be planted between, and I have always found that those which get plenty of sun and air stand best, as may be seen in open market gardens or fields. The heads of these and such as are laid when they turn in are perhaps smaller, but that is a secondary consideration, as the loss is trivial compared to getting plants killed, as generally happens when they are over-robust. Last winter we saved the greater part of our Veitch's, Snow's, Backhouse's, and other early sorts, by laying them thickly in with their stems well buried in a sheltered sunny spot, where in sharp weather they were covered with straw. If this is not done it will be found a great help to mulch the ground with short litter, which, by keeping out the frost, gives the plants a chance for their lives, as then the slightest protection overhead is sufficient. In regard to fruit, Plums have been very plentiful and good, but Apples and Pears, except in favoured districts, are thin, the last-named being much mildewed, or from other causes injured in the skin, which has prevented them swelling, and the result is that the greater portion are not only small, but are cracked. Those, therefore, who are fortunate enough to have a crop free from these defects will be able to make money of them, and those who have not must be pleased to see their trees bristling with buds, for another year; and with such a glorious autumn to mature them and ripen up the wood, we may look forward to 1881 as likely to be one of the best seasons fruit-growers have had. In cases where it is desirable to root-prune, in order to check any gross tendency of the trees, now is the time to set about it, as it cannot well be done too early, the leaves at their present stage being of great service in assisting a quick formation of fresh fibres. The ground, too, with the amount of warmth there is in it, is much in favour of the operation, as is also the weather, which, being dry, renders the soil easy of removal; but whenever root-pruning is carried out, it should be done with care and judgment, otherwise it is productive of far more injury than good. Where trees are large, it is advisable to operate on them piecemeal—that is, to go only half-way round them at one doing, and leave the other for some future time, for then the check is not so violent as it would be to sever the whole of the roots. It is important that these be not hacked at or bruised, but cut clean with a sharp knife at a proper distance from the main stem, which distance must be regulated according to whether it has others emanating from it or not. If there are any branching off that have fibres they should be preserved, as it is only the clean, coarse, strong ones that are the gourmands, and from the rank way they feed cause the growth of gross wood. Trees that have a tendency to make much of this may be improved by having road-scrappings or sharp sand worked in with the soil when filling in around them, and if this is rammed down firm the roots are confined more at home. *W. S.*

A Double Flower of *Lapageria rosea*.—Through the kindness of Mr. Tunnington, gardener to — McIver, Esq., Calderstone, Liverpool, I send you a double flower of *Lapageria rosea*; it is the first time I have seen so fine a double flower. Have you ever seen one before? *Alfred Outram*. [We had a similar flower sent to us last week. *Eds.*]

Traps for Wasps and Flies.—Your correspondent "J." has certainly given a description in your last issue of an excellent trap for wasps and flies, but unfortunately he has omitted several particulars without which it will be quite inefficient. For, in the first place, he tells us that one hand-glass is to be raised on another, without giving any reason for it, or showing how it is to be done; whereas in this lies the whole secret, which is, that it is this which forms the trap. When put on, the interstices between the two must be filled up to prevent the insects getting out, and this may be best done with some strips of carpet, or anything that will stop up the crevices. In the next place the lower glass must have a pane removed or a hole made in it (the nearer the top the better) through which the wasps, &c., after having fed below, fly up, as they always do, and become entrapped. Every now and then they should be put out of their misery by being fumigated, which may be done best through some aperture in the upper glass, which can afterwards be closed, to admit the spout of the fumigator. If done below the very smell

of the sulphur which remains will deter the wasps from entering in to feed. If any of your readers will try this plan, attending to all the above particulars, they will not, I think, be disappointed, as they otherwise might. *J. B.*

The Weather in Devon.—The first appearance of frost for the present season occurred on the 3d inst., when our thermometer registered 1° of frost, or 31°. With us the Vegetable Marrows, Dahlias, and Scarlet Runners are blackened. Since the above date we have had copious falls of rain with cold winds. The rainfall for this year up to date (September 30) registered 16.49 inches; for the corresponding period of last year (1879) it was 36.36 inches. As will be seen, little rain has fallen for the year, still I am pleased to say vegetables and fruits here have been very good indeed. Though of Apples and Pears we have had scanty crops, yet they have been very fine, and of good flavour. Fruit trees have made sturdy and healthy growth, and well ripened, and even should we experience severe weather during the coming winter, such as we have had for the two previous years, I think we may look beyond for brighter prospects of fruit than for several years past. *D. C. Powell, The Gardens, Powderham Castle, near Exeter.*

Change of Sex in Plants.—We have often had occasion to remark on the very slight structural difference in plants between one sex and the other, and the inferences that may be drawn from this unity. We have before us a Poppy head, like that here figured (fig. 90), and kindly sent us by Mr. Lynch. In this specimen the stamens are developed in the



FIG. 90.—MONSTROUS POPPY.

form of pistils or carpels. The occurrence is not very rare; indeed, we believe in France the "strain" of such "monsters" has become fixed. We have also before us a hermaphrodite flower of a *Begonia* with perfect perigynous stamens and well marked styles.

***Cupressus funebris*.**—I believe that no one has succeeded in growing *Cupressus funebris* in this country, unless it may have survived in Devonshire. A remarkable exception has occurred in the case of a plant which was kept for many years in a conservatory, and then turned out to take its chance. It has passed uninjured through the two last severe winters, and made vigorous shoots during the summer. The case is so contrary to our usual ideas of hardening trees that it may be worth notice. *H. K.*

Single Dahlias as Cut Flowers for the Autumn.—Perhaps there are no flowers more useful as there are few more durable than these. Cut as sprays with buds and leaves, they are admirable, either in masses by themselves or associated with other flowers. The effect is wholly different, and very far superior to that produced by any other sort of Dahlias. We have found them most beautiful associated with Delphiniums, Canary Creepers, and Clematis. The brilliant scarlet single Dahlia is also very telling associated with yellow Allamandas, pink Dipladenias, the pink or white Lapagerias, the *Mandevilla suaveolens*, &c. The single yellow Dahlia with *Salvia patens*, some of the finer blue Delphiniums, or delicately fringed with *Plumbago capensis*, is also very fine indeed. Mixtures, too, of the smaller bouquet Dahlias are admirable along with the single ones, and have a good effect. On no account, however, must the larger show or fancy Dahlias be placed with the single ones. The latter are unable to lighten up their dead weight—on the contrary, the larger Dahlias seem, as it were, to sit upon and drag down the single ones into comparative flatness and lack of elegance. It may also be fancy, but we don't care to use Fern fronds with our masses or decorative

arrangements of single Dahlias. By choosing the most delicate shootlets, and the most divided and deeply serrated foliage from Dahlias of any sort—for the best foliage, is seldom found on the single varieties—the Dahlias looking best set in a green cushion of their own foliage; or if anything else is needed by way of variety, we have found it in the pretty silver Dahlia-like foliage of the pretty variegated Maple, *Acer Negundo variegatum*. Few floral decorations are at once more fresh or striking than tall vases or cornucopias filled with single Dahlias, furnished with their own leaves, sparingly variegated with a few elegant sprays of this plant, which might readily be mistaken for a variegated Dahlia by those not familiar with its form and its beauty. *D. T. Fish*. [The most elegant Dahlia foliage is that of *D. gracilis*, the flowers of which, originally scarlet, have now varied to yellow. *Eds.*]

Liquid Manure.—Every gardener knows the value of liquid manure. When a plant is newly potted or a fruit tree is planted in a new-made border it is not in the least required, but when roots have run freely and taken possession of nearly all the soil, then is the time for liquid in the form of which I speak, and just as beef-tea is much more easily assimilated into the system of an invalid than is solid beef, so is liquid manure, when it can be conveniently used, much more effectual than mixing a quantity of manure in the soil of pot plants. I have, like most gardeners, used it made from various substances. Half the manures puffed up in our advertising columns are complete rubbish: even guano is not nearly so good as it used to be. Some few years ago the Castle here was re drained, and all carried down one common drain into a great cesspool; from this a hydrant was fixed, so that a liquid-manure cart could be filled in some three minutes. I had a great wish to try its effects in the garden, and a liquid-manure cart was sent for, but guess my disappointment when it came home to find the great clumsy thing weighed some 25 cwt., quite a load in itself: this was certainly not the cart for my money, so I quickly handed it over to the farm. Seeing the advertisement of Messrs. Boulton & Paul (of Norwich), I wrote for their 100-gallon cart, and a more complete water-carrier cannot be; the cart only weighs 5 cwt., is all iron, and the 100 gallons weigh something under half a ton—just the load for a cob. Of course they make them all sizes, from 36 gallons up to 200. Well, now for the result. I am delighted with the whole arrangement. I have used the liquid manure to everything, except of course Cape Heaths, Azaleas, and other peat-loving plants, and the result is simply marvellous. Here Celery never looked so well, Pine-apples were never so green nor strong, early forced Vines have retained their first leaves up till now, and put into the evaporation troughs at night no red-spider dare show itself in the house. Chrysanthemums are feathered with green leaves to the pot, Cucumbers are cut by armfuls, and Melons are abundant and good. If the weather is hot, and a bed of Lettuce refuses to grow, a thorough soaking is given in the evening, and the result is perfectly marvellous. The Gardener's-house is soaked with the liquid, and the leaves become a black-green, and blossoms gathered by the thousand. The Ivy on the Castle looks yellow in some parts, and refuses to grow in others, a thorough watering is given early in the morning, and an hour after all unpleasant smell is gone, and there is a complete change takes place in the colour and growth of the Ivy. In the roseroy it is freely used, and scarcely a leaf is shed. If a load stands in the cart all night it is perfectly clear in the morning, just showing that the clearness of water is no index to its purity. I have only mentioned a few of the things to which we apply the liquid-manure, and it is not done or published in any boastful spirit to make out that our things are better or as good as those of others, but simply to record a result which has more than answered my expectations; for I am fully convinced that many a plant never perfects its blossom, nor many a fruit tree its fruit, for want of this extra fillip of liquid manure when near the finish. *W. Rusi, Eridge Castle.*

The Silver Lime and Variegated Elm.—The first of these, *Tilia argentea*, which is indigenous to Asia Minor, is far too rare in this country, and certainly deserves more notice than it receives, for few deciduous ornamental trees are more beautiful or more desirable for planting in parks and pleasure-grounds, where trees of its character are appreciated. It is a fast grower, and is in this respect quite as free as the common variety. In habit of growth it is pendulous, and its branches when clothed with foliage arch gracefully over each other, which gives it, especially when in blossom, a very elegant appearance. Its foliage, which it retains in good condition for a greater length of time than does any other Lime with which I am acquainted, is somewhat larger and more leathery than that of the common kind. It is glossy and dark green in colour on the upper surface and silvery beneath. Its blossoms, which are produced very freely, open in August; they are large, amber in

colour, and powerfully scented. They are useful for mixing in bouquets, but on account of their rather strong fragrance they should not be used liberally for that purpose. We have a handsome specimen of this graceful tree growing in the pleasure-grounds here, which was, I am told, planted some forty to forty-five years ago. It is grafted on the common variety, and is 54 feet in height, having a spread of branches 33 feet in diameter, and a clean bole of 14 feet, which is 5 feet in circumference at 3 feet from the ground. This tree, standing as it does on a lawn detached from other trees and shrubs, with its drooping branches sweeping the grass, is an object of great beauty to its admirers, and particularly so when the sun is shining and a gentle breeze causes its leaves to flicker and expose their silvery surface. It is surprising how few know this beautiful variety; few indeed are they of the visitors to this place who are acquainted with it, and few are they also who are not impressed with its great beauty and value as an ornamental tree. It is also, when in blossom, a special favourite with the bees, who visit and feed on it during that season in vast numbers. There is also a variegated Elm (*Ulmus variegata*) growing in the grounds here—this I think is of British origin. It would be interesting to know if it originated from seed or from a sport; I am inclined to think from the latter. I conclude that specimens of this are also uncommon, judging from what has recently appeared respecting it in your columns, and likewise from the few I remember to have seen. Although our tree is 59 feet in height it is not handsome, for being one of a mixed group which grow near to the boundary of the pleasure-grounds, and which were doubtless planted and kept thick in order to give shelter to other choice trees and shrubs, its bottom branches when young were not allowed sufficient room to develop, and its appearance is marred in consequence; but I can imagine what a picturesque object a large and well furnished specimen of this would be standing alone but backed up by other trees with green foliage. *T. Coomber, Hendre Gardens, near Monmouth.*

Correlation of Plants in Regard to the Colour of their Seed.—I was somewhat surprised the other day in looking over the flame *Nasturtium* for a few seeds—which, however, hardly ever grow (how is that?)—to find its beautiful round seeds as near the colour as could be, though three times the size, of that beautiful berried stove plant, *Callicarpa purpurea*. By the way, what a pity the latter is not more grown. It used to be generally cultivated, and now it seems rare. As a dwarf plant or standard on a bracket or up a pillar the graceful branchlets of the *Callicarpa* laden with its little bunches of truly mauve berries was one of the prettiest objects in plant stoves a dozen years ago. With a little manipulation it was also a good basket plant. It was, however, rather difficult to do well, while its flowers, being useless for ornament, its foliage had nothing to recommend it. The seed of the flame *Nasturtium* has sufficed to recal its merits, and prompted me to write of its beauty and usefulness. *D. T. Fish.*

American Purple Potato.—It is rather odd that one of the very best Potatoes we have yet received from America should have got here by a sort of fluke, and was not sent us in the usual way, as other and much inferior kinds have been. American Purple Kidney was occasionally staged at the International Potato Show, and is a dark purple-skinned, flat, handsome tuber, having white flesh that is quite devoid of all discoloration. It is an immense cropper, and with me, as I believe generally, very free from disease. I had not cooked any of it this season until to-day, and found it quite first-rate for an American kind, the flesh as white and mealy as Daw's Matchless, and that is saying a great deal. Messrs Daniels & Sons, of Norwich, first distributed it, and Mr. Daniels informed me the other day that a tub of it came to him a few years since by mistake with a consignment of Compton's Surprise. Having no name with it he named it American Purple, and hence the appellation by which it is now known. *A. D.*

Canary Creeper.—The beauty of *Tropæolum aduncum* has been often expatiated on, but never have I seen it show off to such advantage and look so much at home as in Admiral Mason's garden at Ipswich, where, associated with other kinds of *Tropæolums* of various shades of scarlet, with which the plants had become commingled, it produced a most pleasing effect. The garden referred to fills up the angle of two roadways, and the high ground is supported by a massive wall, on a level with the top of which Laburnums, Arbor-vites, and other shrubs are planted, and up these the *Tropæolums* have climbed and found their way from one to the other, festooning themselves in their course, and depending gracefully between and over the sides of the wall in the most natural manner possible. Many people go to great expense in the adornment of their gardens, and yet here, in the one referred to, may be witnessed more real beauty than could perhaps be found in a

day's journey, and all produced by means of a few seeds of what are regarded by some as the commonest annuals, but as is proved when well placed and left to themselves they will vie with the choicest exotics. The picture made up by them is so good that I wish it could be photographed for illustration, as it is worth imitating, and must have been greatly admired, the place being so situated that it is seen by numerous passers by. *J. Sheppard.*

Plant Lifting.—The planting out of that class of plants which are so useful for cut flowers and the decoration of cool conservatories during the autumn and winter is not so much practised as it might be to a great advantage, for I feel certain that much better results are to be obtained with one-half the labour bestowed than when grown, or rather starved, in pots during the summer months. Among the subjects which do well in this way are *Eupatoriums*, *Salvias*, *Chrysanthemums*, *Richardias*, *Libonias*, *Deutzias*, *Solanums*, *Plumbago capensis*, &c. *Bouvardias* require the shelter of a cold pit or frame, where they make extra strong growth. Treated in this way, the most important thing in the matter is the shading. All plants lifted should have shade for at least a fortnight, when they will have taken hold of the fresh soil. I should not recommend this style of growing plants where very small stuff is required, but where there is a large conservatory to fill, and a lot of cut flowers wanted, the plan is indispensable. I differ from some practitioners as to the best time to lift the *Chrysanthemums*; I prefer waiting till the first flowers begin to expand, if the weather will permit, when they are set in a row under a north wall, with mats in readiness in case of frost. At the end of a fortnight they are taken to the orchard-house and conservatory, where in a short time they give a full crop of good-sized flowers, from which you can cut and come again. *Solanums*, too, can be planted out earlier and lifted later than the more tender things; by so doing they bring a larger crop of berries to full size, when, if they can have the benefit of a cold pit for a short time, they get established sooner, and may be set in any light position where frost is excluded, to colour up the berries. *Salvia splendens*, *Plumbago capensis*, and *Eupatoriums*, have a pleasing effect, flowering together, and give you red, white, and blue, all through the dreary months of November and December. *J. C.*

The Manufacture of Manioc Flour and Tapioca.—Under the above heading, in a recent number of the *Gardeners' Chronicle* (p. 432) are some notes, gathered from the *Journal of Applied Science*, on the preparation as food of the Manioc, or, as it is called in the West Indies, Cassava root. As regards the two forms of Cassava, the bitter and the sweet, though it is true that some botanists have recognised them as distinct species under the names *Manihot utilisima* and *M. Aipi*, yet the two are now commonly regarded as merely varieties of one species. Again, it is true that "it is cultivated for use in the preparation of the Brazilian pepper-pot," but it is surely incorrect to say that this "is prepared by boiling the meat with some Pumpkin, sweet Potatoes, Turnips, &c." In the first place Turnips are hardly likely to grow, or even to be procurable, in countries where Cassava is cultivated; but that objection is not of much moment. More important is the fact that pepper-pot, at least the preparation to which that name is usually given, could not be produced by the process described. The basis of pepper-pot is not the meal of the plant in question, but the juice which is expressed from the root during the preparation of the meal, and which is then concentrated by boiling. The juice so prepared is called cassareep in the West Indies. Cassareep may be used when quite fresh, or it may be kept for some considerable time; but in the latter case it must have been boiled to a greater degree of condensation. In either case a little cassareep, a good deal of water, and some red peppers (*Capsicums*) are boiled either with meat or with fish—never with a mixture of the two—to make pepper-pot. A little sugar or a little salt are sometimes added, but vegetables other than the peppers are never added before or during the boiling, though of course they are often eaten with the boiled contents of the pepper-pot. The cassareep lends a peculiar and much relished flavour to the meat, and this is so strong that it entirely destroys the flavour proper to the meat. Certain kinds of meat are more suitable for pepper-pot than others; but this is not because of their flavour, for that is concealed by the cassareep, but because of the degree of consistency of their fibre. The antiseptic power of cassareep is so great that the contents of the pepper-pot remain good, even in the tropics, for a very considerable time. Every day the pot is reboiled, more meat, cassareep, water and peppers being added to supply the ingredients consumed since the last boiling. A pepper-pot may thus serve as a standing dish for a long time; the present writer has himself kept one in use for many months, and it is said that the older West Indian colonists have been known to use and add to the same

pepper-pot for thirty years and more. Cassava meal is prepared in two ways, and, correspondingly, is used in two forms. The method of preparation quoted from the *Journal of Applied Science* is the method which with small variation is followed in Brazil, and perhaps the more southern part of South America generally, and on the Brazilian border of Guiana. In the greater part of Guiana and in the West Indies a different method is followed. The product of Cassava as treated in the Brazils is *farnha*—or, in the anglicised form of the word, *farine*—a coarse "meal" resembling an accumulation of small dry crumbs of wheaten bread. This farine is the breadstuff in the region in which it is made. It is used in countless ways. A small heap of it in a dry state is often put at the side of each person's plate, and the eater takes some up with his fingers and cleverly throws it into his mouth between each mouthful of other food. For the excellence of another way of using it the present writer can vouch, though perhaps only as a prejudiced witness. He had been travelling across the uninhabited savannahs of the interior for some days during a period of famine, with certain unripe Bananas as his only food; on at last reaching a human habitation, on a cattle farm, he was presented with some farine boiled in milk, which seemed to him a mess beyond all praise. In Guiana and in the West Indies, as has been said, Cassava is prepared and used differently. The root is grated, and the pulp thus obtained is put into a peculiar cylinder of wickerwork, the circumference of which can be readily diminished. This diminution being effected, the result is that the juice, expressed from the pulp, escapes through the wicker meshes of the cylinder, and the meal is thus left comparatively dry. It is this juice which, being boiled, makes the cassareep, which has already been described. The meal is taken from the cylinder and rubbed through a very fine sieve, after which process it has the appearance of coarse flour. This flour is then spread thinly on a flat round iron griddle over a wood fire, and is baked, first on one side, then on the other. The result is Cassava bread, which resembles large cakes of white or light-coloured Scotch oatcakes. This bread forms almost the sole food of large numbers of the aboriginal Indians, and is also largely used by the colonists. All that we have yet said refers only to the bitter form of Cassava. The sweet, so far as we know, is only used boiled, as a vegetable, or roasted, like a Potato in its jacket, instead of bread. The plant grows readily in most soils, but prefers one in which there is plenty of sand. One more quotation we must now make from the note in the *Gardeners' Chronicle*. "The plant," it is said, "is easily propagated by slips, which take root readily, and these form in the second or third year, according to the land on which they are grown, a bush of from 6 to 9 feet high. . . . If the plants were allowed to grow for any length of time they would flower and produce seed, but it is found more profitable to dig them up in the second or third year." The Cassava plant reaches maturity, that is, its root is ready for use, in the ninth or tenth month after it has been planted, and it generally flowers and seeds about the same time. The crop is, therefore, planted and gathered in nine months. Four successive crops, however, exhaust, or are supposed to exhaust the land, so that at the end of three years the Cassava field is deserted if it belongs to Indians, or is planted with some different crop if it belongs to others. In conclusion, it may be added that the implements used in the preparation of Cassava bread, especially the very curious wicker cylinder used for the expression of the poisonous juice, may be seen, by those interested, in the Christie collection belonging to the British Museum. *Everard F. im Thurm.*

Gladiolus.—The improvement that has been made in these during the last few years is something astonishing, for not only have we flowers of greatly increased size, but the most lovely colours imaginable. I have been much struck with some I have seen from the Messrs. Kelway, of Langport, and the Messrs. Daniels, of Norwich, whose exhibits have been of the finest kinds, and have left nothing as show flowers to be desired; but what is wanting is for some one to take up the hybridising of the *ramosus* and *blandus* section, that we may have dwarf sorts with short spikes for cutting, as these would be of great value, and dress beautifully in vases. Grand as the others may be in borders or pots and for show purposes, they are much too large for this kind of work. Not only are the *ramosus* and *blandus* varieties the best for cutting, but they are more continuous blooming, and very easy to cultivate, especially in soils that are naturally light and gritty, in which the bulbs do well, and come up sound and good in the autumn. In cases where the land is naturally light and dry, they may with safety be left in during the winter, provided they are protected with some half-rotten leaves, or other non-conducting material, to keep out the frost; but unless this be done, and if the ground is at all heavy and wet, they should be taken up and carefully stored till the spring. The

proper time to do this is as soon as the tops show signs of decay, for as long as they keep green and healthy the corns are growing, and others forming and enlarging at the side. What weakens *Gladiolus* much is the severe drying to which they are often subjected, which drying causes a shrivelling and shrinkage of the bulb, and when this takes place there is naturally great loss of vitality, as may readily be seen when the time comes for them to start again, when, instead of breaking strong, they come away feebly and flower in the same unsatisfactory manner. The best way when they are taken up is to preserve the tops if possible, and bury the roots in pots of dry sand, in which each kind may be labelled and stood away on shelves in a cellar or shed where Potatoes are kept. The sand prevents the air reaching them and stops loss of sap by evaporation, as also damp from settling on them, which brings about mould and rot. To have a succession of bloom, it is necessary to plant at intervals from March to June. If placed in borders they look best in groups of three, planted triangularly about 6 inches apart. Although *Gladioli* like rich soil, they should not have fresh manure near them, and when putting them in the ground, it is a good plan to cover them with a handful of sharp sand, which is a great help in keeping them in a comfortable healthy condition. *J. S.*

Cottage Gardens.—May I add my testimony to that of your other correspondents on this subject? They have not overdone their praise of gardens for working men. The small size of gardens for farm labourers in the southern counties is, I think, unfortunate, since the value and beneficial influence of the garden is very generally proportionate to its size. It seems to have been decided on prejudice rather than experience, by the land proprietors of the South of England, that 20 rods of garden were sufficient for a farm labourer, and that he ought not to have more. The labourers accordingly were supplied with 20 rods each during the general movement in favour of allotments twenty-five ago. There were hardly any gardens previously in many parishes, and the want was supplied by allotments to the extent of 20 rods for one family. It was a very good movement, and it has helped to counteract the effect of the beer shops, but why stop at 20 rods? Forty rods would be better. In the North of England the gardens are generally larger than in the South. I was informed lately on the excellent authority of one of the largest land agents in Yorkshire, that the gardens on the estates he manages are generally 40 rods in extent, and that most labourers in that part of the country have gardens of that size. "The farmers," said a land proprietor, "have no jealousy of the size of gardens here." In Suffolk that jealousy, or fear of giving the labourer more than he can manage, is very common, though it has been found to be mistaken. Some years since it existed on the estate of Lord Tollemache at Helmingham, who boldly tried the experiment of attaching to each cottage 40 rods of garden ground instead of 20 rods, and that not on a small scale, but in several parishes on an estate of 8000 acres. I have seen the gardens and I have conversed with the employers, and the latter admitted candidly that they had been mistaken. They had feared, when the gardens were enlarged about twenty years ago, that the labourers would devote too much time to their cultivation and would neglect their farming work—that they would become, in short, less useful. Instead of their having done so, they have become better now than they were before. They do not neglect their duties. The garden work, I was told, "get's done" somehow. The women help, and the old men and other odd people are employed, and the labourers sometimes take a day, with the consent of their employers. The whole business has been properly organised, and the large gardens are now thoroughly approved by all. During the strike in East Anglia, Lord Tollemache's estate was not a field of agitation. The labourers were found to be contented. No agitator could do business among them. Not one of them attended the several meetings of angry folk which were held in the neighbourhood. *H. E.*

Transplanting.—Notwithstanding having occupied a subordinate position at extensive and successful machine transplantations of large ornamental trees and shrubs, I was recently somewhat appalled by being requested to transplant an Elm tree with a trunk at the base of 5 feet circumference, rising 30 feet, and surmounted by large spreading branches, with their points at an altitude of 70 feet. The object in removing this tree was by its use to form an unbroken avenue, and my employer for the time being reminded me that were young trees planted he could not expect to live to see them arrive at that mature age when they would complete the object of his ambition, therefore, if transplanted it could be—it must be done. I at once commenced operations by opening a trench a yard in width at 3 yards from the trunk, thus severing every root. This done and guys fixed so as to prevent the action of the wind proving troublesome, the tree was left to take care of itself for several

months, when it was found that the several roots had thrown out such a mass of fibre as was sufficient to raise sanguine hopes that the ball of soil which was throughout permeated by fibre could be retained entire, and so it afterwards proved. A double pulley was now fixed to the tree at 20 feet from the ground, plenty of sacking being used to prevent laceration by the chains, a triple pulley was also fixed at a distance from the tree and a strong rope passed through each pulley and attached to a crane by four men. The motive-power of the crane and pulleys was applied with a result exceeding our expectations, for as the tree was pulled to about 9 feet from the perpendicular it was found that the ball of soil cohered, affording every facility for excavating, levelling, and making the ball of soil of the uniform depth of 2 feet as well as getting planks with rollers between placed under this half. The pulleys were then removed to the opposite side and the tree being pulled into a similar position on the planks the process of excavating, levelling, and roller fixing, having been gone through, the tree was allowed to settle on its carriage ready for the journey. Both pulleys were then fixed on the ground level, and with the crane and four men as the motive-power, this large mass of soil with the tree was rolled so easily and successfully into its new position that I verily believe had it been in full leaf the change would not have made itself immediately manifest. The succeeding growth was sufficiently healthy to prevent any apparent difference between the transplanted and adjoining trees, but its leaves had ripened and fallen off by the first week in September. *Thomas Reid, Chester.*

Winter Onions.—The following circumstance leads me to think it matters but little what kind of Onion is used for autumn sowing. Last autumn our Onions failed, as did likewise a bed of the silver-skinned variety grown for pickling; these latter made no bulbs, and were dug up just before the frost set in; they were lying on the top of the ground all through the bitter frosts of December. When the first thaw came I resolved to see what they would do in place of autumn-sown Onions proper. I had a large bed set out of these curled and almost lifeless Onions. I did not expect much for my trouble, but the result was more than satisfactory. True, a few of them bolted, but not one in thirty, and many of the bulbs, although of this small variety, before the middle of the summer measured from 10 to 12 inches round. This leads me to think that Onions sown any time after the middle of July, and transplanted in autumn, would come into use sooner than Onions sown in September, and transplanted in spring. Those above-mentioned were sown in June, but that would be soon for an ordinary season. *J. C.*

The Colorado Beetle.—Though this beetle has not yet gained, and does not appear likely to gain a footing in this climate, it may be of interest to mention that it still is to be found "on its passage" from America. I have recent personal information from a naturalist well acquainted with it both scientifically and also knowing it practically in its life history and means of prevention in America, that whilst recently crossing to this country he killed five specimens which he found alive on board the vessel. *O.*

Herbaceous Plants to Flower in the Autumn.—Seeing some remarks from a correspondent relating to herbaceous plants, wherein he asks for the names of some varieties that flower in the autumn, I would mention *Pentstemon*, than which more useful things cannot be found, as they not only make a grand display in beds or borders, but they are fine for cutting, the spikes of bloom being of that light elegant character which renders them very effective in vases. The best way to get them to bloom late is to obtain a packet of seed and sow in heat in March and April, and then prick out the young plants under glass in a frame where they can be nursed on till the middle or end of May, when it will be safe to put them in beds in the open. To grow them strong and well and induce them to flower freely, the soil should be made rich. During dry weather in summer it is necessary to water, and if soaked with liquid manure a few times, that will be a great help, as is also a mulching between the rows or around the plants, which not only keeps the ground cool, but is an excellent conservator of moisture. For early blooming plants raised from cuttings are the best, these may be put in any time now, either under handlights or in pots in frames, where they can be wintered with safety. Another plant that should be grown in every garden is the *Anemone japonica*, and its white variety *Honorine Jobert*, the latter of which is quite a gem among herbaceous plants, its large salver-shaped blossoms being very pure and beautiful with their emerald-green disc, to which golden anthers form such a rich setting. As the flowers are so easily damaged by the wind, which knocks them about, the plants should have some sheltered spot afforded them, but wherever planted it is essential to their success

that they have plenty of soil where they can be left quite undisturbed, as digging about them only weakens by destroying the roots and maiming the crowns. *Tritonia aurea*, although generally treated as a greenhouse plant, is sufficiently hardy to stand out in favoured situations, and when so accommodated flowers much better than it ever does in pots, for when cramped in such a limited area it gets starved, and is often affected with red-spider, an insect to which it is very subject if any check occurs to its growth. One of the best places to grow the *Tritonia* is close under the wall of a greenhouse, where it can, with a few inches of leaf-soil, be easily protected after the tops die away in the autumn. We have a row so managed which we cut at for weeks every year, and amongst them are some *Ixia* which come on in the spring. The narrow border where they are planted was prepared for them by being dug out and fresh rich sandy soil put in, with a good deal of leaf-mould, in which the *Tritonia* roots run about freely. The same kind of situation and similar treatment suits *Belladonna Lilies*, which are splendid autumnal bloomers when properly cared for and placed where they can get plenty of sun to ripen the bulbs. The greatest success I ever met with in growing these was brought about by digging out a border a yard deep, and draining it with brickbats, which keeps the roots snug and sound during the winter, a time when they often suffer from too much wet; and when if the crowns are not well covered they are sure to be injured by frost, for as growth proceeds and the bulbs become crowded they push each other out of the ground. This is why it is that so many fail with them. Those who may have clumps of long standing would do well to drop them much lower down or divide and replant, as the present is a good time for doing either, but in pulling them apart care should be taken to preserve the fleshy roots, and to plant the bulbs with them entire. If a portion of the stock is grown close along the front wall of a stove or other place where they can feel the heat that finds its way through, they will flower early, and thus with others elsewhere give a long succession. As they begin to push up their foliage in March they often get cut, to prevent which it is a good plan to protect them by means of a few evergreen branches at night after having scattered a few half-rotten leaves amongst them over the soil. *Funkia ovata* and *ovata variegata* must not be forgotten, as they are among the best of hardy perennials, sending up bold spikes of Lily-like flowers that last a long time in perfection. These are plants of very easy culture and grow freely in any ordinary soil, but, like most herbaceous subjects, do best where they can get well down and find plenty to feed on. *Rudbeckia Neumanni* is another plant that I can specially recommend, for however wet and bad the weather the flowers always look bright and uninjured, and being of a rich yellow with a large black disc they are very showy. *J. S.*

Salvia splendens, Reversion of.—I send for your inspection red and white *Salvia* flowers, cut from the same plant—a seedling raised from the white variety. The shoots bearing the red flowers have dark coloured joints—those bearing white pale green. Have you seen anything like it before? *J. Jack, Langford Lodge, Oct. 5.* [A very interesting case of reversion to the type. *EDS.*]

The Potato Disease.—In descending upon the nature and origin, as well as the effects, of the Potato disease, a favourite bugbear of writers and orators is the statement that this disease has entirely resulted from bad cultivation. If we cannot do a great deal towards getting our crops free from its disastrous effects, at least we may do something to remove the foolish illusions that still exist as to its nature and operations. If the Potato were the only vegetable or garden plant that was affected by disease we should have some good reason to surmise that it might have been produced by neglect and bad treatment, but so far from that being the case these pages show that there is hardly a vegetable that is not some way or other injuriously affected by fungoid or other diseases. Are the *Phylloxera* and the *Oidium*, both very dangerous affections on the Vine, the product of bad cultivation and gross neglect? Do not these things exhibit themselves in the native habitat of the Vine and in the gardens where the culture is the highest, as they do elsewhere? Where would have been Grape culture in this country now if the Vine fungus were as little amenable to the action of sulphur as the Potato fungus is to that and other compounds? Are clubin the *Brassica* family, or the maggot in the *Celery*, plant products of bad cultivation, or simply things that prey upon plants as freely where the cultivation is good as where it is bad? There is the Tomato, with respect to which no one urges that it has been grossly neglected by bad cultivation, and yet we have seen the crop almost destroyed by the *Peronospora*. As far as the Potato is concerned, is it not a fact that the higher the cultivation, the more robust and luxuriant the plant growth, the more destructive is the disease in its operations? How many hundreds of seedlings have been raised

during the past twenty years by far the larger portion of which have been just as badly affected by disease as have plants raised from tubers of old stocks? Yet these seedlings have suffered nothing from the bad treatment and the assumed consequent deterioration. I find I have forgotten to include the Hollyhock in the list of plants that have suffered from fungoid diseases. Here is one that has perhaps more than any other of recent years received high-class cultivation, and had every possible care and attention bestowed upon it that experience could give; and yet what did we find but that stocks were a year or two since nearly decimated, solely by the action of a fungus that is to some extent amenable to external treatment, and far less deadly than is the *Peronospora*. If a writer were to assert that any of the plants I have named were or had been diseased because of previous bad treatment they would assert what was untrue, and be laughed at. It is quite time the same fate befel those who write or assert this ridiculous story about the Potato, and I hope it may henceforth be classed amongst those popular errors that have been scotched. I find it difficult to follow the discussion that has taken place between two correspondents respecting the pulling of the haulm, and perhaps have taken little interest in the matter, because, like the majority of Potato growers, I have little faith in the haulm-pulling panacea. I experimented this year by pulling the haulm from several rows of International Kidney in the midst of a large breadth, and cutting the haulm from several others, but when the entire crop was lifted a month later the only difference discernible was that the produce of the pulled and cut rows was sensibly less than that from the rows untouched, whilst as to diseased tubers there was no difference, for the sufficient reason that out of 50 bushels lifted there was not a bushel that had to be rejected. The disease, as a rule, attacks the plants just as the tubers are swelling, for we all know that relatively the tubers swell far more rapidly as maturity approaches than when in an earlier stage. To pull the haulm with the object of preventing any fungus passing through the tubers it is absolutely necessary that the operation should be performed when the tubers are not more than half grown. Such a produce would be almost valueless for table use, and would imperfectly keep. If anything could tend to deteriorate the Potato surely that course of treatment would. Our rate of disease here has not exceeded 3 bushels per 100, and yet beyond what I have stated I pulled no haulm. I very much doubt whether those who did so can show better results. A. D.

Odontoglossum grande.—Mr. Spyers in writing about this fine old Orchid at p. 406, alludes to it as having seven flowers on a spike. It is not an uncommon thing to see that number of flowers on one spike, and we have an old plant here, grown in a pan 12 inches in diameter, which has twenty spikes, and several of them have seven flowers, some of which are 6 inches in diameter. This plant is grown in a cold vinery all the season, and placed in the warmest part of it in winter. In the same house and under the same treatment there is a plant of *Dendrobium chrysanthum*, with a spike of fifty-six blooms, and a plant of *Oncidium flexuosum*, 18 inches in diameter, with twenty flower-spikes. The treatment these plants receive is very simple. They are grown in sphagnum moss and broken crocks, and receive a little guano-water about three times in the season. W. Ramshaw, Foreman, Thorpe Perrow, Bedale.

Natural History.

THE CUCKOO.—The history of the cuckoo has been more mixed up with fable than that of any other bird except the phoenix, or the roc of the *Arabian Nights*. I have known country people in my boyhood—a long time since unfortunately—who believed stories about the cuckoo which the "march of intelligence," as Yankees say, has entirely discredited, even amongst the most ignorant. In my boyhood the bird arrived in Sussex—and probably still arrives—about April 13, and it was currently reputed to come out of an old woman's basket at Heathfield Fair on that day. She is wonderfully regular in the time of her appearance, but she is known now to come from certain countries, which every village boy has seen on maps hanging on the wall of the school-room. She is a summer visitor to most European countries, except those furthest north, to Italy, France, Spain, Germany, and Switzerland, and several others. She is believed not to winter in any of these countries, but to migrate southwards into Central Africa, and the warmer parts of Asia.

One of the discredited fables I referred to was that no young cuckoo could rest till it had found out and killed its parents; another was that it hibernated in winter. A strange story on this part of its career was

related by Willoughby, and repeated in good faith by the most interesting and inaccurate of naturalists, Goldsmith. He tells the story in these words:—

"The servants of a gentleman in the country, having stocked up in one of their meadows some old, dry, rotten willows, thought proper on a certain occasion to carry them home. In heating a stove, two logs of this timber were put into the furnace beneath, and fire applied as usual. But soon, to the great surprise of the family, was heard the voice of a cuckoo, singing three times under the stove. Wondering at so extraordinary a cry in winter time, the servants ran and drew the willow logs from the furnace, and in the midst of one of them saw something move; wherefore, taking an axe, they opened the hole, and thrusting in their hands, first they plucked out nothing but feathers; afterwards they got hold of a living animal; and this was the cuckoo that had waked so very opportunely for its own safety. It was brisk and lively, but wholly naked and bare of feathers, and without any winter provision in the hole. This cuckoo the boys kept two years afterwards alive in the stove; but whether it ever repaid them with a second song, the author of the tale has not thought fit to inform us."

Such stories have been believed long since the time of Goldsmith, and, in regard to some other real or imaginary incidents in the career of the cuckoo, naturalists of eminence still leave us in doubt, differing as they do among themselves. One says that she does not destroy the eggs of the other bird in whose nest she fraudulently leaves her own. He asserts that if she did so the other bird would inevitably desert: I doubt the assertion. According to my experience birds do not readily desert their nests unless they are very much frightened by the person who finds them therein. I have often seen a bird leave her nest, and I have handled the eggs, and she has shown no fear or resentment, or not sufficient to lead her to desert, unless when I frightened her. The nests preferred by the cuckoo are those of the meadow pipit, or titlark, the pied wagtail, and dicky dunno, or hedge sparrow—especially the first and last named, and these two harmless and familiar little birds do not readily forsake their nests.

On some points in regard to the cuckoo's habits, and the mystery of her non-nidification, ocular demonstration is still required. In regard to her egg we have such proof. It is the most conveniently small egg for the size of its producers that I have seen, and it is lighter for its size than that of any other bird, which seems to support the belief that it does not always lay its egg in the nest of its selection, but sometimes puts it in with its beak. This, too, is a moot point among the learned, and especially among "closet naturalists." Comparing the size of the cuckoo with that of the skylark, it is as four to one; while the weight of the eggs of the two birds is similar. The convenience of a small-sized egg in the cuckoo economy is obvious. A large egg would not be well adapted to the size of the small nests in which it is deposited. What would a pair of hedge sparrows say to a parasitic egg four times as large as that by which at present they permit themselves to be deceived. Would they eye it askance and quit the neighbourhood, or would they take counsel together and heave it overboard? Another question I would propound is, at what period of the imposition which is practised on them do the foster parents lose the chance of rearing offspring of their own? Are the eggs or the young birds destroyed? and is the act of destruction malicious, instinctive, or involuntary?

There is no recorded instance, I believe, of a cuckoo forgetting or ignoring the interest of her young ones, and depositing two eggs in one nest. Two eggs have been rarely found in one nest, but they were believed to have been laid by two birds. It is only by the instinct of distributing her eggs that the cuckoo insures a sufficiency of food for the big bird which is to be developed from the little egg. Two such greedy young ones as hers could not be reared by one pair of little birds; considering the size which the young cuckoo speedily attains and its large appetite, it is surprising that the most industrious of the selected nurses can bring sufficient food to the nest to support it. Moreover, the nest not unfrequently goes to pieces beneath the weight of only one half-fledged cuckoo, and the parents—putative, of course, but not the less faithful—will then be found feeding the young squab on the ground or sitting among the branches in the hedge where it was hatched.

It has been said that the old cuckoo sometimes "looks in" to see how her young one is getting on.

One would not have thought it, unless she is thinking of the evil day of her own assassination (according to the fable) by the offspring she has so shamefully neglected. The little birds that rear the cuckoo keep it company and feed it at a very advanced stage of its growth. Like the heron they are long in discarding their big offspring, or the fosterling they have adopted. Poor things! their attention, far beyond what their own young would have received, seems almost contemptible. In Scotland and the North, the old and the young companions in this case are called the "gowk and the titling," these two words being commonly applied to the cuckoo and the titlark, and the name of the former bird, the gowk, being derived from the Saxon *gac* or *geac*, a simpleton.

I remember alarming a cuckoo exceedingly in Hayling Island, coming suddenly upon it sitting on a wall, hidden from me by a shed, on a windy day when my approach was not heard. She flew off in a hurry, and did not cry "cuc-koo"—a note, by the way, which she is only supposed to utter during a certain short period of the breeding season—the meaning of the word, as she uses it, being love! E.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, OCT. 6, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.					HYGROMETRIC DEDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.	Degree of Humidity at Sat. = 100.		
Sept. 30	In. 30.19	+0.48	63.3	43.3	20.0	52.5	-1.8	50.5	94	calm S.W.	0.00
Oct. 1	30.00	+0.30	65.0	40.0	19.0	55.0	+0.6	49.5	82	S.W.	0.00
2	29.73	+0.03	64.0	41.5	22.5	52.3	-1.9	44.8	76	WSW	0.25
3	29.71	+0.02	62.0	35.5	16.5	43.7	-10.2	35.6	73	WNW	0.00
4	29.48	-0.21	46.5	35.7	10.8	40.6	-12.9	38.8	94	NNE S.W. E.	0.24
5	29.11	-0.58	64.0	41.6	22.4	54.5	+1.3	52.7	94	S.W. NNE	0.47
6	29.22	-0.47	52.2	48.0	4.2	49.6	-3.3	48.0	94	NNE	0.56
Mean	29.63	-0.06	58.1	41.7	16.4	49.7	-4.0	45.7	87	variable	sum 1.52

Sept. 30.—A fine day, rather cloudy. Fog in morning and at night on ground. Cool.

Oct. 1.—Dull morning. Very fine and bright generally afterwards, with clear sky.
 2.—Fine, though cloudy in morning. Very dull and wet from 3 to 7 P.M. Cloudless at night, and raw cold.
 3.—A fine bright day, but very cold, especially in early morning.
 4.—Overcast, dull, and wet. Very cold. Strong breeze. The minimum temperature, 35.7, occurred in the early morning; the temperature then increased to 46.5 about 1 P.M., decreased to 40.5 during the evening hours, and was a nocturnal rising temperature afterwards throughout the night.
 5.—Generally overcast, dull, and wet. Very mild. Temperature increased rapidly during the early morning hours.
 6.—Overcast, dull, and miserable throughout. Frequent rain, very heavy at night. Cool.

LONDON: Barometer.—During the week ending Saturday, October 2, in the suburbs of London, the reading of the barometer at the level of the sea increased from 30.12 inches at the beginning of the week to 30.50 inches by mid-day on the 29th of September, decreased to 29.38 inches by the afternoon of October 2, and was 29.97 inches at the end of the week. The mean reading of the barometer for the week at sea level was 30.28 inches, being 0.29 inch above that of the preceding week, and 0.38 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 74° on September 27 to 63½° on the 30th; the mean value for the week was 66½°. The lowest temperatures of the air observed by night varied from 41½° on October 2 to 54° on September 26; the mean value for the week was 48°. The mean daily range of temperature in the day being 22½°, on October 2d, and the least 14½°, on September 29.

The mean daily temperatures of the air and the departures from their respective averages were as

follows:—Sept. 26th, 60°.3, + 5°.6; 27th, 61°.5, + 6°.9; 28th, 55°.8, + 1°.3; 29th, 55°.4, + 1°.3; 30th, 52°.5, + 1°.8; Oct. 1st, 55°.0, + 0°.6; 2d, 52°.3, + 1°.9. The mean temperature of the air for the week was 56°.1 being 1°.7 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 145° on Sept. 27th, 114° on the 29th, and 111° both on Sept. 28 and Oct. 1; on Oct. 2 the reading did not rise above 82°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 37° on Oct. 2, 37½° on Sept. 30, 38½° on Oct. 1, and 39° on Sept. 29; the mean of the seven lowest readings was 41½°.

Wind.—The direction of the wind was variable, and almost calm in motion on every day, except Saturday, Oct. 2, when its strength was strong.

The weather during the week was fine generally, and dry. Fog prevailed on Sept. 28, 29, and 30.

Rain.—Rain fell on one day only, viz., Oct. 2; the amount measured was 0.25 inch.

ENGLAND: Temperature.—During the week ending Saturday, October 2, the highest temperatures of the air observed by day were above 72° at Truro, London (Blackheath), Birmingham, and Sunderland, and below 66° at Plymouth and Liverpool; the mean value from all stations was 69½°. The lowest temperatures of the air observed by night were below 43° at Brighton, London (Blackheath), Norwich, and Hull, and above 47° at Bristol, Wolverhampton, Sheffield, Leeds, Bradford, and Sunderland; the mean from all places was 44½°. The extreme range of temperature in the week was above 31° at London and Hull, and below 20° at Bristol and Wolverhampton; the mean range from all stations was 25°.

The mean of the seven high day temperatures was above 66° at Truro, London, and Sunderland, and below 62° at Liverpool and Hull; the mean from all places was 64½°. The mean of the seven low night temperatures was below 50° at London, Wolverhampton, and Hull, and above 52° at Truro and Sunderland; the general mean from all stations was 50½°. The mean daily range of temperature in the week was above 15° at London, Hull, and Sunderland, and below 13° at Bristol, Norwich, Wolverhampton, and Liverpool; the mean daily range of temperature from all places was 14°.

The mean temperature of the air for the week from all stations was 56½°, being 5½° above the value for the corresponding week in 1879. The mean temperature of the air for the week was above 57° at Truro, Brighton, Nottingham, Bradford, and Sunderland, and below 55° at both Liverpool and Hull.

Rain.—The amounts of rain measured were very small. At Liverpool the fall was 0.29 inch, and at London (Blackheath) 0.25 inch, at Nottingham 0.01 inch only fell. At Bristol, Norwich, Birmingham and Leeds no rain was measured, and the average fall over the country was less than one-tenth of an inch.

The weather during the week was fine and dry, though occasionally dull.

Fog was prevalent at many places.

SCOTLAND: Temperature.—During the week ending Saturday, October 2, the highest temperatures of the air observed by day varied from 70° at Dundee to 64½° at Greenock; the mean value from all stations was 67°. The lowest temperatures of the air observed by night varied from 28½° at Greenock to 42½° at Edinburgh; the general mean from all places was 37½°. The mean range of temperature in the week from all stations was 29½°.

The mean temperature of the air for the week from all stations was 55°, being 5° higher than the value for the corresponding week in 1879. The mean temperature was above 56° at Dundee, and below 54° at Paisley.

Rain.—Very little rain was measured, the amounts varied from one-tenth of an inch at Greenock and Perth, to three-hundredths of an inch at Leith and Aberdeen; the average fall over the country was four-hundredths of an inch. At Glasgow, Dundee, and Paisley no rain was measured.

DUBLIN.—The highest temperature of the air was 67½°, the lowest 35½°, the extreme range 31½°, the mean 54°, and the amount of rain 0.15 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

ABIES, OR PICEA: R. No doubt the change is inconvenient, but you can obviate it by speaking of "Silvers" or "Spruces." Again, in most cases every one would know what was meant if you simply used the specific name, such as nobilis, ajanensis, Nordmanniana, &c. We do not see why Englishmen should be isolated from the rest of the world to the general confusion; still less do we subscribe to the notion that it is their duty to perpetuate an error, which other people have corrected.

APPLE CRIMSON QUEENING: J. Matthews. Its synonyms are Scarlet Queening, Summer Queening, Red Queening, and Herefordshire Queening.

BEGONIAS: G. C. Short. The batch includes two or three fine large flowers, but not in advance of others already known. One very large broad-petalled crimson, with hermaphrodite flowers, is interesting, and worth attention. Do all its flowers come in the same way?

BOOKS: G. Rae. Duncan's *Treatise on the Melon* is one of the best which has been published, but we doubt if it is now in print. There has been no recent treatise published separately. You cannot do better than collect the ample calendarial instructions given in our columns by some of the best cultivators. There are so many good and successful growers that it would be invidious to mention any one in particular.

CAMELLIA BUDS DROPPING: Lexham. From your description we should think the plants have been too dry at the root; they will not endure excessive dryness, but at least during the flowering period will take any amount of moisture—provided, of course, that they do not get water-logged. Are the roots healthy and active? It is not very important whether the plants are kept indoors, or put out during summer, provided they are kept cool and airy; but if set out in a sunny, exposed place, they would be likely to suffer.

FUNGUS: J. C. Shawell Court. The handsome "Earth-star" sent by you is not *Geaster coliformis*,



FIG. 91.—GEASTER RUFESCENS.

illustrated in our last number, but *G. rufescens*, a fungus seldom met with. W. G. S.

CLEMATIS: J. Colebrook. If the ground is properly prepared they may be planted in open weather any time between the beginning of October and the end of April, but as you have failed with autumn planting we should advise you to try the spring—say from the middle of March to the middle of April, as favourable weather may occur. They are quite hardy, and therefore we are surprised to hear of your failures; perhaps the soil was wet and sour. The plants are usually obtained by grafting, in gentle heat.

DUTCH GARDENS: L. D. D. Many of the old gardening books, which can sometimes be obtained at second-hand book shops, contain the kind of formal designs you inquire for, such as Carpenter's *Retired Gardener*, Langley's *New Principles of Gardening*, &c. The border may be from 6 inches to 1 foot high, according to the design. Box is the neatest, and may be kept dwarfier than such plants as Yew, which, however, if kept closely clipped, makes a very good evergreen edging. Choose something adapted to the soil. As a deciduous edging young plants of Oak kept neatly clipped look very well, but they can scarcely be had less than 1 foot in height. There is a modern book of designs published at 171, Fleet Street, which may possibly suit you.

ERRATUM.—At p. 428, line 9 from the bottom, omit the word "Silver."

INSECTS: Gardener. The insects in your quill were three very minute specimens of a thrips. Are you sure that the Grapes were not gnawed by the caterpillar of some small moth? I. O. W.—N. M. G. Your insect, found on the stem of a Pelargonium, is the larva of one of the two-winged Sylphidae, which feeds on aphides. I. O. W.

NAMES OF FRUITS: E. S. We have failed to identify the Plum.

NAMES OF PLANTS: Mrs. T. We cannot identify the Ash from the insufficient materials sent.—C. W. D. Aster Novae Angliae.—Enquirer. Aristolochia brasiliensis.—S. K., Warsaw. Immature, but appears to be a young frond of *Davallia solida*, which is closely related to *D. ornata*, only the latter is much broader in the parts.—C. D. Z. 1, *Gomeza recurva*; 2, *Sarcanthus pallidus*.—C. T. H. 1, *Chrysophyllum Cainito*; 2, not recognised; 3, *Bupleurum longifolium*.—C. E. F. *Pulmonaria officinalis*, *Agrostemma Githago*, *Pinus sylvestris uncinata*. The others not recognised.—Old Subscriber. 1, *Croton undulatus*; 2, *Browallia elata*; 3 and 4, insufficient; 5, *Asplenium Veitchianum*; 6, *Selaginella apus*; 7, *Lastrea tenericaulis*; 8, *Nertera depressa*.—W. T. T. *Broussonetia papyrifera*.—F. E. 1, probably *Miltonia Karwinskii*; 2, *Zygopetalum maxillare*; 3 and 4, Conifers, not determinable from young sprigs; 5, *Arabis albidia variegata*; 6, *Stachys lanata*.—Brazil. *Laelia præstans*.—R. J. H. 1, *Pteris tricolor*; 2, *Adiantum Capillus-Veneris*; 3, *Selaginella Martensii*; 4, *Adiantum pubescens*; 5, *Selaginella pubescens*; 6, *Davallia bullata*; 7, *Onychium japonicum*.

VINES: S. C. H. Black Hamburgh, Madresfield Court, Buckland Sweetwater, and Foster's Seedling. In such a house we think it would be far the best only to plant two sorts—the first and last named.

* * Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED.—Osborn & Sons (Fulham, S.W.), Catalogue of Hardy Trees and Shrubs and Fruit Trees—William Rumsey (Joyning's Nursery, Waltham Cross, N.), Catalogue of Roses, Trees, Shrubs, Fruit Trees, &c.—Simon-Louis Frères (Metz.), Catalogue of Fruit Trees, Hardy Trees and Shrubs, &c.—André Leroy (Angers), Catalogue of Fruit Trees, Hardy Ornamental Trees and Shrubs, &c.—Paul & Son (Old Nurseries, Cheshunt), Descriptive Catalogue of Select Roses.—Cranston's Nursery and Seed Company (Hereford), Catalogue of Roses.

COMMUNICATIONS RECEIVED:—H. W. W.—W. H.—A. W.—J. M. T.—J. Crozier.—H. P. C.—R. F.—J. H.—D. R. & Co.—O. O.—R. P. W.—W. S.—S. & S.—J. V. & S.—J. B.—W. H. C.—W. E.—F. E. M. S.—T. B.—P. B. P.—G. Maw (enclosure).—Young Gardener.—Dr. Bull.—G. D.—J. M. C.—C. F.—W. T. D.—G. R.—Count de Buysson.—Ed. André.—M. T.—E. W. B.—J. Linden.—Gen. Puckle.

Markets.

COVENT GARDEN, October 7.

Our market still keeps quiet, the recent heavy rains materially affecting supply and demand. Large consignments of American Apples are reaching us, but good samples of English fruit hold their own, and prices are well maintained. Kent Cobs short, with no alteration. James Webber, Wholesale Apple Market.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Asters, per dozen .. 3 0-6 0	Euonymus, various, per dozen .. 6 0-18 0
Begonias, per doz. .. 4 0-12 0	Evergreens, in var., per dozen .. 4 0-18 0
Bouvardias, per doz. 12 0-24 0	Ferns, in variety, doz. 4 0-18 0
Chrysanth., per doz. 6 0-12 0	Ficus elasticus, each 1 6-7 6
Cockscombs, p. doz. 3 0-6 0	Foliage Plants, various each .. 2 0-10 0
Coleus, per dozen .. 3 0-9 0	Fuchsias, per dozen 3 0-9 0
Cyperus, per dozen 4 0-9 0	Myrtles, per doz. .. 6 0-12 0
Dracæna terminalis 30 0-60 0	Palms in var., each 2 6-21 0
—viridis, per doz. 12 0-24 0	Solanums, per dozen 6 0-18 0
Erica gracilis, per dozen .. 9 0-18 0	
—caffra, per doz. .. 8 0-12 0	

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Abutilon, 12 blooms 0 3-0 6	Heliotropes, 12 sp. .. 0 6-1 0
Asters, 12 bunches .. 4 0-9 0	Mignonette, 12 bun. 2 0-6 0
Bouvardias, per bun. 1 0-3 0	Pelargoniums, 12 .. 1 0-1 6
Calceolarias, p. bunch 0 9-1 0	—zonal, 12 sprays 0 3-0 6
Camellias, per dozen 3 0-9 0	Primula, double, per bunch .. 1 0-1 6
Carnations, 12 blms. 1 0-2 0	Roses (indoor), doz. 1 0-6 0
Dahlias, 12 bunches 3 0-6 0	—outdoor, 12 bun. 6 0-15 0
Eucharis, per doz. .. 3 0-9 0	Stephanotis, 12 spr. .. 6 0-1 0
Feverfew, 12 bun. .. 4 0-6 0	Tropeolum, 12 bun. 1 0-3 0
Forget-me-not, 12 bunches .. 3 0-9 0	Tuberose, per dozen 1 0-2 0
Gardenias, 12 blms. 3 0-6 0	
Gladioli, 12 spikes .. 2 0-4 0	

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Apples, ½-sieve .. 2 0-5 0	Melons, each .. 2 0-3 0
Cobs, per lb. .. 1 3- ..	Peaches, per doz. .. 6 0-12 0
Filberts, per lb. .. 1 3- ..	Pears, per dozen .. 1 6-2 6
Grapes, per lb. .. 0 6-4 0	Pine-apples, per lb. 1 6-4 0
Lemons, per 100 .. 6 0-10 0	Plums, ½-sieve .. 2 0-4 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	3 0 4 0	Horse Radish, p. bun.	4 0 ..
per doz. ..	3 0 4 0	Lettuces, Cabbage,	6 1 6
Aubergines, per doz.	3 0 ..	per doz. ..	6 1 6
Beans, French, p. lb.	0 6 ..	Mint, green, bunch.	0 4 ..
Beet, per doz. ..	1 6 2 6	Mushrooms, p. basket.	1 6 2 0
Cabbages, per doz. ..	1 0 2 0	Onions, per bushel.	5 0 ..
Carrots, per bunch.	0 4 0 6	— Spring, per bun.	0 6 ..
Cauliflowers, Eng.	3 0 6	Parsley, per bunch.	0 4 ..
ish, each. ..	3 0 6	Radishes, per bun.	0 2 ..
Celery, per bundle ..	1 6 2 0	Small salad, pun.	0 4 ..
Chilis, per 100 ..	3 0 ..	Spinach, per bushel	6 0 ..
Cucumbers, per doz.	0 6 9 0	Tomatos, per lb.	0 9 1 0
Endive, per 2 doz. ..	1 6 3 0	Turnips, new, bunch.	0 4 ..
Garlic, per lb. ..	0 6 ..	Vegt. Marrows, doz.	0 2 ..
Herbs, per bunch ..	0 2 0 4		

POTATOS:—Kent Regents, 80s. to 105s.; Champions, 80s. to 95s.; Early Rose 60s. to 80s.

SEEDS.

LONDON: Oct. 6.—The market for all kinds of Clover seed continues inactive. A few sales of new German red have taken place at prices which appear moderate. Mail advices just received from Canada speak of a short Clover crop. Winter Tares find buyers at full prices; good dry parcels are getting scarce. Seed Rye keeps firm. Timothy, being in short supply, realises more money. The yield of the new English blue Peas is found very unsatisfactory; with a brisk demand, enhanced rates are readily obtained. Haricot Beans are also in better request. For fine Canary seed there is an improved enquiry. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday there was a steady consumptive demand for most descriptions of Wheat, and an advance of 1s. to 2s. per quarter compared with the previous Monday. There was more inquiry for malting Barley than at last market, and prices improved about 1s. per quarter; grinding barley was also rather dearer. In the malt trade the chief feature was a desire to sell old qualities. For Indian Corn trade was very firm, and prices advanced 1s. to 1s. 6d. per quarter. Supplies are very firmly held. Oats improved 6d. to 9d. per quarter; Beans had an upward tendency; white Peas realised extreme rates; and flour was very firm at rather better prices.—On Wednesday Wheat was only in moderate supply. Good new white home-grown produce was worth fully 45s. per quarter. Beans were quiet and unaltered. Malt attracted very little attention. For Oats rates were steady. Maize was firm, while in Beans, Peas, and flour no material change was noticeable.—Average prices of corn for the week ending Oct. 2:—Wheat, 40s. 1d.; Barley, 34s.; Oats, 21s. 6d. For the corresponding period last year:—Wheat, 47s. 1d.; Barley, 40s. 7d.; Oats, 23s. 4d.

CATTLE.

At Copenhagen Fields on Monday the demand for beasts was in excess of that on Monday se'night, and choice qualities were dearer, with a fair clearance of all descriptions. For choicest kinds of sheep there was a brisk demand, but trade was dull for inferior. Calves sold about as of late. Quotations:—Beasts, 4s. 6d. to 5s., and 5s. 4d. to 5s. 10d.; calves, 5s. to 5s. 8d.; sheep, 5s. to 5s. 8d., and 6s. 4d. to 7s.; pigs, 4s. 4d. to 5s. 4d.—Thursday's trade was dull in tone. Beasts moved off heavily at less money than above noted; sheep were dull and unaltered, but calves were firm.

HAY.

Tuesday's Whitechapel Market report states that the supply of fodder on offer was rather large, but trade was dull at the following quotations:—Prime Clover, 100s. to 132s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 106s.; inferior, 30s. to 70s.; and straw, 30s. to 42s. per load.—On Thursday there was a moderate supply of hay and straw on sale. With a dull trade, prices were without alteration.—Cumberland Market quotations:—Superior meadow hay, 100s. to 110s.; inferior, 50s. to 84s.; superior Clover, 128s. to 135s.; inferior, 84s. to 108s.; and straw, 36s. to 42s. per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that the arrivals continue liberal, and the trade is dull at the subjoined currency:—Scotch Regents, 80s. to 90s.; Champions, 65s. to 75s.; Kent Regents, 100s. to 110s.; Essex, do., 80s. per ton.

COALS.

The following are the quotations current at market during the week:—East Wylam, 16s.; Ravensworth West Hartley, 14s. 3d.; Walls End—Hetton, 17s. 6d.; Hetton Lyons, 16s.; Hawthorns, 16s. 3d.; Lambton, 17s.; Original Hartlepool, 17s. 6d.; Wear, 16s.; Tunstall, 16s.; Chilton Tees, 16s. 9d. and 17s.; Thornley, 16s. 9d.; Haswell, 17s. 6d.; South Hetton, 17s. 6d.; Caradoc, 17s.; South Hartlepool, 16s. 6d.; Tees, 17s. 3d.

Government Stock.—The closing prices of Consols on Monday were, for delivery, 97½ to 97½, and 98 to 98½ for the account. Tuesday's figures were, for delivery, 97½ to 98, and for the account, 98 to 98½. The final quotations of Wednesday were, for delivery, 97½ to 98, and 97½ to 98½ for the account. Consols closed on Thursday at 97½ to 98 for both the account and delivery.

Seakale—Seakale.

RHUBARB and ASPARAGUS for Forcing. The best house in the Trade. Also DUTCH BULBS and FLOWER ROOTS. **H. THORNTON AND CO. (late A. Dancer),** NURSERYMEN and SEEDSMEN, Fulham, London, S.W. HYACINTHS, TULIPS, CROCUS, and other BULBS of the very best quality. Priced CATALOGUES free on application. N.B. We make the Growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can possibly be procured in the Trade. To insure their being supplied, we beg that our Customers may give their orders early, to prevent disappointment, as we are continually receiving orders from all parts, which will be strictly executed in rotation. Best MILLTRACK MUSHROOM SPAWN. MATS, very good for covering Mushroom Beds, 25s. per 100 Dancer's Nurseries, Fulham, S.W.

BAY LAURELS.

ORMISTON & RENWICK,
NURSERYMEN, MELROSE, N.B.,
OFFER A SPECIAL LOT OF BAY LAURELS,
In sizes suitable for Underwood and Ornamental
Shrubbery.
Prices on application.

SPECIALLY CHEAP OFFER of FERNS.—*Adiantum cuneatum*, *A. gracillimum*, *Pteris*, *Asplenium*, and others. All in small pots, fit to shift. 1/6 per 100, or by the 1000. Also some good specimens of *A. gracillimum*, in 48 and 32-pots. Prices on application.
FOUNCE AND SONS, Nurserymen, Hendon, Middlesex.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, 1/1, bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, free on rail, 1/1 3s. **J. STEVENS AND CO.,** Greyhound Yard, and 134, High Street, Battersea, S.W.

Reduction of Prices.

COCOA-NUT FIBRE REFUSE.—As supplied to all the Royal Gardens and principal Nurseries. Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; a destroyer of Slugs and Insects. Sold in bags, about 4 bushels, at 9d. per bag. Orders for 15 bags, 10s.; 30 bags, 17s.; 100 bags for 50s. (bags included). Delivered free to any Station in London. Van-loads at the Works, 2s. Ditto, delivered by our vans within 5 miles, 8s. Railway trucks filled at 18s., 2 trucks for 30s., free to any Station in London. Terms Cash. Post-office Orders payable at West Ferry Road. **GEO. WHITTLE,** Janet Street, West Ferry Road, Millwall, E.

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SEEDLING and TRANSPLANTED FOREST TREES,
PLANTS FOR GAME COVERTS,
ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.

The immense stock of the above is this season in splendid condition, and special offers for future delivery will be made on application.

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(JOHN WILLS, Limited).

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The Company having made large purchases from the leading Bulb Gardens of Holland and France, are now prepared to supply HYACINTHS, TULIPS, NARCISSI, CROCUSES, and all other BULBS for Autumn Planting, at low prices, and with a large discount to Shareholders; Non-shareholders will be treated with on the most liberal terms.

The Company also supplies all kinds of NEW and RARE PLANTS, Ferns, Fine Foliaged and New Holland Plants, Standard and Dwarf Roses, and all kinds of Fruit and Forest Trees, Evergreens, &c., GARDEN SEEDS for Autumn Sowing, FARM SEEDS, HARDY PLANTS for Winter and Spring Gardening, PLANTS for FORCING, &c., MUSHROOM SPAWN, and all kinds of GARDEN IMPLEMENTS and REQUISITES, at the lowest prices.

FRUIT, BOUQUETS, FESTIVE and MEMORIAL WREATHS, FLORAL CROSSES, DRIED FLOWERS, &c., sent to all parts of the country on receipt of letter or telegram.

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Thousands of valuable plants were lost last winter through the continuous early frosts preventing the carrying out of such Glass Protection and Heating as had been proposed but delayed too long, while flues and frames proved worthless and bad boilers broke down under such severe strains.



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GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,

3d. per bushel; 100 for 20s.; truck (loose, 250 bushels),

30s.; 4-bushel bags, 4d. each.

LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack;

5 sacks, 25s.; 12 for 45s., or 36s. per ton.

BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 25s.; 12 or

40s., or 34s. per ton; sacks, 4d. each.

COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton,

26s. per ton; in 1 cwt. bags, 4d. each.

YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF

MOULD, 1s. per bushel.

SPHAGNUM MOSS, 8s. 6d. per sack.

Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper,

Russia Mats, &c. Write for FREE PRICE LIST.

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COCOA-NUT FIBRE REFUSE,
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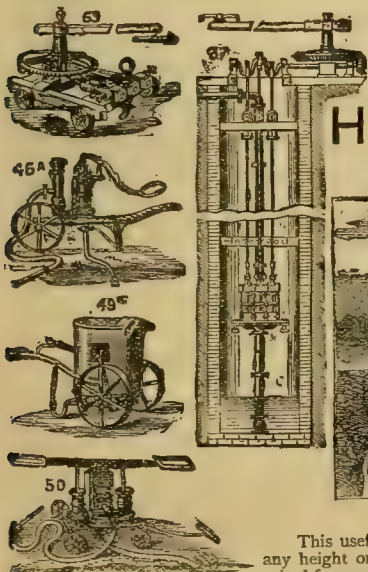
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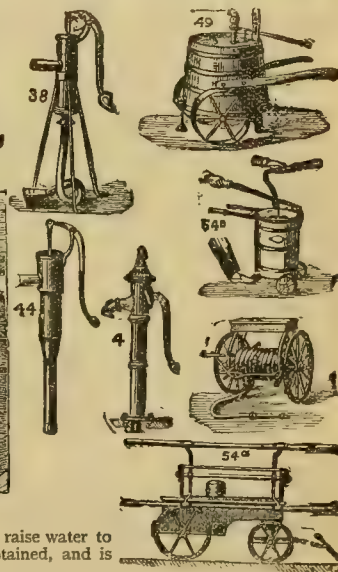
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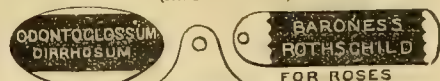
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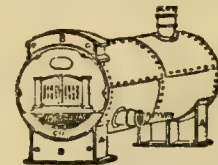
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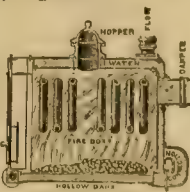
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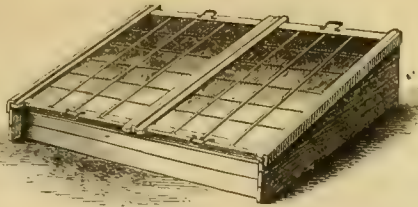
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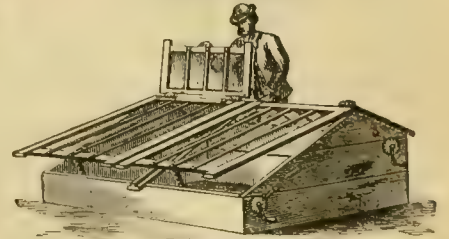
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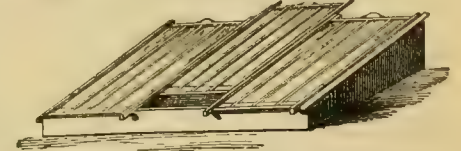


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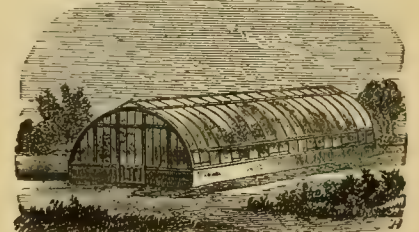
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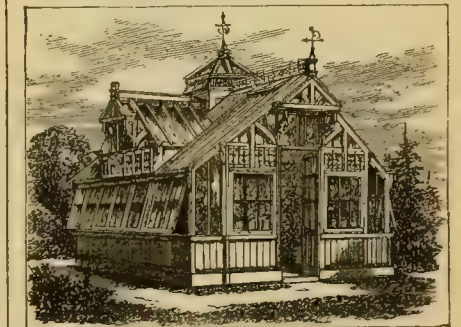
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New Chester Road, Tranmere, Cheshire, April 30, 1880.

"Dear Sir,—Will you kindly forward me another bottle of
 your 'Capillary Germinator,' as I have found it to be beneficial
 and quite capable of producing what I so earnestly desired. I
 shall recommend this wonderful producer to all my friends and
 comrades. I shall be in London soon, and shall have the
 pleasure of showing you my capital Whiskers and Moustaches,
 which your preparation has to my satisfaction produced.—I re-
 main, yours respectfully,
 'W. C. MAGER.'"

Harmless, free from grease, nicely scented, will not stain nor
 injure the skin. The original of the above, with hundreds of
 similar letters, may be seen at any time.

Full particulars with forty testimonials sent free to any address.
 Of all Chemists, Perfumers, &c. Sent, carriage paid, to any
 address, secretly packed, with testimonials, directions for use,
 &c., for 2s. 6d. Larger sizes, FRER, 5s. 9d. and 12s.

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146, Regent's Park Road, London, N.W.

Beware! Beware!!—Every genuine bottle has above title
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 imitations of this thoroughly reliable article.

DINNEFORD'S MAGNESIA.

The Medical Profession for over Forty years have approved of
 this pure solution as the Best Remedy for

**ACIDITY OF THE STOMACH, HEARTBURN,
 HEADACHE, GOUT, and INDIGESTION,**
 and as the safest Aperient for Delicate Constitutions, Ladies,
 Children, and Infants.

DINNEFORD'S MAGNESIA.

OLD DR. JACOB TOWNSEND'S

SARSAPARILLA.—The best autumnal Medicine for the
 Blood, Scrofulic Disorders, Gout, and all Skin Diseases.
 In Bottles, 2s. 6d., 4s. 6d., and 11s., of all Chemists. Chief
 Depot: 131, Fleet Street, E.C.—DEAN, STEEL AND CO.

"I can with confidence recommend

DR. LOCOCK'S PULMONIC WAFERS

for Severe Coughs and Difficulty of Breathing." Signed,
 J. Parkinson, M.P.S., 450, Oldham Road, Manchester. Asthma,
 Consumption, Bronchitis, Colds, Phlegm, Pains in the Chest,
 and Rheumatism, are instantly relieved and rapidly cured by
 Dr. Locock's Wafers, which taste pleasantly. Sold at 1s. 1/4d.,
 2s. 9d., and 11s. per box, by all Druggists.

HOLLOWAY'S OINTMENT and PILLS.

—Autumn is proverbially the season of sickness; then the
 blood requires purification, the digestion demands thorough and
 attentive regulation, and all the secretions call for correction.
 Holloway's remedies supply all the necessities for securing
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 Abscesses, Carbuncles, and all visible Imperfections: the other
 acts most potently in Cleansing the Circulation, Strengthening
 the Stomach, Governing the Liver, Regulating the Bowels, and
 reducing the entire system to order. Thus the twin medica-
 ments furnish the most efficient medicine chest available for
 family use. It is easier, through Holloway's discovery, to point
 out the remedy than to describe the disease; into the former no
 fallacy can intrude; into the latter prudence may unwittingly creep

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UNIFORM,
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UNPRECEDENTED
SUCCESS!
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(SUBJECT TO THE USUAL CONDITIONS) WITH EVERY

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MARVELLOUS ACHIEVEMENTS

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HORTICULTURAL ENGINEERS,

KING'S ROAD, CHELSEA,

LONDON, S.W.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 355.—VOL. XIV. { NEW SERIES. } SATURDAY, OCTOBER 16, 1880.

{ Registered at the General Post-office as a Newspaper. } Price 5d. POST FREE, 5 1/2d.

With this Number is presented
a Double-page Coloured Plate of the
"POET'S NARCISSUS."

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Now Ready, in cloth, 16s.,
THE GARDENERS' CHRONICLE,
Volume XIII., JANUARY to JUNE, 1880.
W. RICHARDS, 47, Wellington Street, Strand, W.C.

THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.
The THIRD GRAND COMBINED EXHIBITION of CHRYSANTHEMUMS, FRUIT, &c., and CAGE BIRDS, will be held on NOVEMBER 16 and 17. Entries close November 9. Schedules and Entry Forms may be obtained of C. S. FUDGE, Secretary.
39, York Street, Lower Avenue.

ROYAL AQUARIUM, WESTMINSTER.
GRAND EXHIBITION of CHRYSANTHEMUMS, FRUIT, and VEGETABLES (Competition open to all England), on WEDNESDAY and THURSDAY, November 17 and 18. Five Valuable SILVER CUPS, and a liberal scale of Money Prizes will be awarded. Entries close on Saturday, November 23. Schedules and all information of WILLIAM HOLMES, Frampton Park Nursery, Hackney, N.E.

THE LIVERPOOL HORTICULTURAL ASSOCIATION will hold their First Grand Autumn Exhibition of CHRYSANTHEMUMS, STOVE and GREENHOUSE PLANTS, FRUITS and CUT FLOWERS, in St. George's Hall, on TUESDAY and WEDNESDAY, November 23 and 24, when over ONE HUNDRED and THIRTY POUNDS will be given in PRIZES. The dates are Fixed subject to the Assize Courts. If the Hall be not available for these dates, due notice will be given. Prices of Admission:—First Day, from 2 to 5 P.M., 2s. 6d.; and from 5 to 10 P.M., 1s. Second Day, open from 10 A.M. till 9 P.M., 1s. Schedules may be had on application to R. WASHINGTON, Secretary.
25, Lucerne Street, Lark Lane, Liverpool.

ALEXANDER DANCER, late Nurseryman and Seedsman, of Fulham, S.W., begs to state that he has NOT ANY INTEREST whatever in the BUSINESS of Messrs. H. THORNTON and CO., and they have no authority from him to use his name in any way.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit. CARTERS, the Queen's Seedsmen, High Holborn, London.

MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

Deutzia gracilis and Ligustrum ovalifolium.
R. AND G. NEAL beg to offer the above, extra fine plants, by the 100 or 1000. Samples and Trade LIST on application to The Nurseries, Wandsworth Common, London, S.W.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785).
Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

Christmas Roses.
BUDDENBORG BROS., BULB GROWERS, Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.
CATALOGUE of Hyacinths, Tulips, and other Bulbs, sent post-free on application.

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

To Planters on a Large Scale.
FOR SALE, to effect a clearance, thousands of CONIFERÆ in many varieties, LAURELS, YEWs, RHODODENDRONS, finest named in largest specimens. They can be delivered to Great Northern Railway, or London and North-Western Railway, or Midland. Apply to, Rev. J. B. NORMAN, Edgware, London.

CAMELLIAS, in Bud, small plants, at £3 per 100; larger, £6 per 100; AZALEAS, in Bud, at £4 per 100; beautiful Crowns, at £5 per 100; LILY OF THE VALLEY, 35s. per 1000; CHRISTMAS ROSES, £4 per 1000; SPIRÆA JAPONICA, £4 per 1000.
PETER DE COCK, The White Flower Nursery, Meirlebeke, Ghent, Belgium.

Strawberries.
CHARLES TURNER'S Descriptive Select LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice.
The Royal Nurseries, Slough.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

All Kinds of FIELD and GARDEN SEEDS are purchased by J. KORNWEIBEL, Seed Merchant, Dusseldorf, Germany.

EXCHANGE.—Norway Maple, 10 to 14 feet; Horse Chestnuts, 6 to 8 and 8 to 10 feet; Black Italian Poplars, 6 to 8, 8 to 10, and 10 to 14 feet; Gean or Wild Cherry, 10 to 14 feet. The above are all fine clean-grown transplanted trees, and will be EXCHANGED for CONIFERÆ, &c., or special quotations given.
STUART, MEIN, and ALLAN, Nurseries, Kelso.

WANTED, STEPHANOTIS, GARDENIAS, CAMELLIAS, and other CHOICE FLOWERS.—Letters and Consignments to W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WANTED, a large quantity of LAVENDER PLANTS. Samples and lowest cash price per 1000 to A. MOFFAT and SON, Botanic Nurseries, Biggleswade, Bedfordshire.

To Nurserymen and Others.
WANTED, a quantity of LAVENDER PLANTS. State price per dozen or 100, to W. BUNN, Florist, 5, Paignton Road, Stamford Hill, N.

WANTED, a few Thousand MANETTI STOCKS. State price per thousand to W. J. WATSON, Town Hall Buildings, Newcastle-on-Tyne.

NURSERYMEN having extra large prepared DECIDUOUS or EVERGREEN TREES to Dispose of, are invited to send particulars to JOSEPH F. MESTON, 20, Spring Gardens, London, S.W.

WANTED, English GRAPES and FRUIT of all kinds, suitable for Sale in Smithfield Market, Manchester. Good prices realised, and prompt cash. Moderate commission.
DORAN and SON, Stretford, Manchester.

SUTTON'S POTATOS for AUTUMN PLANTING.
Priced Descriptive LIST on application to SUTTON AND SONS, The Queen's Seedsmen, Reading.

Roses.
W. GROVE, Tupsley, Hereford, offers choice dwarfs, fine plants; sample dozen, 4s. 6d. QUICK, 12s. 6d. to 30s. per 1000. See LIST.

FOR SALE, Six CAMELLIAS—alba plena, fimbriata, Cup of Beauty, Lady Hume's Blush, &c.; 6 to 9 feet high, clean, healthy, and full of buds. Apply to Rev. J. B. NORMAN, Edgware, London.

Camellias.
FOR SALE, Cheap, a few large CAMELLIAS, from 6 to 10 feet high.
S. WOOLLEY, Cheshunt, Herts.

SWEET VIOLETS, in Fourteen Varieties, in fine strong clumps, at 4s. per dozen, or 25s. per 100. Now is a fine time for planting them for winter and spring blooming. Apply to JAMES SMITH, Darley Dale Nurseries, near Matlock.

Deutzia gracilis.
WILLIAM FLETCHER has a fine stock of the above to offer, fine bushy plants, with from 10 to 20 branches, price 21s. per 100, £10 per 1000.
Ottershaw Nurseries, Chertsey.

Bulbous Flower Roots.
FIRST QUALITY, CARRIAGE FREE.
JAMES DICKSON AND SONS have received, in the finest possible condition, their first large annual consignment. Priced CATALOGUE post-free.
108, Eastgate Street, Chester.

Bulbs, Orchids, &c.
THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

To the Trade.
HYACINTHS, named; Double DAFFODILS, NARCISSUS, Double White and Poeticus. Special low offer of the above on application.
GEORGE REID, Seed Merchant, 20, Castle Street, Long Acre, London, W.C.

ED. PYNAERT-VAN GEERT Ghent, Belgium.
SEEDS of TUBEROUS BEGONIAS, large-flowered varieties, from the collection of M. Moens (first prize at the Brussels National Exhibition, 1880), 5 francs per packet, or 12 francs for three packets, post-free. Large stock of INDIAN AZALEAS and CAMELLIAS with flower-buds. Apply for Price LISTS.

To the Trade.
J. MOOY, FLORIST and SEEDSMAN, Haarlem, Holland (established 1830), begs to inform his Commercial Friends that he has arrived in London as usual with a good selection of FLOWER ROOTS, and is staying at 29, Norfolk Street, Strand, W.C.

EVERGREEN HEDGES, in great variety, very cheap.
Descriptive Price LIST on application.
RICHARD SMITH and CO., Nurserymen, Worcester.

To the Trade.
SWEET BAYS.—Splendid bushy stuff, 1 to 1 1/2, 1 1/2 to 2, and 2 1/2 to 3 feet; also good standards 5 to 6 feet, with heads 2 1/2 feet through. Price on application.
W. M. PILLINGER, The Nurseries, Chestport, Mon.

SEEDLING THORNS.—The finest in the Trade. Price and particulars on application. Also transplanted of various sizes.
RODGER McCLELLAND and CO., 64, Hill Street, Newry.

COMMON LAURELS, good bushy plants, from 1 to 2 feet high, 2s. per dozen, 12s. per 100, or £5 per 1000, nett cash.
J. FARWELL, Nurseryman and Seedsman, Wimborne.

BROOM SEED, White Portugal, just harvested. The undersigned has a quantity to offer, price on demand.
FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

KENTISH FRUIT TREES.—Standard and Pyramid Apples, Pears, Plums, and Cherries, in 200 varieties, principally good profitable Market sorts, from 65s. per 100. Gooseberries and Currants very cheap.
T. EVES, Gravesend Nurseries.—Established 1810.

BLACK NAPLES CURRANTS 6000 Strong, 4-yr. old, twice transplanted, and twice cut back, grand plants, 65s. per 1000.
J. G. MITCHINSON, 9, Chapel Street, Penzance.

To the Trade.
ROLLISSON'S Telegraph CUCUMBER (true). Price on application to E. P. DIXON, Hull.

SEAKALE CROWNS for Sale—large, strong, and selected. Land specially adapted for it. Apply to T. BROSNAN, Market Gardener, Norman Farm, Fulham, S.W.

SALES BY AUCTION.

Every Monday.

SALES OF DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, on MONDAY NEXT, and every following Monday, at half-past 11 o'clock precisely, extensive consignments of first-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS from Holland, in lots to suit all buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

The Vale Nursery, Uxbridge Road, Acton, W.
NURSERY STOCK AND PIGS.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises as above, on TUESDAY NEXT, October 19, at 12 o'clock precisely, by order of Mr. Reeves, who has to give up a portion of his land for building, a large quantity of well-grown NURSERY STOCK, including 3500 Aucubas, 1000 Limes, 1000 Thuja aurea, 1000 Arbor-vitae, several hundreds of Euonymus, 1500 Ives and Creepers, an assortment of Coniferæ and Evergreens, for Border planting, Deciduous Shrubs, Ornamental Trees, &c.; also 600 double white Primulas, and 300 Poinsettias, together with 50 PIGS.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Tooting, S.W.

CLEARANCE SALE, a portion of the Land having been sold for Building.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on TUESDAY and WEDNESDAY next, October 19 and 20, at 12 o'clock precisely each day, by order of Mr. R. Parker, Without Reserve, a large quantity of extra young NURSERY STOCK, remarkably well grown and in excellent condition for removal, comprising several thousands of choice Evergreen and Coniferæ Shrubs, handsome specimen Coniferæ, a splendid assortment of Ornamental and Forest Trees, fine Fruit Trees, Hardy Climbing Plants, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Consignment from Ghent, for unreserved Sale of 300 CAMELLIAS and 500 Indian AZALEAS, all named, and well set with bloom-buds; 200 FICUS ELASTICA, 200 AZALEA MOLLIS, PALMS, and other plants; winter-flowering Greenhouse Plants, 400 lots of Dutch Flower Roots and other Bulbs. In lots to suit the Trade and Private Buyers.

MESSRS. PROTHEROE AND MORRIS will SELL the above at the Mart, Tokenhouse Yard, E.C., on FRIDAY, October 29.

Catalogues had at the Mart, and 98, Gracechurch Street, E.C.

Linton, near Maidstone.—Great Clearance Sale of ROSES.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. Grant (Rose Grower) to SELL by AUCTION, on the Premises, Wester Hill, Linton, near Maidstone, on TUESDAY, November 2, at half-past 12 o'clock precisely, about 16,000 Standard and Half-standard ROSES, consisting of the choicest and most approved kinds of H.P., Noisette, Tea and Bourbon varieties; also 5000 Dwarf Roses on the Manetti stock, in variety. Lotted to suit the Trade and Private Buyers.

May be viewed. Catalogues had on the Premises; and of the Auctioneers, Land Agents, and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

Woking.—Entirely Without Reserve.

IMPORTANT CLEARANCE SALE OF NURSERY STOCK, IMPLEMENTS, and EFFECTS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, Trigg's Nursery, Woking, 10 minutes' walk from the Station, on WEDNESDAY, November 3, and following days, the whole of the well-grown NURSERY STOCK, including 10,000 Green Hollies, 12,000 Fruit Trees, 14,000 Crab and other Stocks, 15,000 bedded Quick, 85,000 Ornamental and Forest Trees, 8000 Yews, and other Stock; also the FARMING IMPLEMENTS, CART MARE, and EFFECTS.

Further particulars next week. Catalogues of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. THE VALUABLE ESTATE, part Copyhold and part Freehold, having an important frontage to the main road, to be SOLD by PRIVATE CONTRACT. Particulars and terms of the Auctioneers.

Leicester.

GREAT CLEARANCE SALE, the Land being required by the Great Northern Railway for the extension of their line.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Harrison & Sons to SELL by AUCTION, without the slightest reserve, early in NOVEMBER, on the Premises, The Willows Nurseries, Leicester, a Large and Extensive Assortment of FRUIT and ORNAMENTAL TREES, Evergreen and other SHRUBS, well grown and in fine condition for removal, consisting of upwards of 60,000 Fruit Trees, 12,000 Aucuba japonica, 12,000 Laurels, 5000 Pines, 30,000 Privets, 10,000 Horse Chestnuts, 2000 Elms, 10,000 Limes, 10,000 Poplars, &c.

Further particulars in future Advertisements. Catalogues had, when ready, of Messrs. Harrison & Sons, Nurserymen, Leicester; and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY, during October, at half-past 12 o'clock precisely each day, consignments of DUTCH BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

Consignment of Plants from Ghent—Bulbs from HOLLAND.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, October 20, at half-past 12 o'clock precisely, First-class CAMELLIAS, AZALEAS, and other Plants from Ghent; PICOTÉES and PINKS, HERBACEOUS PLANTS, LILIES of the VALLEY, and a great variety of BULBS from Holland.

On view the morning of Sale, and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 19, at half-past 12 o'clock precisely, a Collection of ESTABLISHED ORCHIDS, in fine health, including some fine Phalaenopsis, Masdevallias, Odontoglossums, Dendrobiums, &c.; Importation of CYPRIPEDIUM LOWII, a quantity of Plants of CATTLEYA MARGINATA, ONCIDIUM DASYLEPSIS, LÆLIA DORMANIANA, and ONCIDIUM CRISPUM, all in healthy growing state; some fine Bulbs of LÆLIA TIGRINUM Bore-peno, LILIU LANCIFOLIUM; and a Consignment of HYACINTHS, TULIPS, CROCUSES, and other Bulbs from Holland, in Lots to suit all buyers; a Consignment of Rare Bulbs from Germany, and 100 good Bulbs of CHIONODOXA LUCILÆ (Boiss.).

On view the morning of Sale, and Catalogues had.

Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, October 23, at half-past 12 o'clock precisely, a Consignment of 600 choice CAMELLIAS, Indian AZALEAS, and other Plants from Ghent; CARNATIONS, PICOTÉES and PINKS; a quantity of Hardy Herbaceous BORDER PLANTS, &c.; and a choice assortment of First-class Double and Single HYACINTHS, for Glasses, Pots and Borders; TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULUS, SCILLAS, SNOWDROPS, Roman HYACINTHS, and other BULBS from well-known farms in Holland, in Lots to suit all buyers.

May be viewed the morning of Sale, and Catalogues had.

Bedford

IMPORTANT SALE OF VALUABLE and WELL-GROWN NURSERY STOCK, the land being required for building purposes, the property of Mr. Sheppard.

MR. H. PULLEY will SELL by AUCTION, on the premises of Mr. Sheppard, the Nurseries, Union Street, Bedford, on TUESDAY, October 19, and two following days, at 12 o'clock precisely each day, the valuable NURSERY STOCK, consisting of upwards of 9000 Evergreen and Deciduous Flowering Shrubs, 2000 large Handsworth and variegated Box Trees, 1500 Aucuba japonica, and some male varieties; 300 Standard and Ornamental Trees, 500 Climbing and other Roses, 2400 Raspberry Canes, 8000 Strawberry Plants, 200 Fruit Trees, 600 Plants in Pots, consisting of Chrysanthemums, Ferns, and Pelargoniums; a quantity of Hardy Phloxes, Roots of Pampas-grass, &c.

May be viewed one week prior to Sale. Catalogues may be had on the Premises, and of the Auctioneer, Bedford.

At the Gardens, Oakwood, Crayford.

Choice FERNS, ORCHIDS, and WINTER-FLOWERING PLANTS.

MR. DANN has received instructions to SELL by AUCTION, on WEDNESDAY, October 20, at 12 for 11 o'clock, on the Premises, 140 Adiantum and other choice Ferns, 62 Orchids, 40 Azaleas, 12 Camellias, 600 Solanums, 400 Dracenas, 120 Crotons, 12 Eucharis, 100 Primulas, 800 Chrysanthemums, 36 Callas, 84 Poinsettias, 300 Strawberry Plants, Bouvardias, Hoyas, Callas, Isoplexis, and numerous other Plants for Winter Decoration. Also a stump of Meadow HAY.

May be viewed the day previous and morning of Sale. Catalogues may be had of Mr. A. TOMLIN, at the Gardens, Oakwood, and of the Auctioneer and Estate Agent, Bexley.

The Dorset Nurseries, Blandford, Close to the Railway Station.

MESSRS. PARK AND CROOM have received instructions from the Executors of the late Mr. H. Blandford, who are reducing their stock, to SELL by AUCTION, on the Premises, the Nursery, at the top of Salisbury Street, Blandford, at 10 o'clock precisely (Refreshments at 10 o'clock), on WEDNESDAY, November 3, and following day, if necessary, an immense quantity of Ornamental TREES and SHRUBS, including Cedrus Deodara, Araucarias, Cupressus (of sorts), Golden Yews, Thuja aurea and elegantissima, Cryptomeria, Thuopsis, Acer, &c.; about 1000 splendid Dwarf ROSES, named; 3000 Common LAURELS, 200 choice named FERNS, Standard HORSE CHESTNUTS, LIMES, POPLARS, for Avenues, &c.; some fine SPRUCE FIRS, BEECH, and other NURSERY STOCK too numerous to mention.

Catalogues to be obtained of the Auctioneers, Blandford.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Landscape Gardening.

To TOWN COUNCILS, ESTATE and HOTEL COMPANIES, LAND PROPRIETORS, ARCHITECTS, &c.

R. H. VERTEGANS, F.R.H.S., in competition with twenty-six leading Landscape Gardeners from all parts of the kingdom.

WON THE PREMIER PRIZE OF £50, offered by the Wolverhampton Town Council, for the best Design for Converting Fifty Acres of the old Racecourse into a Public Park and Recreation Ground; and was also commissioned to Carry-out the Design, which he has satisfactorily completed within the short space of twelve months.

R. H. V. confidently offers his services to Lay-out Parks, Cemeteries, Ornamental Grounds, Gardens of all sizes, &c., in any part of the kingdom, and feels satisfied that he can meet the requirements of all who may honour him with commissions. Designs adapted to the varied requirements of Town and Country Houses and Mansions furnished promptly on application. R. H. V. has extensive Nurseries, where he grows every description of Coniferous and other Evergreen and Deciduous Trees and Shrubs, which experience has proved will thrive in the Midland Counties; all of which, being periodically transplanted, are ready for removal whenever planting is practicable. From this select and varied Stock he is always able to supply suitable Plants in robust health for Ornamental Planting of all descriptions. The Nursery Stock also includes Roses, Fruit Trees, Spring Bedding Plants, and Stove and Greenhouse Plants, Dutch Flower Roots, Garden Seeds, and all kinds of Garden requisites kept in Stock. Chad Valley Nurseries, Edgbaston, Birmingham.

Specially Cheap Offer of

FINE SPECIMEN CONIFERS, &c.—Splendid specimen Thuopsis dolabrata, borealis, aurea; Cupressus, Austrian Pine, and about 1000 other Conifers, &c., from 4 to 5 feet. Choice Dwarf ROSES, sample dozen 4s. 6d. 200,000 fine transplanted QUICKS, from 12s. 6d. to 30s. per 1000, FINE SPRUCE FIR, 2 to 4 feet.

W. GROVE, St. Owen's Nursery, Hereford.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—White Garden LILIES, 12s. 6d. per 100; Winter ACANTHUS, 12s. 6d. per 1000; ANEMONE FULGENS, 16s. per 100; single French ANEMONES, 30s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to SANDER AND CO., Seed Growers, St. Albans.

NATURAL GRASSES.—The Subscriber has just completed his purchases of Natural Grasses in the Irish Markets. The Crested Dogstail, Foxtail, and Cockfoot, &c., are of fine quality. Samples and prices on application.

P. EGAN, 80, North King Street, Dublin.

THE MOST SUPERB ROSES

that money can buy.

Descriptive Price List on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWs, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

Golden, many thousands, 3, 4, 5 to 10 feet high.

Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

laurifolia, myrtifolia, Scottica, Hodgson's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

Golden Queen, 4, 5, 6 to 10 feet high.

Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

ARGENTEA, 4 and 5 feet.

LIBOCEDRUS DECURENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.

THUOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 4, 5 and 6 feet high.

SEMPER-AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

To Estate Agents, Planters, and Others.

In consequence of Leases expiring on a large portion of the Nursery Grounds, and also bad health of the Proprietor,

T. L. MAYOS wishes to effect a thorough

CLEARANCE of his valuable STOCK, at greatly reduced prices, consisting of a choice and varied collection of CONIFEROUS, extra strong DECIDUOUS and EVER-GREEN TREES and SHRUBS, a grand lot of Standard and Trained FRUIT TREES, &c., all of which have been recently transplanted; also an immense stock of GREENHOUSE, WINTER and SPRING BEDDING PLANTS.

Descriptive LIST free on application.

Highfield Nurseries, Hereford.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are now prepared to

make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.

Seed Growing Establishment, Wisbech.

ONE HUNDRED THOUSAND HARDY

HEATHS, in 42 varieties, at 4s. per dozen, 25s. per 100, or £20 per 1000. This is now a proper time to plant these fine plants, which are suitable for covering mounds or banks, or for rockwork. Fine plants can be ensured.

JAMES SMITH, Darley Dale Nurseries, near Matlock.

100,000 Raspberry Canes.

CARTER'S PROLIFIC and NORTHUM-

BERLAND FILLBASKET. For price, &c., apply early to C. BLUNDELL, Jun., Halstead, near Sevenoaks, Kent.

Raspberry Canes.

MR. R. BATH begs to announce he is now

booking Orders for his famous "FASTOLF" CANES, which will be ready for delivery in a few weeks, at 4s. per 100. Cheque or P.O.O. with order.

Seakale—Seakale for Forcing, Splendid Large Roots.

NONE TO EXCEL.

ALFRED ATWOOD, MARKET GARDENER,

having Removed to 12, Chaldon Road, Fulham Fields, S.W., begs to thank his numerous customers for their many years' patronage, and at the same time most respectfully to state that he is now prepared to take orders for SEAKALE ROOTS, which will be ready to send out in a few days, at £5 per 1000, and 2s. packing; any quantity under 500, 12s. per 100, and 1s. packing. Terms Cash with order. Cheques crossed London and County Bank; Post-office Orders payable at Walham Green, Fulham, S.W.



BY APPOINTMENT TO

H.R.H. THE PRINCE OF WALES, K.G.



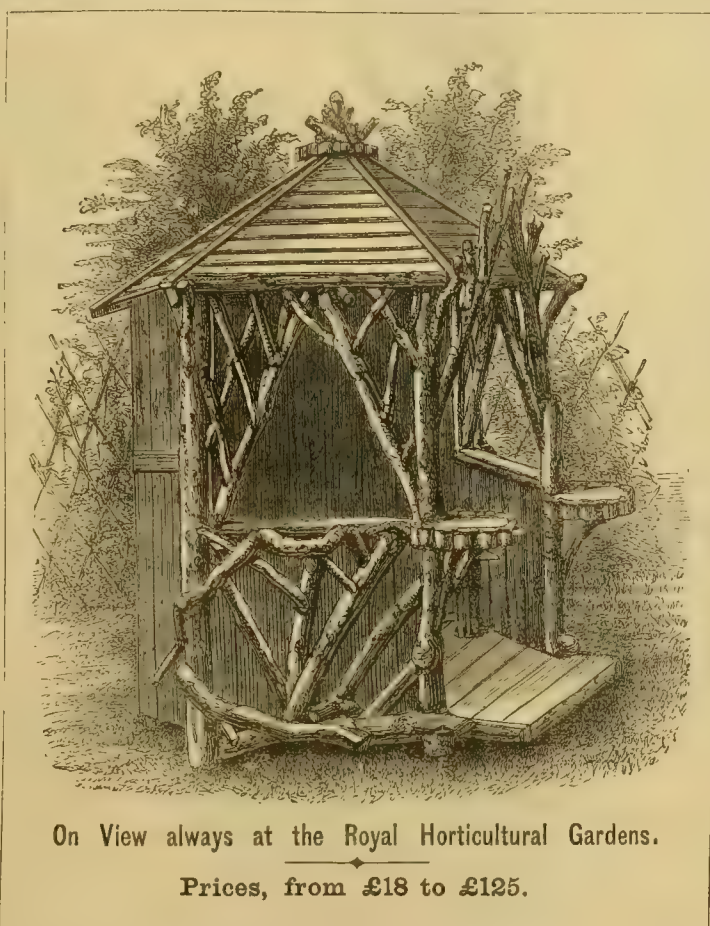
J. CAVEN FOX, F.R.H.S., RUSTIC SUMMER-HOUSE BUILDER,

RUSTIC BOAT HOUSES, BRIDGES, SEATS, AND GENERAL
HORTICULTURAL DECORATIONS.

Manager of the Permanent Exhibition, Royal Horticultural Gardens, South Kensington, London.

Prize Medal,
Vienna,
1873.

Prize Medal,
Paris,
1878.



Prize Medal,
Royal
Horticultural
Society,
1880.

On View always at the Royal Horticultural Gardens.

Prices, from £18 to £125.

THE ROYAL HORTICULTURAL SOCIETY'S GREAT SHOW 1880,
JUNE 8, 9, 10, & 11.

OPINIONS OF THE PRESS.

"Several good examples of garden construction were shown in this open part of the exhibition; and from among them should be specially singled out the model of the Rustic Cottage, built for the Prince of Wales in the style, although in miniature, of the pavilion of the Department of Woods and Forests, which was so conspicuous an ornament of the Trocadéro Hill in 1878. A Cottage exactly similar has been placed at Sandringham; and the maker, Mr. Caven Fox, who has now received his patent of appointment as constructor of this kind of building to His Royal Highness, has also supplied a Summer House and Alcoves for Marlborough House."—*The Times*, June 9, 1880.

"Messrs. Foster & Pearson were awarded a Prize for the Greenhouse with Span-roof which they showed, while another Silver Medal

was taken by Mr. J. Caven Fox, who has recently been appointed Manufacturer of Rustic Summer Houses to the Prince of Wales, and who showed, amongst the many prettily-designed wooden structures, *fac similes* of the two large ones which he has had the honour of supplying to His Royal Highness at Sandringham."—*The Morning Post*, June 9, 1880.

"Outside the tents a large and attractive display of Rustic Summer Houses, by which Mr. J. Caven Fox has taken a Silver Flora Medal, is especially noticeable as including one that has been designed for the Prince of Wales, the exhibitor having received the Royal Warrant for Decorating the Gardens of Marlborough House and Sandringham with this quaintly ornamental and convenient class of art-industry."—*The Daily Telegraph*, June 9, 1880.

J. CAVEN FOX, ROYAL HORTICULTURAL GARDENS, SOUTH KENSINGTON, LONDON, S.W.

ISAAC DAVIES has the following to offer, in large quantities, at reduced prices:—
AZALEA MOLLIS, Seedlings, raised from the best named varieties, each variety kept distinct, twice transplanted, 3 to 5 inches high, 5 to 10 shoots, 25s. per 100, £10 per 1000.
 „ **FONTICA**, transplanted, 8 to 12 inches, 16s. per 100; 15 to 18 inches, bushy, a portion with buds, 25s. per 100; fine bushy plants, 2 feet high, with buds, 9s. per doz.
RHODODENDRONS, hybrid Seedlings, raised from the best varieties, and which can be supplied from various crosses to give variety of colours; strong bushes, 2½ to 3 feet, one-third in each dozen supplied with buds, 18s. per dozen; 3 to 4 feet, 24s. per dozen.
 „ **pictum**, white; roseum superbum, rose; Beatrice, light with dark spots, very bushy plants from layers, 2 feet high, a few with buds, 12s. per dozen.
ANDROMEDA FLORIBUNDA, fine bushy plants, 12 to 18 inches high, 9s., 12s. and 15s. per dozen.
SKIMMIA JAPONICA, 12 inches high, covered with flower-buds, 8s. per dozen.
POPLAR, Golden-leaved, extra transplanted, 5 to 6 feet, 18s. to 24s. per dozen.
BIRCH, Purple-leaved, extra transplanted, 1½ to 3 feet, 2s. to 3s. 6d. each.
AZALEAS, Greenhouse, fine bushy plants, well budded, 12s. per dozen.
LILIUM AURATUM, home-grown flowering bulbs, 9s. per dozen, 70s. per 1000.
 Terms cash, or reference from unknown correspondents.
 Brook Lane Nursery, Ormskirk, Lancashire.

FLOWERING SHRUBS in great variety, such as **HYDRANGEAS**, **LILACS**, **DEUTZIAS**, **SPIRÆAS**, **CYTISUS**, **BROOM**, **PRUS**, **BERBERIS**, **Double CHERRY**, **Scarlet HAWTHORNS**, &c., 8s. per dozen, 50s. per 100.
 Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Note Prices.
FOR AUTUMN PLANTING.
CABBAGE PLANTS Warranted free from Club-root.

Early Enfield Market	Wheel's Imperial
Early Nonpareil	Robinson's Champion
Early (Dwarf) York	Robinson's Drumhead
Early Battersea	Imperial Oxheart
Sugarloaf	Early Rainham
Thousand-head	Red Pickling
East Ham	

At 9s. per 1000.
LETTUCE PLANTS.—Hardy Hammersmith, Hicks' Hardy White Cos, Giant Brown Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.
 Testimonials and samples on application.
EDWARD LEIGH, Wrotham Farm, Dunsford, Godalming, N.B.—Above Plants are from Messrs. Gibbs' Seed, and Purchasers may depend on good Plants, and true to name.
 E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford. Extra Plants to compensate Carriage.

A B C Bulb Guide for 1880.
THOMAS S. WARE will have much pleasure in posting to all applicants the above new, extensive, and most useful CATALOGUE, which contains complete collections of Hyacinths, Crocus, Tulips, Lilliums, Narcissus, Gladioli, &c.; Climbing Plants, Bamboos, Aquatics, &c.; also a selection of Hardy Perennials adapted for Autumn Planting.
 Hale Farm Nurseries, Tottenham, London.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNs for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNs," free on application.

Azaleas, Camellias, Palms, &c.
A. D. D'HAENE, NURSEYMAN, Ghent, Belgium.—Special LIST, with full particulars, now ready. Sent gratis and post-free on application.

STRAWBERRY PLANTS, in small pots for Planting, and in 6-inch pots for Forcing. **FRANCIS R. KINGHORN** has a splendid lot of these. Price and LIST of sorts on application.
 Sheen Nurseries, Richmond, Surrey.

STRAWBERRIES.
 Strong Roots for Fruiting next year, 4s. per 100.
 Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade Only.
DOUBLE FRENCH RANUNCULUS.
LEONARD ROOZEN AND SONS' superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)
LEONARD ROOZEN AND SONS, Bulb Growers, Overveen, near Haarlem, Holland.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
 Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Seakale—Seakale.
RHUBARB and **ASPARAGUS** for Forcing. The best house in the Trade. Also **TUNCH BULBS** and **FLOWER ROOTS.**

H. THORNTON AND CO. (late A. Dancer), Nurserymen and Seedsmen, Fulham, London, S.W. **HYACINTHS**, **TULIPS**, **CROCUS**, and other **BULBS** of the very best quality. Price CATALOGUES free on application.
 N.B. We make the Growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can possibly be procured in the Trade.
 To insure their being supplied, we beg that our Customers may give their orders early, to prevent disappointment, as we are continually receiving orders from all parts, which will be strictly executed in rotation.
 Best **MILLTRACK MUSHROOM SPAWN.**
MATS, very good for covering Mushroom Beds, 25s. per 100.
 Dancer's Nurseries, Fulham, S.W.

WEBB'S CHOICE COLLECTIONS OF HYACINTHS, CROCUS, TULIPS, &c.



For Window Boxes and Greenhouse Decoration.

10s. 6d. to 42s. each.

For Growing in Pots, Glasses, Vases, &c.,

10s. 6d. to 105s. each.

For Spring Flowering, Outdoor and Open Border Decoration.

10s. 6d. to 105s. each.

5 per cent. discount for cash

Orders of 20s. value Carriage Free.

FOR FULL PARTICULARS SEE

WEBB'S AUTUMN CATALOGUE,
 Gratis and Post Free.

THE QUEEN'S SEEDSMEN,

WORDSLEY, STOURBRIDGE.

GRAPE VINES AND ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, and warranted free from Phylloxera, Oidium, and all Disease. Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. **ORCHARD-HOUSE TREES**, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.
 Descriptive Price LIST for 1d. stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

PRIMULAS and CINERARIAS, prize strain, strong plants, 1s. 6d. per dozen, free by post.
J. GEO. HILL (late Scott), The Royal Seed Stores, Yeovil.

Autumn, 1880.
WOOD AND INGRAM'S abridged Trade LIST of Fruit Trees, Forest Trees, Ornamental Trees and Shrubs, Roses, and other Nursery Stock, is now ready, and will be forwarded (to the Trade only), on application, The Nurseries, Huntingdon.

OSBORN AND SONS beg to announce that they have now ready for distribution a Supplementary CATALOGUE of Plants for Forcing and Winter Decoration. Hardy Trees and Shrubs (at low prices), Roses, &c., post-free on application.
 The Fulham Nurseries, London, S.W.

To the Trade and Large Buyers.
EWING AND CO. offer large quantities of the following, viz., **BLACK CURRANT BUSHES**, **NUT AND FILBERT BUSHES**; **ELMS** of many sorts, large and small trees; **POPLARS**, ditto; **RED-TWIGGED LIMES**, **WILLOWS**, and **HORSE CHESTNUTS**, large and small trees, **MYROBELLA** (**PRUNUS MYROBALANA**), for fencing, &c.
 The Royal Norfolk Nurseries, Eaton, near Norwich.

Dutch Bulbs.
C. G. TUBERGEN, Haarlem, Holland, begs to announce that his Wholesale CATALOGUE of Hyacinths, Tulips, Lilies, &c., is ready, and can be had post-free on application to
 Messrs. **R. SILBERRAD AND SON**, 25, Savage Gardens, Crutched Friars, London, E.C.

TO BE SOLD, in consequence of owner removing, several specimen plants (some quite unique): **MASDEVALLIA MACRURA**, 7 breaks, 35 leaves; **PANDANUS VEITCHII**, 12 feet through; **RHATHURUM CRYSTALLINUM**, 28 leaves (fine variety); **RHAPHIS FLABELLIFORMIS**, 11 stems; **ALOPHILA AUSTRALIS**, 2 feet stem; **LIVISTONA ROTUNDFOLIA**, 15 leaves; **COCOS NUCIFERA**, 12 leaves; **CYATHEA DEALBATA**, 4½ feet stem; **DAVALLIA BULLATA**, 5 feet through; **DAVALLIA CANARIENSIS**, 4½ feet through; **PHYLLITENIDIUM LINDENI** (large).—Apply to **GARDENER** Harberton, Hornsey Lane N.

STRAWBERRIES IN POTS.

Crop at once.
 Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
H. CANNELL, Swanley, Kent.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—**J. E. ALDERSON**, Bell Farm, Hershaw, near Walton-on-Thames, Surrey.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. **MANUAL ON STRAWBERRY CULTURE**, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

To the Trade.
GREEN HOLLIES.—1-yr. Seedlings, fine; also 2-yr. bedded Hollies, healthy good rooted stuff, 4 to 9 inches. Price and terms on application to
C. WHITEHOUSE, Brereton Nurseries, Rugeley.

Fruiting Trees of APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds. Priced LIST on application to
J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

Special Cash Offer
TO THE TRADE.—Spruce Fir, Quicks, Oval-leaved Privet, Hazel, Limes. Maiden Apples and Plums, Dwarf-trained Fruiting Pears, Plums, Cherries, and Apricots; Standard Plums and Cherries; Gooseberries, Currants, Strawberries, Medlars, Nuts, and Filberts, Globe Artichokes. Special low prices on application to
J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

To the Trade.
JOHN PERKINS AND SON beg to call attention to their large Stock of the following, the whole of which are good plants and well rooted:—
CEDRUS DEODARA, 3 to 4, and 4 to 5 feet.
HOLLY, Green, 1½ to 2, 2 to 2½, and 2½ to 3 feet.
LAURELS, Common, 1½ to 2, 2 to 2½, and 2½ to 3 feet.
 Portugal, 1½ to 2, 2 to 2½, and 2½ to 4 feet.
PICEA NORMANIANA, 3 to 4, and 4 to 6 feet.
THUJA AUREA, 1 to 1½ foot, and 1½ to 2 feet.
WELLINGTONIA GIGANTEA, 2 to 2½, and 2½ to 3 feet.
YEWs, English, 3 to 4, and 4 to 5 feet.
 Wholesale CATALOGUES on application.
 52, Market Square, Northampton.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SPRUCE FIRS.—100,000 for Sale, cheap, all sizes. Prices and samples on application to
J. GEO. HILL, The Royal Nurseries, Merriott, Somerset.

A. M. C. JONGKINDT CONINCK begs to offer a large stock of **VERY SOUND, HOME-GROWN LILIUM AURATUM**.
 Prices on application.
 Dedemsvaart, near Zwolle, Netherlands.

Blooming Rhododendrons.
H. LANE AND SON, Nurseries, Berkhamstead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.
JAMES DICKSON & SONS, Newton Nurseries, Chester.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Flowers for Cutting.
PANCRATIUM ROTATUM.—A most useful plant for cutting for bouquets, or any other decoration. It produces snowy-white flowers, in clusters of nine to twelve, on stiff, erect scapes, deliciously fragrant and extremely elegant. Two guineas per dozen.
PANCRATIUM AMENUM.—White flowers, very useful for cutting, and deliciously fragrant. Two guineas per dozen.
PANCRATIUM FRAGRANS.—White and fragrant. Not only good for cutting, but one of the handsomest flowering plants known. Four guineas per dozen.
WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quicks in every yard.
 Strong **HOLLY**, 9 to 12 inches high, 12s. per 100.
 Strong **HAWTHORN QUICK**, 25s. to 30s. per 1000.
RICHARD SMITH AND CO., Nurserymen, Worcester.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Enfield Market and Rainham. Apply to **Mr. T. DAVIES**, Tangley, near Guildford.

STRAWBERRIES
 The best sorts for Fruiting next year.
V. H. DE THURY. } Strong plants, all well rooted,
SIR JOSEPH PAXTON. } in small pots, prepared for
 } forcing, 10s. per 100.
 Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1000. Package free. Extra plants for carriage. Cash from unknown correspondents.
H. J. HARDY, F.R.H.S., Stour Valley Seed Grounds, Bures Suffolk.



J. J. THOMAS & CO.

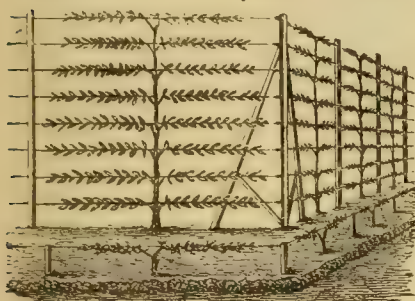
PARIS EXHIBITION, 1878,
HIGHEST AWARD, GOLD MEDAL,
For Wire applied to Horticultural Purposes.



MANUFACTURERS OF GALVANISED WROUGHT-IRON

FITTINGS FOR WIRING WALLS AND ERECTING TRELLISES FOR THE PURPOSE OF TRAINING FRUIT TREES.

Illustration of Espalier Trellis.

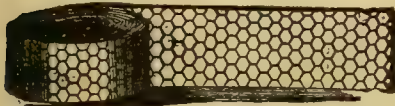


The arrangement of these Trainers is much improved, and is now rendered so simple that they can be readily fixed by inexperienced hands. The bases of the terminating and intermediate standards are of iron, and require neither wood nor stone to attach them to. The wires are usually placed about 8 inches apart.

Illustrated PRICE LISTS, with full particulars of Wall Wiring and Fittings for Espalier Trainers, post-free on application.

THOMAS' GALVANISED WIRE NETTING

By Improved Machinery. Superior Quality.
REDUCED PRICES.



Prices per Lineal Yard, 24 inches wide:—

Mesh.	Light.	Medium.	Strong.	Ex. Strong
s. d.	s. d.	s. d.	s. d.	s. d.
2 inches	0 2½	0 3¼	0 4	0 5
1½ inch	0 3	0 3¾	0 4½	0 5½
1¼ inch	0 3½	0 4½	0 5½	0 7
1½ inch	0 5½	0 7	0 9	1 0
1 inch	0 7	0 8½	0 11	1 3
¾ inch	0 9	0 11	1 2	1 6

Usual widths kept in stock, 12, 18, 24, 30, 36, 48 inches.
2 inch Mesh kept in stock 72 inches wide. This will be found very convenient for erecting Poultry Yards.

All Widths Charged at Proportionate Prices.

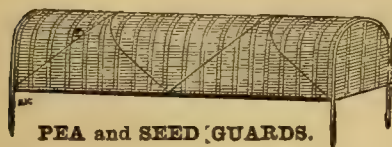
Special Quotations for Large Orders.

SOFT GALVANISED TYING WIRE, 6d. per gross.

CUTTING NIPPERS, 1s. 3d. per pair, very useful for Cutting Wire Netting, &c.

GALVANISED STAPLES, ¾-inch long, 4d. per gross; 1 inch long, 6d. per gross.

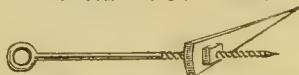
NETTING in quantities of 100 yards subject to 10 per cent. Discount; quantities of 300 yards and upwards, 15 per cent. Discount, for prompt cash only.



PEA and SEED GUARDS.

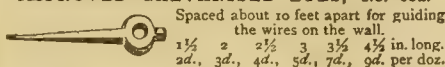
REDUCED PRICES of MATERIALS.

GALVANISED STRAINING BOLT, No. 635.
FOR TIGHTENING THE WIRES.



One required for each line of wire.
Price 4s. per dozen, with Holdfasts complete.

IMPROVED GALVANISED EYES, No. 631.



Spaced about 10 feet apart for guiding the wires on the wall.

1½ 2 2½ 3 3½ 4½ in. long.
2d., 3d., 4d., 5d., 7d., 9d. per doz.

IMPROVED GALVANISED TERMINAL HOLDFAST, No. 632.



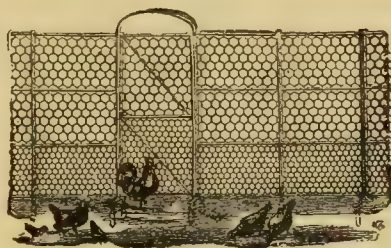
5 inches long. Price 2s. per dozen.

These Eyes and Holdfasts are very much superior to those generally in use; being made with a shoulder, they do not break when being driven into the hardest wall.

STRONGLY RECOMMENDED.

THOMAS' New and Improved Poultry Fencing

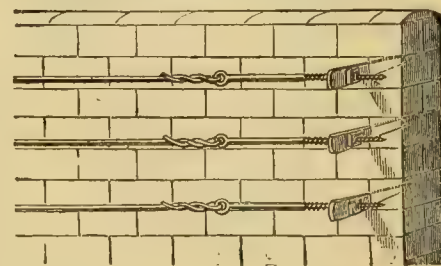
No. 691.
REDUCED PRICES.



This is a much stronger description of fencing than the lattice panels with loose standards, and is more portable, being made in lengths 6 feet long with double pronged feet. A run or pen can be formed of any length or shape without extra cost; it is easily fixed or removed; the gate can be placed in any part of the fence.

6 feet high, including all necessary Bolts and Nuts .. 4s. 6d. per yard.
Doorway complete, 2 feet wide, including Standards and Arched Stay .. 10s. 6d. each.
Angle-iron Pillars for Corners, with Cast Ornaments .. 2s. each.

Galvanised Fittings for Wiring Walls. New and Improved System.

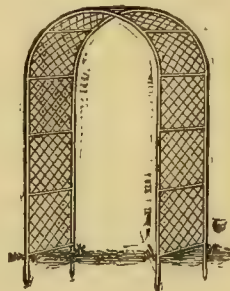


The following Prices give the total cost of each line of Wire, including Holdfasts, Straining Bolts, Intermediate Guiding Eyes, 10 feet apart, and specially prepared Galvanised Wire.

Length of Wall.	No 14 Gauge Wire.	No. 13 Gauge Wire.
	s. d.	s. d.
20 yards	1 1	1 3
40 "	1 9	2 0
60 "	2 3	2 8
80 "	2 10	3 5
100 "	3 4	4 1

THOMAS' GARDEN ARCHWAYS.

REDUCED PRICES.



No. 51.

Height out of ground.	Span.	Wide.	Painted.	Galvanised
ft. in.	ft. in.	ft. in.	s. d.	s. d.
7 0	4 0	1 0	8 6	10 6
7 0	4 0	1 6	12 0	15 0
7 6	4 6	1 0	10 0	12 6
7 6	4 6	1 6	14 0	16 6
8 0	5 0	1 6	16 0	19 0
8 0	5 0	2 0	22 0	27 6

Larger sizes at proportionate prices.

THOMAS' IMPROVED PEA AND SEED GUARDS.

Great Success. Reduced Prices. Superior Quality. Galvanised after made.

New Pattern with Diagonal Stays. No. 76.

3 feet long, 6 inches wide, 6 inches high. Reduced Price, 7s. 8d. per dozen.

Two end pieces included with each dozen. This pattern being smaller in the mesh than the ordinary diamond pattern, is proof against the smallest birds.

Having a large Stock, Orders can be executed on receipt.

Five per Cent. discount off the above prices for prompt Cash with Order, except Wire Netting, which is subject to special discount, as above.

Illustrated CATALOGUES of Horticultural Requisites on application.

J. J. THOMAS & CO., 87, QUEEN VICTORIA STREET, E.C.
Manufactory: Paddington Iron and Wire Works, 362, Edgware Road, London, W.

BAY LAURELS.
ORMISTON AND RENWICK,
 Nurserymen, Melrose, N.B.,
 OFFER A SPECIAL LOT OF BAY LAURELS,
 In sizes suitable for Underwood and Ornamental
 Shrubbery.
 Prices on application.



NEW CATALOGUE for AUTUMN, 1880,
 OF THE BEST
PLANTS, TREES, BULBS, ROSES, &c.,
 REQUIRED FOR
Garden or Conservatory Decoration,
 Post-free.

The prices are much lower than goods of the same first-class quality are usually offered at. Comparison and inspection of stock invited. For names and description see Catalogue.

ALL OUR SELECTION.
BULBS for GARDEN.

The most showy and finest sorts, specially selected for the purpose.

	Per doz.	Per 100.
HYACINTHS, in separate colours	3 0	21 0
ANEMONE, finest mixed	0 6	3 6
CROCUS, ...	1s. 4d.	2 0
RANUNCULUS	0 6	3 0
TULIPS	1 0	7 0

BULBS for CONSERVATORY.

Will produce a beautiful display at about two-thirds of the usual cost.

	Per doz.	Per 100.
HYACINTHS, 12 fine named sorts	5 0	40 0
" 12 extra named sorts ..	7 6	60 0
" Roman	2 6	18 0
ANEMONE, finest named ..	1 0	7 0
CROCUS, finest named ..	1s. 6d.	2 6
RANUNCULUS	0 6	3 0
TULIPS, finest named ..	1s. to 2 6	7 0

For prices and description of Dutch, French, and Miscellaneous Bulbs, in great variety, see Catalogue.

SPRING FLOWERING PLANTS.

About 100,000 now ready of the best and finest plants for the Spring Garden, including the best Show and Fancy Pansies, Violets, the newest and most showy varieties; Daisies, of all colours; Polyanthus, Sweet William, Canterbury Bells, Wall-flowers, Arabis, Aubrietia, Silenes, the finest Double and Single Primroses, Hepaticas, Sweet Violets, Alyssum, Cheiranthus of sorts, Christmas Roses, Iberis, Forget-me-Not, including the new variety "elegantissima," Sedums, Saxifrages, &c. All in good plants, to stand the winter and produce a fine spring display. For prices, &c., see Catalogue.

HARDY FLORISTS' FLOWERS and HERBACEOUS PLANTS.

A stock of many thousands of good plants, in good named varieties, and at low prices, including fine Double Pyrethrums, Potentillas, Delphiniums, Paeonias, Antirrhinums, Phloxes, Pansies, Show and Fancy; Carnations, Picotees, Pinks, fine Polyanthus to name, Double Primroses, and about 500 species and varieties of the finest Herbaceous Plants in cultivation for garden decoration. For List of sorts, prices, &c., see Catalogue.

WINTER-BLOOMING PLANTS for INDOOR.

A large stock of fine, well-grown plants of Bouvardias, Cyclamens, Solanums, Camellias, Azaleas, Ericas, Epacris, Primulas, Cinerarias, &c.; also of the finest plants and roots procurable for forcing, Spirea japonica, Spirea palmata, Lily of the Valley, Dielytra, Deutzia, Azalea mollis, Ghent Azaleas, Rhododendrons set with buds, Kalmias, Andromedas, &c.; a large stock of the best Stove and Greenhouse Plants, in robust health, perfectly clean and very cheap.

DWARF ROSES.—A fine lot of well-grown plants of the leading varieties.

FRUIT TREES.—Apples, Pears, Plums, Cherries, &c., well-grown and splendidly rooted.

STRAWBERRY PLANTS.—A Collection of Sixty Varieties, true to name, good plants and cheap.

CONIFERS, &c.—Pretty pyramidal plants of the best varieties, for winter bedding.

EVERGREEN and DECIDUOUS TREES and SHRUBS.—For prices and all particulars see Catalogue.

WM. OLIBRAN & SON,
 OLDFIELD NURSERY, ALTRINCHAM.

NEW COLEUS :

offered for the first time.

The following are beautiful and distinct kinds, of rich and diversified colours, such as can be strongly recommended:—

ANNIHILATOR, rich dark velvety maroon; the centre of the leaf beautifully rayed with bright magenta-crimson, and the serrated margin tipped with green; a very showy variety.

ATTRACTION, ground colour of the leaf golden-yellow, reticulated and blotched with rosy-crimson; in some leaves the lower half is entirely of a rich rosy-crimson colour; the leaves are narrowly edged with crimson.

BRIGHTNESS, rich bright crimson with slight purplish shade; the leaf is margined with chocolate, and tipped with green on the edge; it is a bright looking and effective kind.

CHAMPION, chocolate colour; the midrib and side-veins marked out with lines of bright magenta-crimson, margined with greenish-yellow and slightly spotted with green; a beautiful variety.

CUPID, the leaves of this variety are of a very light pale green shade with creamy-white centre, which radiates outwards in the course of the veins towards the margin.

DELIGHT, centre of the leaf soft rosy-purple, ornamented with patches of bronzy green between the veins; the margin of the leaf is bronzy-green and the teeth are tipped with bright green.

DIAMOND, ground colour of leaves soft rose with slight violet tint veined with purple, and occasionally blotched with bronzy-green; the margins tipped with yellow.

FIREBALL, intensely bright reddish-crimson; the serrated margin tipped with gold; the centre of the leaf slightly marked with bronze.

ILLUMINATOR, centre of leaf rich rosy-magenta, surrounded with dark velvety bronze colour, and margined with green.

MAGNIFICENT, rich velvety bronze, the whole surface of the leaf attractively veined and blotched with magenta-rose, and the margins tipped with yellowish-green.

NIMROD, the leaves of this showy variety are of a bright green colour, veined with rich magenta-crimson, and marked on each side of the midrib with dark crimson-maroon; the outer part of the leaf is slightly spotted with maroon.

NONSUCH, small green centre blotched with maroon; outer portion of leaf of a rich velvety-crimson colour with chocolate markings; margined with golden-yellow.

SOVEREIGN, rich dark velvety-bronze with feathered centre of magenta-rose; the edges of the leaf tipped with green.

SPANGLE, rich bright amaranth-crimson, with small greenish centre, and bright golden-yellow margin; a rich velvety looking leaf.

SULTANA, a showy variety with foliage of a rich bright velvety crimson colour, shaded with maroon and irregularly blotched with golden-yellow; the margin of the leaf toothed and tipped with greenish-yellow.

Price 3s. 6d. each, or the Collection of Fifteen Varieties for Two Guineas.

WILLIAM BULL, F.L.S. Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

YEWS, splendid this season, from 3½ to 4½ feet, 9s. per 100; also some good ones from 4½ to 6 feet, first-class for hedges, at once, well rooted and furnished.

HOLLIES, Green and Variegated, good young plants; a quantity for Sale.

JOSEPH SPOONER, Goldworth, Woking.

THUJA AUREA, T. ELEGANTISSIMA,

T. SEMPER AUREA, T. ELLWANGERIANA,

JUNIPERUS CHINENSIS, THUJA LOBBII, CUPRESSUS ERECTA VIRIDIS, &c., beautiful round bushes, 12 to 20 inches high, 40s. per 100.

W. JACKSON, Blakedown, near Kidderminster.

Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.

MESSRS. LEVASSSEUR and SON,

NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents,

Messrs. R. SILBERRAD and SON, 25, Savage Gardens, London, E.C.

MATRICARIA INODORA, fl.-pl.—Where

an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this."

Two Cuttings, post-free, for 1s. 2d.

One Plant, post-free, 1s. 6d.

The Home for Flowers, Swanley, Kent.

CAMELLIAS, INDIAN AZALEAS.—A

fine stock of Budded Plants of the above now ready. Also of PALMS, FERNS, Ficus elastica, variegated Aralia Sieboldi, Dracena terminalis, cannaefolia, and others for table and general decoration; Ghent and Mollis AZALEAS, SPIREAS, TUBEROUS BEGONIAS and GLOXINIAS by thousands, &c.; the whole, as usual, at very moderate prices. Special offer on application.

A. VAN GEERT, Continental Nurseries, Ghent, Belgium.

STRAWBERRY RUNNERS.—Twelve

leading varieties, 2s. per 100, or 15s. per 1000. True to name.

J. G. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

ASPARAGUS PLANTS, strong, 1-yr.

Conover's Colossal, from imported seed, 2s. 6d. per 100, 20s. per 1000. Special quotation for large quantities. Discount to the Trade.

8-yr. Giant, for forcing, 8s. per 100; 8-yr. Conover's Colossal, for forcing, 10s. per 100; in any quantity. Package gratis. Cash with order.

CHRISTMAS QUINCEY, Fulney, Spalding.

VIOLAS, PANSIES, HARDY

PERENNIALS, &c.—In consequence of our Nursery Grounds being sold to the new Stechford and Aston Railway Co., we propose to sell our stock in Guvra. Hampers, consisting of Twenty Dozen Spring and Summer Plants in over thirty varieties, including eight dozen Violas and Pansies, and forming a complete permanent Garden Collection, really worth £5. One dozen of Holyhocks or Spirea japonica will be sent to cover carriage with basket gratis. The two best double Daisies, The Bride, pure white, and The Sweep, vermilion-shaded black, 5s. per 100; Viola Blue Bell, 8s. per 100. Everything we have is separately transplanted, not twisted off-shoots.

CATALOGUE gratis.

JOHN PIRIE and CO., Stechford, Birmingham.

DANIELS' CHOICE FLOWER ROOTS.



OUR GUINEA BOX OF Choice Hardy Flower Roots for Outdoor Planting

Contains the following liberal assortment, all in sound picked bulbs, with full Instructions for Cultivation. Case, packing, and carriage free to any Railway Station in England or Wales:—

25	Hyacinths, choice mixed
200	Crocus, in variety
12	Tulips, Rex Rubrorum
12	" La Reine
12	" Double, mixed
12	" Single, mixed
12	" Parrot, mixed
25	Anemones, double, mixed
12	" scarlet
25	" Single, mixed
12	Polyanthus Narcissus, mixed
12	Double White Narcissus
12	Pheasant-eyed Narcissus
6	Campanelle Jonquills
25	Ranunculi, Scarlet Turban
25	" mixed Turban
25	Snowdrops
50	Winter Aconites
12	Spring Iris
2	Triteila uniflora
2	Lilies.

550 Roots in all.

Other Collections for Greenhouse and Conservatory, Window Boxes, &c., 12s. 6d., 21s., 42s., 63s., and 84s.

Beautifully illustrated CATALOGUE post-free on application.

From **R. MORRIS, Esq., Ruabon, April 6, 1880.**—"I am highly pleased with the box of bulbs sent. The Hyacinths and Tulips are really splendid, and quite a show in our neighbourhood."

DANIELS BROS.,

The Royal Norfolk Seed Establishment, Norwich.

DUTCH FLOWER ROOTS.

PAUL & SON,

The Old Nurseries,

CHESHUNT, HERTS,

AND

Departure Platform, Liverpool Street Station,
 Great Eastern Railway.

HYACINTHS, TULIPS, CROCUS, And other Bulbs of Extra Selected Quality.

These Bulbs have been personally selected by the Advertisers, in Holland, this season, and the stock is believed to be unsurpassed by those of any house in the kingdom. The prices are very moderate.

PAUL AND SON'S CHESHUNT COLLECTION OF BULBS for INDOOR CULTURE, 10s. 6d., 21s., and 42s.

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For particulars see **BULB CATALOGUE**, gratis and post-free on application.

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also contains **LISTS of SPECIALITIES in SHRUBS for FORCING**, Descriptive **LISTS of SPRING FLOWERING HARDY PLANTS**, of **CAMELLIAS and AZALEAS and STRAWBERRIES.**

THE OLD NURSERIES, CHESHUNT.

TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

Trade terms on application.

MAIRIS and CO., Weston-in-Gordano, Bristol.

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WM. CUTBUSH & SON'S CATALOGUE

Is now ready. Post-free on application.

HIGHGATE, LONDON, N., or BARNET, HERTS.

LILY OF THE VALLEY.

Fine strong Crowns for forcing, the best quality, as known in use many years, 40s. per 1000; by taking at least 5000, at 38s. per 1000, for cash, carriage free to Hamburg. By taking at least 10,000, and cash with order, carriage free to London. Early orders requested.

ROBERT NEUMANN, Erfurt, Germany.

NEW CATALOGUE for AUTUMN, 1880, post-free, of the finest and cheapest DUTCH, FRENCH, and other FLOWERING BULBS. For prices, see last week's large Advertisement.

SPRING FLOWERING PLANTS, 100,000 fine plants, now ready.

HARDY FLORIST FLOWERS, and the choicest HERBACEOUS PLANTS for Garden Decoration. See CATALOGUE and last week's large Advertisement.

WINTER FLOWERING PLANTS for Indoors. A fine stock of the best sorts, well set with bloom. See CATALOGUE.

PLANTS and ROOTS for forcing, very fine.

DWARF ROSES, well rooted, strong good plants.

FRUIT TREES, STRAWBERRY PLANTS, EVER-GREEN and DECIDUOUS TREES and SHRUBS, &c.

For prices, List of sorts, and descriptions, see CATALOGUE.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.

RICHARD SMITH and CO., Nurserymen, Worcester.

FERNS from Devonshire, Cornwall, and Somerset. Best time to Plant. INSTRUCTION BOOK for Making Rockery, Planting Ferns, &c., with each 5s. order, 14 named varieties, 7s. per 100; Small (post), 3s. for 25. Five Asplenium fontanum, septentrionale, and Holly Fern, 1s. each; the three for 2s. 6d. 1000 varieties British and Exotic Ferns.

CATALOGUE 2d. Established 25 years.

GILL, Lodging-house Keeper, Lynton, Devon.

BULBS—BULBS.



H. CANNELL, F.R.H.S.,

BEGS TO ANNOUNCE THAT HIS

CATALOGUE of BULBS and OTHER SPRING FLOWERS

is now ready, and sent post-free.

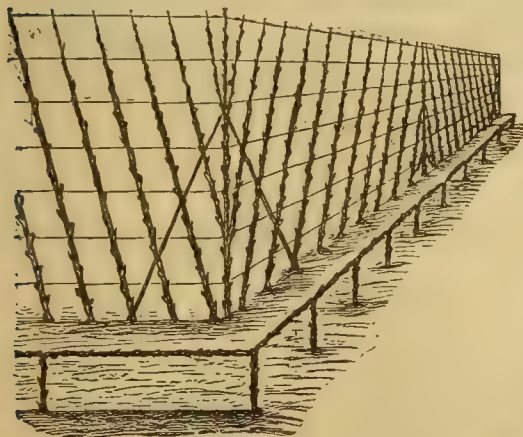
H. C. need hardly say the List is most complete, and only the very best, both in kinds and quality, are offered; and, like all goods from Swanley, they are sure to give satisfaction.

THE HOME FOR FLOWERS, SWANLEY, KENT.

CORDON FRUIT TREES.

J. CHEAL & SONS,

LOWFIELD NURSERIES, CRAWLEY, SUSSEX.



CORDON AS AN ESPALIER AND EDGING.

Have a large stock of **FRUIT TREES** grown expressly for Cordons, under the management of Mr. Henry Shepherd, late of Paxhill Park, Hayward's Heath, Sussex, where he successfully carried out this system of growing Fruits, as shown by the First-class Certificates obtained by him from the Royal Horticultural Society.

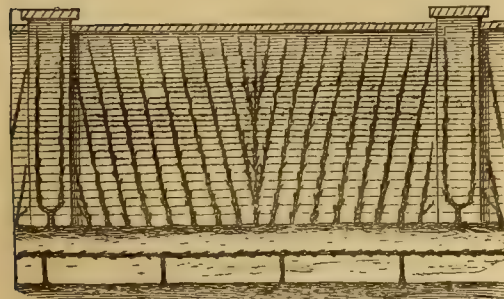
The following is an extract from *The Garden*, of November 8, 1873:—"We have received some of the most superb Apples ever seen in London, from Mr. Shepherd, Gr., Paxhill Park, Hayward's Heath, all of which have been grown on the French Paradise Stock, and the trees which have borne them are described as far surpassing what the most flattering engraving of the French trees might have led us to expect. These Fruits have been pronounced by the best judges in Covent Garden to be the finest Apples ever known to have been grown in England. These have been obtained from Cordons, and, as may be seen, are magnificent results of that system of culture."

An article in the *Gardeners' Chronicle* of September 11, 1880, by Mr. D. T. Fish, gives a full description and several illustrations of his experience of the Cordon system, and is well worthy the attention of all fruit growers.

J. CHEAL & SONS having a fine stock of **CORDON TREES**, to fruit next season, of all the best varieties, are prepared to supply any Orders, to select the varieties most suitable for different soils and localities, and to plant or superintend the proper planting and training of trees in any part of the kingdom.

A Priced and Descriptive CATALOGUE of Fruit Trees, containing illustrations and descriptions of different styles of Training Fruits, also ornamental Trees and Shrubs, Forest Trees, &c., sent post-free on application.

Descriptive CATALOGUE of **DUTCH BULBS**, now ready, post-free on application to



CORDONS FOR WALLS AND EDGING.

J. CHEAL & SONS, LOWFIELD NURSERIES, CRAWLEY, SUSSEX.

DUTCH FLOWER ROOTS.



JAMES VEITCH & SONS,
ROYAL EXOTIC NURSERY,
CHELSEA.

HYACINTHS,
TULIPS, CROCUS,
AND OTHER
BULBS of SUPERIOR QUALITY.

Report of the Royal Horticultural Society's Exhibition, March, 1879:—"There were many large collections of Hyacinths, but Messrs. Veitch's surpassed all the others. A Gold Medal was given for these flowers.—*Vide Times*, March 26.

VEITCH'S COLLECTIONS
OF
BULBS for INDOOR CULTIVATION,
at 10s. 6d., 21s., 42s., and 63s.

VEITCH'S COLLECTIONS
OF
BULBS FOR GROWING IN THE
OPEN GROUND,
at 10s. 6d., 21s., 42s. and 63s.

For particulars see CATALOGUE, gratis and post-free on application.

Messrs. Veitch & Sons, Chelsea, contributed about 120 Hyacinths in superb condition, unquestionably the finest of all those exhibited.—*Vide Journal of Horticulture*, March 25, 1880.

VEITCH'S
"CHELSEA" COLLECTIONS
FOR
Greenhouse, Conservatory,
and Sitting-room,

Containing only the most easily cultivated and attractive sorts of Winter and Spring Flowers,
at 21s., 42s., and 63s.

VEITCH'S HARDY BULBS
FOR MIXED BORDERS,
SHRUBBERIES, &c.

One Thousand Bulbs for One Guinea.

For particulars see CATALOGUE, gratis and post-free on application.

BULBS for SPRING GARDENING,
Large Quantities at Low prices.

J. V. & Sons have pleasure in stating that Her Majesty's Commissioners of Works have for the eleventh successive year accepted their tenders for the supply of Bulbs for the decoration of Hyde Park, Regent's Park, Hampton Court, &c., and J. V. & Sons will be pleased to give Special Quotations where large quantities of Bulbs are required for Spring Gardening.

ROYAL EXOTIC NURSERY,
CHELSEA, S.W.

PARK, STREET,
and AVENUE TREES.
LIMES, 12, 14, 16 to 20 feet.
PLANES, 12, 14, 16 to 20 feet.
CHESTNUTS, Horse, 12 to 16 feet.
Scarlet Horse, 10 to 14 feet.
BEECH, Purple, 10 to 14 feet.
OAKS, Scarlet, 10 to 14 feet.
MAPLE, Norway, 12 to 16 feet.
SYCAMORE, 12 to 15 feet.
ACER DASYCARPUM, 12 to 18 feet.
POPULUS CANADENSIS NOVA, 12 to 18 feet.
ANTHONY WATERER has to offer a very large quantity;
they are all finely-rooted, handsome trees. The larger Planes,
Limes, and Horse Chestnuts, are splendid trees, girding at
4 feet from the ground 8 to 13 inches.
Knap Hill Nursery, Woking, Surrey.



MY PRIMULAS. They are now showing
flower, and of such colours never before seen. Best
rubra and alba, fine plants, showing flower, 3s. 6d. to 5s. per
dozen; smaller, 2s. 6d. per dozen; Seedlings, 1s. 6d. per dozen,
post-free.
CINERARIAS, 2s. 6d. per dozen; Seedlings, 1s. 6d. per
dozen, post free.
CYCLAMEN, flowering plants, 12s. to 24s. per dozen;
smaller, in 60s. 6s. per dozen.
CALCEOLARIAS, in pots, 2s. 6d. per dozen; smaller, post-
free, 1s. 6d. per dozen.
Special prices per 100 and 1000.

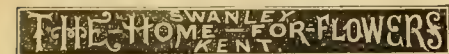
ZONAL PELARGONIUMS, specially
prepared, in 5-inch pots, to produced a blaze of bloom all
the winter, 12s. per dozen, £4 per 100.

Salvias.
ALTHOUGH the older varieties of the
above have been grown and appreciated for autumn and
winter flowering, no idea can be formed of what a splendid
addition the following new kinds make:—Splendens Bruanti,
brilliant scarlet; Betheli, colour rose; Pitcheri, equal in
colour to patens; Hoveyi, purple. Flowering plants, 2s. each;
smaller 1s. Small plants by post of the above, the four for 3s. I
shall have 100-ft. house full of Salvias, which will be a grand sight
all through November and December. Come and see them.

Violet odoratissima (New).
THE KING OF ALL THE SINGLE VARIETIES.
H. CANNELL wishes to announce that the
above is a decided improvement on Victoria Regina
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Special prices for large quantities.

Violets, strong, full of Flower, in Pots.
H. CANNELL begs to announce that he
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"Invigorator," or Food for Plants.
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have been a poor puny plant will put forth flowers that
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New Rose Catalogue for 1880-81,
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NOW READY FOR AUTUMN PLANTING.

W. VIRGO can now supply, in any quantity,
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the following, for spring use, which cannot be equalled for
sorts and growth. Seed from the very best stock:—Early
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Dreadnought. All the above delivered free on rail at 3s. per 1000.
Brown Cos, Hardy Green Cos, and Tom Thumb LETTUCE,
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N.B.—Samples forwarded if required.
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For those who do not know these lovely flowers we would
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they are also exceedingly useful, either in pots or in the
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no skilful cultivation, and is cheap. In mild seasons these
Anemones bloom from early in August till the end of October.
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	Per dozen—s. d.	Each.
WHITE..	{ Clumps taken from the open ground 5 6 0 6	
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20s. value Carriage Free.
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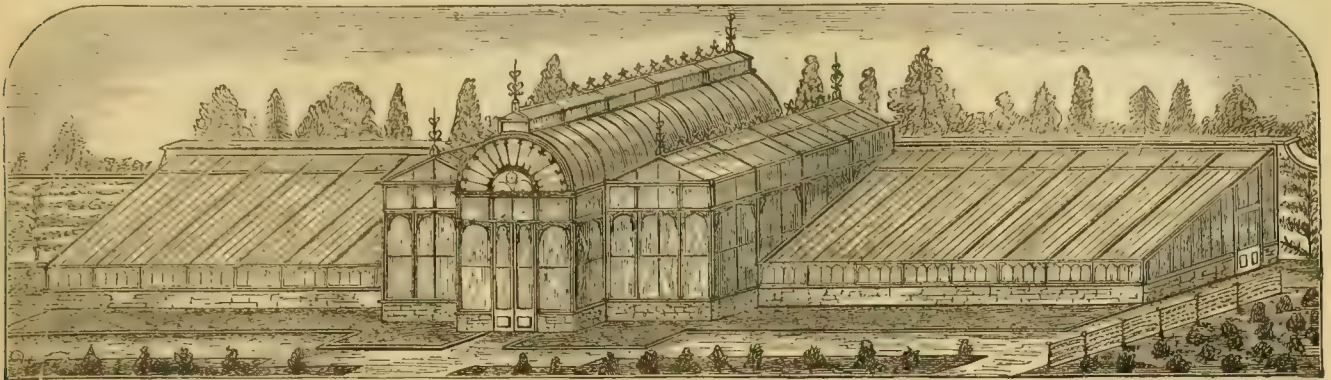
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Peat and compost for choice plants. Fresh gathered SPHAG-
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THE COMPANY having made large purchases from the leading Bulb Gardens of Holland and France, are now prepared to supply HYACINTHS, TULIPS, NARCISSI, CROCUSES, and all other BULBS for Autumn Planting, [at low prices, and with a large discount to Shareholders; Non-shareholders will be treated with on the most liberal terms.

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WITHOUT THE USE OF BENT GLASS,

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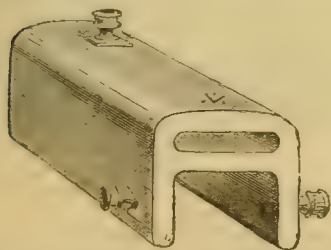
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CAREFULLY SELECTED

COLLECTIONS OF BULBS

FOR

WINTER and SPRING FLOWERING.

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No. 1, containing 2575 Fine Bulbs ..	£5	5	0
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No. 6, containing 757 Fine Bulbs ..	£5	5	0
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"I feel it only just to inform you of the great success of
the Bulbs. They were the admiration of all who saw them."
—J. E. LAWSON, Esq., High Street, Tring.

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IN

Distinct Shades of Colour for
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When Hyacinths are ordered by name for bedding purposes, disappointment often occurs from the fact that there is always a slight variation in tint, however careful and accurate the descriptions may be. In the following arrangement we have divided the Hyacinths offered into red, blue, and white, and in the subdivisions each shade will be found perfectly distinct, our object being to supply Hyacinths which shall prove a striking contrast to each other when planted side by side. Each variety offered will be found to correspond accurately to the description given. This system effects a considerable saving in cost.

LIST OF HYACINTHS,

Arranged according to our New System.

		Per doz.	Per 100
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RED	Sutton's Scarlet ..	6	45
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	Sutton's Dark Blue ..	6	45
WHITE	Sutton's Pure White ..	6	45
	Sutton's Tinted White ..	6	45

N.B. All the Hyacinths offered above will bloom as nearly as possible together, if planted at the same time.

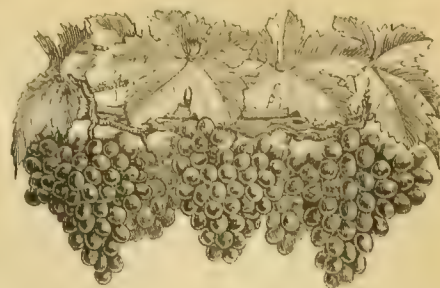
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SUTTON & SONS,
THE QUEEN'S SEEDSMEN,
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THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 16, 1880.

HARDY BULBS.

"IN the culture of flowers there cannot, by their very nature, be anything solitary or exclusive. The wind that blows over the cottage porch sweeps over the grounds of the nobleman, and as the rain descends upon the just and the unjust, so it communicates to all gardeners, both rich and poor, an interchange of pleasure and enjoyment; and the gardener of the rich man, in developing or enhancing a fruitful flavour, or a delightful scent, is in some sort the gardener of everybody else." Our present object is to realise this by writing of hardy bulbous plants which may alike be grown in queen's gardens, or nestle at the foot of the cotter's porch. To speak of them calls up visions of form and colour unsurpassed by any other class of garden favourites. One thinks of the long lines of rosy Amaryllis Belladonna, even now so lovely under the warm plant-house walls of many old country gardens; of the golden-rayed Japanese Lilies, the bravery of whose beauty so recently delighted us at Weybridge Heath, and among the Rhododendrons at Dunedin! Again we look on the long silvery trumpets of Wilson's white Japanese Lily at Tottenham, or the "filled-up glory" of the North American bog Lilies beside the brook at Tooting. What a glorious candelabrum, glowing with Lily beauty, "sweetness, and light," was that superb *Lilium giganteum*, 11 feet in height, grown at Sunningdale, and of which a figure was given in these columns as a remembrancer.

Every year brings us evidence of the increasing popularity of all kinds of hardy bulbous plants. We need not here allude to the enormous sums which history informs us were given for certain Tulips and other bulbs of early memory, it is more to the point for us to realise the fact that the prices of bulbs are now low enough for every artisan to purchase them, and we have the charm of knowing that these bulbs which his garden or window-sill may now boast are fully as lovely as those that Jean Baptiste Van Huysum, or Paul Potter painted so lovingly and so faithfully years ago. The last-named painter receives more credit for his famous picture of the bull than for his flower painting, and yet of all the Dutch painters few were more truthful, or brilliant, or sympathetic in the portraiture of delicate blossoms.

Poetry, as well as painting, have done much to augment the interest which naturally fixes itself upon such distinct types of hardy bulb-beauty as those of the Lily and the Narcissus; and in addition to all this gardeners have an especial interest in them, owing to the associations which year by year become entwined with their history and culture.

Among the more tender of hardy bulbs are the Crinums, Amaryllis, some *Pancratiums*, *Ixias*, *Sparaxis*, and some species of *Xiphion*, or bulbous Iris. Many of the bulbs from Turkistan, South Africa, and the coast lines of Por-

tugal and Spain, are tender also, our climate being too uniformly moist for them, and thus they do not get the summer rest which seems so essential to their welfare. Iris Susiana, for example, and some Spanish Narcissi, Alliums, and many Cape bulbs rarely flower satisfactorily unless scorched to rest during our summer and autumn season. Not only hardy but also many tender or stove and greenhouse bulbous plants require great extremes of heat and moisture in order to bloom them successfully. In the warm sheltered nooks of Devon, Cornwall, as also in Wales and in Ireland, hardy bulbs may be made to form a really important decorative feature in the garden. The bulb treasures at Kew are enormous; no day in the year but some newly born bulb-blossom opens its eyes to the sun there. At Glasnevin the late Dr. Moore made quite a speciality of these flowers, by planting them in the warm sunny nooks afforded by the angles of the warm plant-houses and conservatories. While I now write a superb mass of that stately rosy *Crinum* which bears his name is beautifully in bloom, planted out in such a position in company with other kinds. At Edinburgh also the late Mr. MacNab was most sympathetic and successful in his treatment of hardy bulbs. In Mr. Rucker's garden at West Hill, Wandsworth, again, *Crimums* flowered splendidly in the open air, sheltered by a sunny wall, while all the protection they received in winter was that supplied by covering up their crowns with large stones, which, while they economised sun and earth-heat to some extent, did not exclude the air. No doubt many bulbs, such as those of *Hippeastrum*, *Crinum* and *Pancratium*, would thrive well in such warm nooks as are to be found in most gardens if protected during winter with ashes or stones. The crimson-flowered *Amaryllis* (*Hippeastrum*) *Ackermannii* is perfectly hardy so protected, producing flowers in August of a size and substance rarely, if ever, seen upon pot plants grown indoors.

Most kinds of Lilies are hardy if planted out in well-drained soils, but upon tenacious clay land, and in wet localities, properly prepared and well-drained beds become essential for them. They like a sweet, well aerated soil. Old soils may be freshened up by a lime dressing, which is further beneficial in banishing slugs and worms. Manure should never be given to Lilies except it be in the form of leaf-mould. *Lilium giganteum* is the only kind I know that manure does not injure in a very marked way. To grow good Lilies a deep well drained bed of turfy loam, peat, broken oyster shells, and sand, should be made 3 feet deep. Plant in this amongst others *L. auratum*, *L. pomponium*, *L. longiflorum* *Wilsoni*, *L. Szovitzianum*, *L. chalcidonicum*, *L. testaceum*, *L. speciosum*, *L. giganteum*, *L. tigrinum* in variety, and also *L. candidum*. Be careful to obtain some strong bulbs. Water well during hot dry weather; it is wise to mulch also; and wait until the second year, then you may ask your friends to come and see your Lilies at any time between June and October. Of course, such a bed as that here recommended may be planted with many bulbs other than Lilies, and may thus be made an attractive feature during most of the year. Wherever there are well-made *Rhododendron* beds, any of the strong-growing Lilies may be planted out along their margins. It was by judicious planting in this way that Mr. McIntosh, of Weybridge, surprised us all by growing *Lilium auratum* over 10 feet in height, with stout wand-like stems, bearing aloft great flowers as big as soup-plates, and many of them.

The lovers and cultivators of hardy and half-hardy bulbous plants are many, but not nearly so numerous as they will be when the bulb-flora wealth of temperate regions shall have become better known. Many of our best cultivators are also collectors, who have ransacked

the Caucasus, Sicily, Corsica, Spain, the Riviera, and even the Himalayas and Japan, in their pursuit of whatever is beautiful or interesting in this way. Dickens saw that there could be nothing exclusive about a genuine love for flowers. His speech at the Royal Gardeners' Benevolent Institution dinner some years before his death shows this most clearly, as witness the opening paragraph of this article—and this brings us to the fact that our collectors and cultivators of bulbous plants are especially "in some sort the gardeners of everybody else." Can we not fairly say this of such men as Giles Munby, George Maw, Harpur-Crewe, Elwes, J. D. Llewellyn, Peter Barr, Thomas Ware, W. Pamplin, Backhouse of Walsingham, Leeds of Longford Bridge, Groom of Walworth, of Haworth, of Wilson Saunders, and last, but by no means least, of Dean Herbert, whose work on the *Amaryllideæ*, is, or should be, in every bulb-grower's library? Men who have been the discoverers and introducers of such plants as *Chionodoxa Lucilæ* ("The Glory of the Snow"), or of *Bulbocodium citrinum*, the large sulphur-coloured Hooped Petticoat Daffodil, will be revered by the more intelligent of gardeners for all time.

The literature of hardy bulbous plants would alone form a large library. Parkinson's dear old *Paradise* contains rude woodcuts and much quaint descriptive lore, and nearly carries us back to the time when Shakespeare wrote of *Proserpina*, and of the Daffodils "which come before the swallow dares." Mrs. Loudon and the late Noel Humphreys devoted a well-known volume to their description and portraiture. The *Botanical Magazine* is literally teeming with pictures of hardy bulbous plants, as also are those stately portfolios in the Kew library. Among the most beautiful and pleasing of all pictures of bulbous plants, however, are those of Redouté, as published in his *Liliacææ*, eight or nine of which ponderous tomes may be seen in the Linnean and most other large public libraries; and to a real lover of plant beauty, as fixed or emphasised by art, the turning over of these elegantly drawn plates is a great pleasure. While we may fairly congratulate ourselves on the many new and beautiful introductions of recent years, these plates of Redouté's, as those also of Sydenham Edwards in the early volumes of the *Botanical Magazine*, show us but too frequently how much of the most fairy-like of bulb beauty has eluded the grasp of even the most tender and sympathetic of cultivators. This experience is common to all ages and all arts, however; the march of progress is, like the banks of the seaway through the great desert, marked with crosses, to show the spot where loved ones were left behind or became lost to our view.

In speaking of bulbous plants there are many questions appealing to us for answers at the same time. For example, I never yet could satisfy myself why a plant became bulbous—which was the plant that first became discontented with its feeding roots, and in addition formed for itself a savings' bank. In arid districts one can comprehend how the life of the plant stores itself away for a season in its cool basement below the ground level; but then we have *Crocus* and *Snowdrop* growing side by side with the common grasses and with herbs which from the first have found fibrous rootlets sufficient for them.* Even in the tropics, where evergreen growth progresses more or less all the year, we find some plants bulbous. But in the tropics we find many novel phases of plant life; even the Orchids there have stems bulbous above the ground level, instead of below it, as is the case with those of temperate climates.

Whatever may have been the prime cause of bulb growth there remains with us the glorious certainty of their presence, and to the gardener who grows bulbs for pleasure, as to him who groweth them for profit, this is the all-important fact of interest. Now that peasant proprietorship is a topic of concern to many, let us consider how many quaint Dutch homes are at this very moment brightened with the results of the bulb harvest now in the market, just as thousands of tasteful English homes will in a few weeks hence be brightened with the glory of many bulb blossoms. In Holland we may see bulb gardens just as one sees Potato patches at home. *Narcissus*,

Hyacinths, *Scillas*, *Tulips* and *Lilies* are grown by the acre, and when in bloom form a sight which may not readily be forgotten. Even in Lincolnshire we may see many acres of *Snowdrops* grown for sale, in much the same way as one may see *Tigridias* and *Tuberose*s in 10-acre plots in New Jersey, or the loveliest of *Ixias* and *Sparaxis* in the Jersey which is nearer home. Not the least interesting phase of wholesale bulb culture is that especial branch of it carried on by the trade-growers who force flowers for Covent Garden Market during the winter and spring months. They are of a truth "in some sort the gardeners of everybody else."

Our especial task just now, however, has not so much reference to the ordinary autumn trade in forcing bulbs, but rather to the wider and more interesting field of Nature's wildings—the species of Nature, rather than the seedling varieties of the florist. The wild flowers of the world have supplied the florist with ample material for what he is pleased to call improvement, and it is to the natural species as dug from rocky coast, alpine meadow, or from the cool mountain side, that many of us look for beauty of form and colour in the garden. Our nodding wild *Hyacinth* is beautiful, and the dainty little *II. amethystinus* is still more lovely, while nothing but the blue of the mountain *Gentians* can make us forget the emphatic blue of the *Chionodoxa*, or the yet more intense hue of the *Siberian Squill*. *Snowdrops* in variety are always welcome and are exceedingly lovely, naturalised on the grassy slopes of the pleasure-grounds and beneath trees. I saw the common *Snowdrop* and *Crimean species* sprinkled among the young grass and in clumps beneath the weeping *Linden* trees at Straffan last spring, and shall not readily forget the exquisite effect they had there. I believe I am right in saying that those clumps of *Crimean Snowdrops* have graced the mossy lawns of Straffan since 1856, having been brought home directly after the war. The secret is to leave them alone when once planted, and to enrich the earth with sprinklings of leaf-mould or other stimulant occasionally. One of the results gained by naturalising *Crocus* and *Snowdrops* and other dwarf bulbs among the grass is, that their blossoms last in beauty and freshness much longer than when planted in the earth of the border or beds where they are soiled by every passing shower.

Of all spring flowers, however, perhaps the "green and gold of Daffodils" come upon us as most welcome, and what a *Crocus*-like wealth of gold they do bring to our gardens. Either forced in pots, or treated as hardy border bulbs, they are equally useful and attractive. The Hooped Petticoat (*N. Bulbocodium*) is especially useful as a pot plant, as is also the Paper White (*N. papyraceus*), and even the common wild Daffodil and its great golden cupped forms are welcome to the conservatory during the early spring months. Now is the proper time to pot up all these kinds, and also the double *N. poeticus*, strong bulbs of which bear gentle forcing, and afford a supply of their pure *Gardenia*-like flowers long before the open-air blooms expand. A London florist once informed me, as a particular secret, that forced bulbs of the Poet's *Narcissus* bloom more freely the second season of forcing than the first. Seeing that its flowers are so pure and lovely, and so fragrant withal, the wonder is that the Dutch florists have not devoted more attention to this as a forcing bulb. The old system of growing *Iris persica*, *Narcissus* of sorts, in glasses of water, may here be attended to, although it is now rarely practised except in the case of *Hyacinths*.

Of the sweetest of all the *Narcissus*, that especially consecrated to the "poets," one can scarcely say too much. Although a very doubtful native of Britain, it is a common wild flower of the meadows in the South of France and in Switzerland, where it grows in sweet copartnership with the grass and other herbage. There are early and late varieties, and by planting these its season of flowering extends from the end of April until late in June, at which time the double-blossomed variety expands its blossoms. Although generally grown in the open border, it lends itself to naturalisation amongst the dwarf shrubs on the outlying portions of the lawn. This chaste and fragrant flower has been so faithfully portrayed in the picture presented with this number that the best and most I could write of it may well remain unsaid. The pencil has once more vanquished the pen! Mr. Fitch's beautiful drawing shows to us how well this *Narcissus* is adapted to beautify the banks of violet leaves, the brook side, and to add yet another and lovelier charm

* Some species of *Saxifraga* and some *Begonias* are reproduced by axillary buds or bulblets, and an observant friend has just written to tell me that *Mimulus primuloides* forms bulblets at the extremities of its growth ere it goes to rest for the winter. The production of bulblets by *Fourcroyas* in place of seed is well known.

to the tender meadow grass of May-time. Of late years, Mr. Leeds, of Longford Bridge, Manchester, has raised many forms seemingly intermediate between this species and *N. incomparabilis*. Some of these are very distinct and beautiful. Even in a state of Nature this species is said to have been varied by hybridisation. Thus, Dr. Henon tells us that the station for this plant at Lattes, near Montpellier, is remarkable in that it offers many species mixed in the same meadow (*poeticus*, *angustifolius*, *biflorus*, *Tazetta*), as well as a considerable quantity of intermediate forms, varieties, or hybrids: a statement which has since been verified.

Of the native or wild forms of *N. poeticus* Mr. Baker recognises five as distinct varieties;—

CLOVENFORDS.

THE genius of Mr. William Thomson has in a few years done much to transform what must have been a somewhat bleak, although at the same time a highly interesting district, into

"A blending of all beauties—streams and dells,
Fruit, foliage, crag, wood, cornfield, mountain, Vine."

Most of the above components he found awaiting him, while some, particularly the last-named, may be said to be his own creation. Clovenfords is some three miles, or a little more, from the thriving and rapidly increasing border town of Galashiels, situated on the banks of the Gala, about a mile above its junction

fords chiefly owes its well-deserved celebrity. Before visiting this place I had somehow formed the idea that the keen eye of Mr. Thomson had discovered in Clovenfords a sort of Eldorado, or a valley of exceedingly rich alluvial soil, which, if not replete with auriferous deposits, contained, nevertheless, all the essential elements required to ensure the full and fruitful development of the Grape Vine. This idea, however, I found far from being correct, as the original soil, without being absolutely bad, is nevertheless of a very ordinary character, certainly not such as an experienced Grape grower would have selected for the purpose had he had the privilege of a choice in the matter. The surrounding hillsides, however, could, I believe, furnish an abundance of soil suitable for

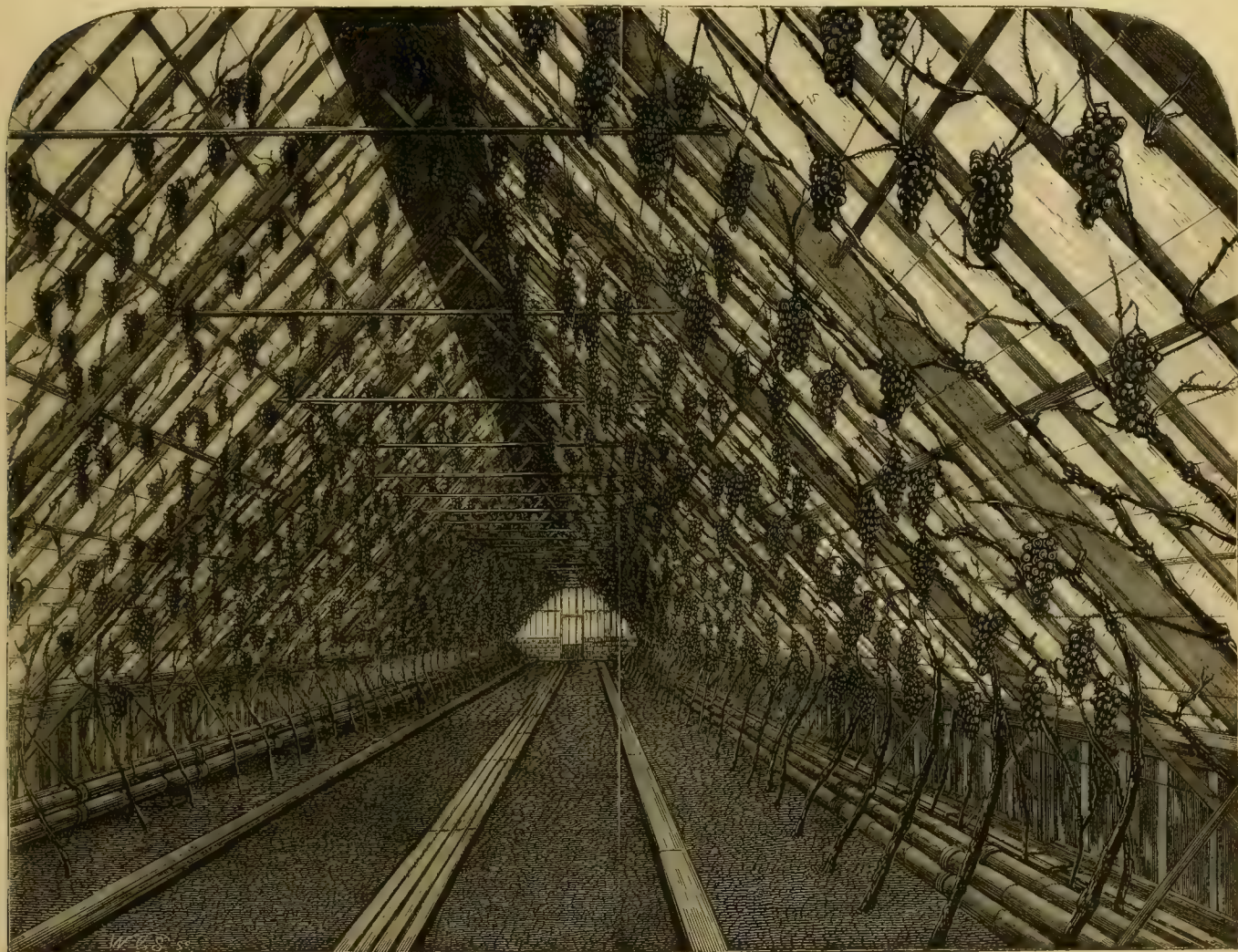


FIG. 92.—A LATE VINERY AT CLOVENFORDS.

1. *radiiflorus* (or *angustifolius*), an early, narrow-leaved form.
2. *stellaris*, a late-blooming, stellate-flowered form.
3. *recurvus*, also late-flowering, with drooping or recurved leaves, and reflexed divisions.
4. *poetarum*, an early, large, broad-petalled form.
5. *verbanensis*, a slender, late variety, with narrow, reflexed, yellowish petals.

All are in cultivation, if we except the last-named, which is a doubtful guest in our gardens. The Poet's or Pheasant's-eye Narcissus is known in some parts of the North of England, and especially in Cheshire, under the popular name of "Sweet Nancy."
F. W. B.

HORTICULTURAL CLUB.—The usual monthly dinner of the Horticultural Club was held on Tuesday, and was largely attended. Messrs. C. Frederick Hore, Joslin Adams, and Thomas B. Heywood were elected members.

with the River Tweed, and is, like the last-named river, celebrated in border song and story. While its banks furnish sites for numerous mansions of beauty and great interest, such as that of Yair, the ancient seat of the Pringles, where is said to have originated the well-known variety of Pear known as the "Green Pear of Yair," a valuable and almost first-rate variety, and so exceedingly hardy that it rarely if ever fails to furnish a crop, however unfavourable the season may be; such, at least, has been my experience of it.

The now celebrated Grape growing establishment at Clovenfords has been more than once, I believe, described in the pages of the *Gardeners' Chronicle*, so that it is not necessary to state here the number and dimensions of the various commodious glass structures employed for this purpose, as well as for the various kinds of ornamental stove and greenhouse plants, which are also most successfully cultivated here as well as the Grape Vine, but it is to the latter that Cloven-

this purpose, but this it is difficult to obtain in sufficient quantity. But in spite of all difficulties, the success which has at this place been secured in Grape growing is well worth the trouble of travelling very many miles to see, and no one at all interested in Grape growing could fail to be highly gratified by a visit to Clovenfords.

At the time of my visit (middle of September) the Duke of Buccleuch and other white varieties had been mostly cut, but enough remained to prove the excellent quality of the fruit, and the ripe wood and healthy condition of the Vines appeared to be all that could be desired. Three span-roofed structures, each some 200 feet long, 24 feet wide, and 14 feet high (see fig. 92), planted with late black varieties, presented an appearance the like of which, I should think, is hardly to be seen elsewhere, and when seen, not likely to be soon forgotten. One house was devoted to the Lady Downe's variety; the fruit was not quite ripe, but was beautiful.

fully coloured, while the berries and bunches were both very large, and so distributed were the latter, that had they been placed upon the Vines by the hand, they could not have exhibited greater regularity.

The vines themselves were in a most healthy condition, the foliage large and perfectly green. This, I think, was the latest house, and the fruit it contained was most likely hang upon the Vines for some months to come. It would be difficult to hazard an opinion as to its weight, but it must be something very considerable. Another structure of similar, or, I believe the same dimensions was devoted to the Black Alicante variety, and a third to Gros Colmar, all carrying equally heavy crops of splendid fruit. The last named variety, however, although all that could be desired in appearance is not, Mr. Thomson admits, up to the mark in point of flavour, and on that account fails to give satisfaction, and he has consequently resolved to discontinue its growth; but as it makes an excellent stock for better flavoured sorts, he will soon accomplish this desideratum without at the same time losing a crop of fruit. Most of the splendid fruit produced at Clovenfords finds its way to the London market, being placed in the train on the afternoon of one day, and is in the hand of the London salesman in the early part of the next.

Pine-apples are less extensively grown here than was formerly the case. A few, however, are still grown, and well grown too, but more for the love of the thing than with a view to profit. Most of the finest and most ornamental kinds of stove and greenhouse plants are grown at Clovenfords in immense numbers, including an extensive collection of fine healthy Orchids, many of the finest varieties of the Palm family, including hundreds of the pretty Cocos Weddelliana (*Leopoldinia pulchra*), in fine healthy condition, also Crotons, Dracæas, Cyperus alternifolius, the Fern-leaved variety of the *Primula sinensis*, tuberous rooted Begonias in immense numbers, all from seed, and including remarkably fine varieties. All are grown in comparatively small pots, or pots of a size most suitable for the table or other decorative purposes, and all were in an exceedingly clean and healthy condition. In fact, Clovenfords may be regarded as a most successful plant as well as fruit-growing establishment. From its great extent it may well be described as a town composed almost entirely of glass, yet, unlike most towns, every individual structure is in excellent condition and repair, no dilapidated buildings nor glasshouses calling loudly for paint and repairs to be seen here, and more than one horticultural establishment in this country, whether public, private, or commercial, might well look to Clovenfords as an example worthy of imitation. *P. Grieve.*

NEW FERNS OF CHINA AND JAPAN.

To the courtesy of Messrs. Veitch the Kew herbarium has been lately indebted for a set of the plants gathered for them by Mr. Maries during his recent travels in China and Japan. As might be expected from the fact that he visited several productive districts in the interior of both countries which had never been previously explored botanically, the series contains many new and interesting plants. Amongst the Ferns the following are the most noteworthy:—

HYMENOPHYLLUM BARBATUM, Baker; Kiu-Kiang Mountains, Central China.—Only known previously in Japan; a near ally of *H. Tunbridgensis*.

DAVALLIA TYERMANNI, Baker.—From a packet gathered in Kiu-Kiang and on the River Yangtse, China. Teeth less distinct than in Mr. Tyermann's plant, but I think evidently the same species. We received it before from Ningpo, where it was gathered by Mr. C. W. Everard. When first described (*Gard. Chron.* 1871, p. 870, t. 178) it was supposed to have come from West Tropical Africa.

ADIANTUM MARIESII, Baker, n. sp.—Stems densely tufted, very short, nearly black, naked, as is the wiry rachis, which is not more than 1 inch long. Fronds simply pinnate, glabrous, moderately firm in texture; pinnae 7–9, obovate-cuneate or suborbicular, $\frac{1}{2}$ inch long, $\frac{1}{8}$ – $\frac{1}{4}$ inch broad, placed on a short black wiry petiole, the barren ones with an entire margin. Sorus only one to a pinna, placed in a deep notch of the apex. Involucre orbicular, or oblong-reniform, firm, glabrous. Schang gorge, Central China. A tiny species, in habit most like the small forms of *A. lunulatum*, but with the sorus of *A. monochlamys*.

PTERIS CRETICA.—A variety near *P. stenophylla*, Hook. and Grev. *Ze. Fil.*, t. 130, with very narrow segments of firm texture, the barren ones sharply toothed at the margin, the internodes of the main rachis sometimes almost suppressed (as in the plant figured), but sometimes as much produced as in typical *cretica*. Schang gorge, Central China.

LOMARIA (PLAGIOGYRIA) EUPHILEBIA, var. *SERRATA*.—A well-marked variety from Japan, received previously from Dr. Maximowicz, with closer, more numerous pinnae than in the type, not so firm in texture, and sharply serrated. It resembles closely the Tropical American *L. semicordata*.

ASPLENIUM OLIGOPHLEBIUM, Baker, n. sp.—Stems very short, densely tufted, black, wiry and glabrous, as is the rachis. Frond lanceolate, simply pinnate, 2–3 inches long, $\frac{1}{2}$ – $\frac{3}{4}$ inch broad, green, glabrous, moderately firm in texture. Pinnae sessile, alternate, subdeltoid, dimidiate, quite straight on the patent or erecto-patent lower edge, deeply 1–4-lobed on the upper edge; lobes ligulate, or if two are confluent quadrate, reaching halfway down to the lower edge. Veins one only to each lobe, not more than four to the most fully developed pinnae. Sori small, nearly globose. Involucre small, glabrous, evanescent. Japan. A very distinct plant, of known species nearest to *A. formosum*.

ASPLENIUM VARIANS, Japan.—The first specimens we have received. The true plant, not *A. peginense*, Hance, which is frequent in Japan, and has often been labelled *varians*.

ASPLENIUM THELYPTERIOIDES, Michx., Japan.—The first examples we have received. This is an interesting addition to the Japanese flora, as it is abundant both in the Himalayas and Eastern United States.

ASPLENIUM SPINULOSUM, Baker, Japan.—Known previously in Manchuria, Amur-land, and the Korea.

ASPIDIUM (POLYSTICHUM) LANCEOLATUM, Baker, n. sp.—Paleae basal only, small, dark brown, lanceolate. Stems tufted, pale green, naked, slender, under 1 inch long. Fronds lanceolate, simply pinnate, 2–3 inches long, $\frac{1}{2}$ – $\frac{3}{4}$ inch broad, firm in texture, glabrous, rather shining. Pinnae 15–25-jugate, close, obscurely petioled, quadrangular, entire on the lower and inner side, the latter parallel with the rachis, with 4–5 relatively large deltoid-cuspidate teeth on the upper margin, which is not auricled at the base, and about three similar teeth on the outer margin. Veins flabellate from the lower inner corner of the pinnae, one veinlet running up to each tooth. Sori medial on the veins, 2–4 to a pinna. Involucre small, glabrous. Schang gorge, Central China. A small species, which comes in between *lachenense* and *ilicifolium*.

ASPIDIUM (POLYSTICHUM) DELTODON, Baker, n. sp.—Paleae basal only, small, brown, lanceolate, membranous. Stipes 2–3 inches long, slender, naked, stramineous. Fronds lanceolate, simply pinnate, 4–5 inches long, 1 inch broad, glabrous, moderately firm in texture; rachis with a few small adpressed deltoid dark brown scales. Pinnae close, sessile, 20–25-jugate, ovate-quadrate, strongly auricled on the upper side at the base; apex deltoid, with deltoid-cuspidate teeth, which run down the upper edge; lower edge entire below the tip, as is the inner edge. Veins pinnate, springing from a main vein contiguous to the lower edge of pinnae. Sori supra-medial on the veins, confined to the outer half of the pinnae, not more than 3–4 to a pinna. Involucre small, glabrous. Schang gorge, Central China. A near ally of the Himalayan *A. obliquum*, D. Don (*A. crepitans*, Wall.).

NEPHRODIUM (LASTREA) ISOLATUM, Baker, n. sp.—Stems naked, slender, stramineous, 4–6 inches long. Fronds deltoid, fully pinnate at the very base only, 4–6 inches long, moderately firm in texture, green and glabrous on both surfaces. Lowest pinnae largest, obscurely petioled, lanceolate, about $\frac{3}{4}$ inch broad, with short obtuse contiguous lobes, each with several small strongly cuspidate teeth; central pinnae broadly adnate to the main rachis: upper half of the frond with a broad wing to its rachis. Veins copiously pinnate opposite each lobe of the lower pinnae, with 5–6-jugate ascending simple veinlets. Sori few, medial on the outer veinlets of the pinnate groups. Involucre minute, glabrous. Mountains of the Province of Kiu-Kiang, China. One of the least compound of the *Lastreae*, not nearly allied to any known species.

NEPHRODIUM PROLIXUM, Baker; Japan.—An extended range for this very common Himalayan

species, which Dr. Shearer discovered not long ago in the mountains of Kiu-Kiang.

NEPHRODIUM FRAGRANS, Reich.; Japan.—An interesting extension of range, as it is widely spread through both Temperate Asia and Temperate America.

NEPHRODIUM (SAGENIA) VARIOLOSUM, Baker; Northern Formosa.—Known before only in India and the Malay Islands.

POLYPODIUM (GONIOPTERIS) LINEATUM, Coleb.; Schang gorge, Central China.—An extension of range for a common Himalayan species.

POLYPODIUM (GONIOPTERIS) VEITCHII, Baker, n. sp.—Rhizome slender, creeping. Basal paleae dense, spreading, pale brown, lanceolate, membranous. Stipes very slender, stramineous, under 1 inch long. Frond deltoid, pinnatifid, 3–5 lobed, 1–1 $\frac{1}{2}$ inch long, rather thin in texture, glabrous, pale green. Segments oblong, $\frac{1}{4}$ – $\frac{1}{2}$ inch broad, obtuse, minutely inciso-crenate, the lowest side ones reaching down nearly to the rachis. Main veins fine, distinct, usually joining so as to form a single row of areolae. Sori superficial, globose, large for the size of the plant, forming a single row nearer the midrib than the edge. Japan; received previously from Mr. Bissett. A tiny species, allied to the Himalayan *P. erythrocarpum*, Mett.

POLYPODIUM (NIPHOBOLUS) SHEARERI, Baker; Kiu-Kiang Mountains.—A fine species, with a long stipe, like *P. Lingua*, discovered not long ago by Dr. Shearer.

POLYPODIUM (NIPHOBOLUS) ASSIMILE, Baker; mountains of Kiu-Kiang.—This, like the last, was first sent to England by Dr. Shearer. Descriptions of both of them will be found in *Trimen's Journal* for 1875, p. 201.

POLYPODIUM (PHYMATODES) ONAGI, F. and S.; Japan.—We have no authenticated specimens, but the plant of Mr. Maries quite corresponds with the description of Franchet and Savatier. In size and habit it is just like *P. linearifolium*, Hook., but is perfectly glabrous.

POLYPODIUM (PHYMATODES) OLIGOLEPIDIUM, Baker, n. sp.—Rhizome creeping. Paleae basal only, dense, small, lanceolate, brown-black. Stipes under 1 inch long, dark brown, nearly naked. Frond simple, lanceolate, 4–5 inches long, about $\frac{1}{2}$ inch broad, acute, narrowed gradually to the base, thick and coriaceous in texture, with small adpressed membranous dark brown ovate cuspidate paleae scattered over the surfaces. Venation hidden. Sori large, globose, superficial, forming a row near the midrib in the upper half of the frond. Mountains of Kiu-Kiang. Comes midway between *P. lineare* and *P. lanceolatum*.

POLYPODIUM (PHYMATODES) BRACHYLEPIS, Baker, n. sp.—Rhizome as thick as a goose's quill; paleae brown, deltoid, adpressed to it. Stipes naked, stramineous, stiffly erect, 3–4 inches long. Fronds lanceolate, simple, green, glabrous, almost membranous in texture, under 1 foot long, $\frac{1}{4}$ – $\frac{1}{2}$ inch broad in the middle, acuminate, narrowed gradually to the base. Main veins fine, erecto-patent, distinct and parallel nearly to the edge, $\frac{1}{4}$ – $\frac{1}{2}$ inch apart, enclosing copious minute areolae with free included veinlets. Sori copious, minute, scattered, terminal on the free veinlets. Mountains of Kiu-Kiang province. Allied to *P. irioides* and *superficiale*.

NOTOCHLENA CHINENSIS, Baker, n. sp.—Rhizome slender, creeping; paleae small, dense, linear-subulate, dark brown. Stipes slender, wiry, naked, castaneous, flexuose, 3–4 inches long. Fronds oblong-lanceolate, bipinnate, 3–4 inches long, thinly pubescent on the dark green upper surface, densely matted on the lower surface with brownish-white tomentum. Lower pinnae largest, deltoid, produced most on the lower side, their linear-oblong contiguous pinnules entire or crenate; the other pinnae lanceolate and many upper ones entire and adnate to the rachis; veins hidden. Fructification of solitary distant marginal [sporangia] immersed in the tomentum. Schang gorge, Central China. A well-marked new species, most like *N. Marante* in the general habit, but less compound, with an entirely different vestiture. *J. G. Baker.*

HORSE RADISH.—Huge casks, like sugar-hogsheads, are now arriving in the market from Germany, filled with Horse Radish. The roots are tied up in bundles as thick as a man's thigh. It gives one an idea of the fondness of the Briton for beef and Horse Radish to see these huge casks, and forms a curious illustration of the variety of commercial enterprise.

STOKE ROCHFORD,

THE seat of Christopher Turner, Esq., is beautifully situated in a park of some 400 acres in extent, distant about 6 miles south from Grantham, in Lincolnshire, and some 2½ miles from Great Ponton, the nearest station on the Great Northern Railway. To reach Stoke Rochford from Grantham—a town whose name has been made familiar to cultivators of the soil throughout the civilised world by the skill and energy of the Hornsby family—one has to take the Great North Road, as the main highway between London and York is called in this part of this famous agricultural county. On the outskirts of the town are the works of the great firm, now carried on by a Limited Liability Company; thence to Stoke, the road for a considerable distance passes through Mr. Turner's estate, which is known to be one of the best in the county for its admirably equipped and substantially built farmsteads, and the excellent character of its cottages, most of which have either been improved to meet modern requirements or entirely rebuilt by the present owner of the estate—an improving landlord of a type of which there are unhappily too few in the British Isles.

Leaving the Great North Road by the one which leads to the quiet little village of Stoke, the park gates are soon reached, and from thence to the mansion the drive passes through a belt of trees forming the boundary, leaving the site of the old family mansion on the right, and the kitchen garden on the left a little further on; then over a stone bridge spanning a small stream, which, on the east side of the mansion, broadens out into a series of lakes made by the hand of man. Onwards from this point the drive takes a circuitous route through the undulating and thickly-wooded park to the courtyard on the west side of the mansion, in which stands a conspicuous piece of masonry—an obelisk erected by Mr. Turner to perpetuate the memory of Sir Isaac Newton, who was born on his estate, at the Manor House, Wiltshorpe. Our illustration of the mansion, which was also built by Mr. Turner some years ago, gives a good view of it as seen from the south, but it is on the east side that its handsome proportions and substantial character are seen to the greatest advantage. Prominent in the foreground of fig. 93, p. 499, is the conservatory, a lofty structure, adjoining the library, from the roof of which hang a variety of suitable climbing plants, while most conspicuous in its borders amongst the specimens planted out is a noble old plant of *Datura sanguinea*, carrying a rich profusion of large red flowers. Near the south-east corner of the conservatory is the large circular bed, of which we gave an illustration and a plan at p. 45 of vol. xi., and which has again this year been planted by Mr. Dell in a style which for good taste and effectiveness is worthy of all praise.

In the centre of the terrace on the east side there is a small but prettily designed flower garden in Box and gravel, mostly bedded out with flowering plants; and at its northern extremity, some feet below, is a square enclosure with a series of tastefully arranged flower-beds, now on grass, but which used to be Box and gravel—the change, as we think, being a decided improvement.

This garden, as it appears now, affords a forcible reminder of the severity of last winter, which killed all the Roses and an outside row of beautiful specimen Hollies, which were a striking feature of the place. Roses have, however, been again planted, and the bedding, a combination of coloured-leaved and flowering plants, has been very gay and attractive. The terrace is continued from the conservatory southwards down two short flights of steps about 28 feet apart, on to a lower stretch some 56½ feet long, where a smooth and beautifully kept gravel walk, 22 feet wide, is flanked by closely shaven grass, the greatest width of which is on the right hand, where there were formerly three long beds, the designing and planting of which in the mosaic style gained for Mr. Dell the reputation of a master of the art.

At the end of the terrace, backed up with a border of evergreen trees and shrubs, there is a statue of the goddess Diana; but a more striking sight to us are the great gaps that have been made among the trees and shrubs by the terribly severe frosts experienced here last winter. We have already mentioned Roses and Hollies as being killed right out; and to these may be added common and Portugal Laurels, large Hollies and Yews, &c., which have had to be removed by the cartload, creating blanks that will

take years again to fill up. Turning to the right through the Rose garden, the path leads onward through an enclosure, sacred to the horticultural pursuits of the children, to a hardy fernery, situated in a plantation, and covered in with glass. It is of considerable size, and well designed for the object in view. From the fernery a short walk brings us into the park on the road to the kitchen garden, which lies due south from the mansion, about a quarter of a mile away, and which is reached from the park through a short avenue of old Yews, some of which are killed to the ground, if not beyond it.

(To be continued.)



FARMERS AND FOREST TREES.—I need not say that the world is full of extravagances and misrepresentations, for so much is this the case that it is often difficult to know the true from the false, and fact from fiction. If this is traced to its true source, it will be found that contamination of the moral fountain is the cause of it. The least drop of impurity will taint, and render the whole water in the well distasteful and unpalatable; even a decayed branch of a tree embedded in the strata through which the well is supplied will render the water unfit for all domestic purposes. But what, it may be asked, has all this to do with farmers and forest trees? It is intended by these facts to illustrate what so often comes before us in the reasonings or railings about forest trees. There is the well-worn, if not threadbare, speech in common use at agricultural dinners and rural gatherings, when you speeches have to be made to please everybody and to be void of every ingredient that any one dislikes, albeit their tastes differ as widely as the Oak tree from the Fir, or the Beech from the Cedar.

The speech referred to is the little one which says the interest of the landlord and tenant are identical, and what benefits the one equally benefits the other, and so on. Now, at agricultural dinner parties people are usually so jovial and good-natured that they would not for the price of a Shorthorn say anything but "Hear, hear!" to everything that is spoken, be it sense or nonsense. All the business of life, however, carried on between landlords and tenants cannot be transacted under the roofs of Agricultural Halls, however desirable and pleasant that might be; and when they go outside to the fields and forests they do not in all cases so well agree upon all matters of detail, and they sometimes differ about forest trees, which is to be regretted, and need not be. What farmers say about forest trees on their farms, as far as I have heard them, is just what other people say—that is, sometimes it is a wise thing, and sometimes a thing other-wise. Sometimes they say "Plant," at other times they say "Cut down." I will tell you what I have heard some farmers say against trees, and I will also tell you what they say in their favour, for they say things both manifold and strong for, as well as against, the forest denizens.

One complaint, and I think a very just and proper one, is that their roots ferret out and choke the tile and other underground drains; and therefore they, under such circumstances, wish to have the tree or trees thus offending cut down, and taken out of the way. Now, as none but quack doctors pretend to cure all diseases flesh is heir to, so neither can the presence of a tree in such situations be defended. The roots of trees will go wheresoever water will, and they will enter a hole by far too minute to be detected with the naked eye. Choked drains are a serious matter, and the landlord would surely be out of harmony with his tenants' best interests were he to allow the tree to remain and injure the drainage of the fields. In such cases the farmer who would not complain is neither his own, his neighbour's, nor his landlord's friend; and the landlord who would not listen to and fulfil the part devolving on him to redress the grievance would not long be regarded as a wise and considerate proprietor.

Another case of complaint is that brought against trees that grow in the hedges that shade and destroy them, and at the same time stretch far and wide their ample limbs, and thereby render the corn and other crops underneath them profitless and useless. The

straw of cereals grown beneath trees is not always deficient in quantity, although in point of quality it is never so good as that beyond the shade; and the grain, while it seldom ripens under the shade of trees, is usually so deficient in quality as to prove to the farmer that his profits would have been greater, or, rather, his loss less, by never having ploughed or sown the ground thus shaded by hedgerow trees. In such cases of shading some farmers complain, and others do not; some ask to have the trees either cut down or dismembered of their branches, while others make no such demands. Unless the lease is for more than nineteen years the trees could not, in the nature of things, if planted after the lease is taken, be so large and spreading as to seriously damage the crops before the expiry of that lease, and if no reference is made to the existing trees when a lease is taken or renewed, the farmer has himself and not his landlord to blame for the shading of the crops and spoiling of the hedges. Again, we must ever be reminded that man is not to live by bread alone, and that the loss of grain is only one item, and when put in the opposite scale other items frequently outweigh it. Hedgerow trees, therefore, being a seen evil in the sense of shading, and one of the items both contracting parties count upon at the entry to or renewal of a lease, it is simply unfair and unjust on the part of the farmer to ask the removal of the trees. Such trees, it may be said, render corn less plentiful in the market, and, therefore, the public have a right to complain. This may be true, but the minor truth is absorbed in the major. The hedgerow trees are a subject of landscape beauty, and by the wayside, as well as the field side, the shade that diminishes the bread on the one hand, solaces and covers the weary traveller on the other; and who, under the scorching rays of a meridian sun, has not breathed the prayer of thankfulness for the refreshing shade, as well as the hungry man for his daily bread? If, then, the farmer secures no redress from his landlord on the grounds already indicated, it is very certain he need not appeal to the public for sympathy or support here, for, as already said, the beauties of the landscape all can appreciate and enjoy; and the shade, like angels wings thrown athwart the thoroughfare, the footpath, or the common highway, is a banquet few, if any, peer or peasant, would be willing to surrender even for the sake of corn, but would much rather foster and maintain. *C. Y. Michie, Cullen House, Banffshire, Oct. 11.*

Florists' Flowers.

THE AURICULA IN AUTUMN.—Some time in October there must take place a general overhauling of the plants. The frames which, up to this time, have been on the north side of a wall, or similar position, must be moved into an open place. The plants have hearted up, and should now be kept rather dry at the roots. The outer leaves are rapidly becoming yellow, and should be removed before they cause any injury to the plants. Our own were left alone for two weeks or more, and some of the plants had suffered considerable injury, owing to the mouldy leaves causing the young centre leaves to decay, and in one case a plant has died off altogether.

During the summer it may be desirable to plunge the plants in ashes to half the depth of the pots; but in winter I prefer to place the pots on trelliswork. See that the insides of the frames are cleared of slugs and other pests that infest the Auricula at this season. Grubs and caterpillars of various kinds eat the leaves, and disfigure the plants in that way. It requires very strict watchfulness to keep a large collection of plants right. It is necessary to look over them every night with a light, and even then one is caught napping sometimes. I left a choice specimen all right at 6 P.M., and on looking round with a light between 8 and 9 o'clock the same evening this plant was quite destroyed by a large caterpillar which was found feeding on it. Slugs also eat the young plants off almost as soon as the seed-leaves are formed. I have seeds now vegetating freely that were sown about six weeks ago.

I had an opportunity this autumn of inspecting several collections in many different parts of the country, north and south, and talked over the various ills that the Auricula is heir to. The most vexing thing to cultivators is the autumn bloom. It is most annoying to see fine healthy plants of George Lightbody (Headley), for instance, starting into bloom during October. The fancier pictured to himself some of those fine plants winning "premiums" at

the London or Manchester exhibitions; but as soon as he sees the bloom rise he knows the chances are gone, as the spring bloom of this variety is sure to be of inferior quality if it has flowered in the autumn. How to prevent autumn bloom is a question anxiously pondered over by growers. I saw a collection at Newcastle-on-Tyne where the plants, young and old, were showing bloom to the extent of at least 50 per cent. Later on I visited the Rev. F. D. Horner, at Kirkby Malzeard, and not more than one or two plants in a hundred were showing for bloom. As far as temperature is concerned, the Kirkby collection would be placed at a disadvantage. A grower can gain in several ways, and overcome to a considerable extent the disadvantages of an unsuitable climate. Mr. Horner's plants are behind a high wall in low frames. He pots about the end of April, or early in May, and he is very careful not to give the plants too much water, either during the summer or autumn months. There is, no doubt, something in this. A copious supply of water is certain to push on the plants much more rapidly than those which are kept comparatively dry.

I also talked over the various details of potting with Mr. Horner. He prefers early in May, and the bulk of the collection is potted at that time; but numbers of plants are potted during the summer and autumn months; some as late as October, and they do well. The fact is, few plants are more accommodating than the *Auricula* in this respect, and if suitable compost is used the roots very speedily run into it. I had on one occasion a number of plants sent here about the end of October. They were in pots; but as the compost did not seem quite suitable, I turned them all out, reduced the balls a little, and repotted them, with the result that those plants held a high place on the exhibition table the following spring. I have been taking a few strong offshoots from some of the seedlings to-day (October 8), and with care I shall expect good trusses from them at blooming time.

The principal growers in the North do not winter their plants in frames, but in houses heated either with flues or hot-water pipes. They move them into the house about the end of September. One very successful grower was moving his plants indoors when I called at his place, the last week in the month, and all the plants had been exposed to heavy rains continuously through the autumn. I fancy it would have been better for the plants if they had not been thus exposed. Another grower, a working man, writes last week, "I have just filled my *Auricula* house with blooming plants. There are 500 of them, but I still have much autumn bloom." The *Auricula* blight (*Trama Auriculæ*) has become much too common in collections; but no grower that I met with seemed to think it did much harm to the plants, and quite laughed at the idea that *Auriculas* were killed by it. "We would rather not have it," some of them said, "but we do not think it does any appreciable harm to the plants." In one collection the most healthy plant was pointed out to me as having the aphid on its roots. No one would say that the plant owed its health to the presence of this insect, but neither could it be said that it had injured it in the least. I saw plants killed or injured by the use of Fir tree oil and paraffin, but not by this insect. When plants have once been seriously attacked by it, there is no way to destroy it except by shaking the soil from the roots. If these are well washed with soapy water, and all the insects washed off, and in an hour washed in clear water, and the plants suffered to dry, and then repotted into clean pots and fresh soil, the pest will be destroyed. Greenfly, if not destroyed when it first attacks the plants, is a more troublesome customer. My plants of George Lightbody and Alexander Meiklejohn were much injured by it last year. I find, upon the whole, fumigating with tobacco smoke is the cleanest way to get rid of it. Even if there is no fly visible on the plants I fumigate the frames every other week, after the plants have been placed in their winter quarters, until severe frost sets in; and in this way I seldom have any fly on them until the blooming season is over. After this month I would earnestly urge that no plants should receive any water until it is seen by the state of the roots that they really require it. *J. Douglas, Loxford Hall, Ilford, E.*



Natural History.

TOADS IN THE GARDEN.—Fortunately for gardeners, during the past two seasons toads have been remarkably numerous; for in dull and wet seasons, so favourable to the increase and multiplication of the innumerable species of insects that subsist on vegetation, the toad is, more than any other creature, quadruped or biped, the gardener's friend in need. But for the toad, and his enormous appetite for slugs, &c., our garden crops would be in an infinitely worse condition than they now are.

I believe that gardeners are generally aware of the value of the toad, and it may seem superfluous to write anything in his favour, seeing that he leaves behind him such unmistakable evidence as to what his diet consists of; but, partly on account of appearance, and partly owing to erroneous notions as to his being venomous, the toad is sometimes treated in a manner very different from what he deserves.

As to the toad being venomous, I have seen and handled a great number of them, sometimes carrying half-a-dozen at once, but have never had the slightest reason to consider them anything but harmless; and for choice I would rather handle the toad than the frog, as the latter always feels damp and slimy, though I must admit that if I were obliged to eat one or the other, I should prefer the frog.

In the matter of feeding the toad is not very particular, either as to quality or quantity. Anything that creeps or crawls will do for him—woodlice, beetles, spiders, slugs, worms, even snails with their shells, are put out of sight as if by magic, for he has a peculiar way of taking his prey. He watches the moving insect for a second or two, then, suddenly darting out his tongue while at a distance of 1 or 2 inches, the insect is snatched up and swallowed instantly. One evening I gave one a wasp and a humble-bee; both were snapped up directly they commenced to move, apparently without causing the toad the slightest discomfort, though they must have reached his stomach in a tolerably active condition.

In plant-houses, especially forcing-houses, where insects increase their numbers so rapidly at all seasons, the toad's services are especially valuable; and if a suitable ladder, made of a narrow board with bits of lath tacked on it 2 inches apart, be set in a corner, slanting from the floor to the stage, he will climb it, and thus be enabled to make himself still more useful.

But perhaps the most remarkable fact concerning the toad is, that though he can, and does, eat a great deal, he can exist for a long time without eating anything. Years ago I buried one for a month in the earth, as an experiment, and when dug up it was apparently as well as ever. More recently, having been bothered with myriads of woodlice in an early Cucumber-house, and not being able to find toads in February, I later on, when they became plentiful, buried three in a 9-inch pot, with a slate on the top, 18 inches under ground, that I might have them handy for the next early forcing season. But that season I did not require them, so they remained buried until the following one, and were then, on being taken up, apparently not much the worse for their eighteen months' fast, though they didn't have any ice-water or alcoholic baths.

I will just make mention of one more. He had rendered me most valuable services in a small hot-house for three years, and had attained to such corpulence as to remind me of the Claimant in a certain notorious lawsuit, when, to my great regret, he came to an untimely end by suffocation in a vessel of insecticide, though I have not yet discovered by what means he managed to scale the smooth outside of the vessel. *George Duffield, Winchmore Hill, N.*

SWALLOWS.—Yesterday I was calling on a friend, living about two miles from this, and he informed me that shortly before I arrived he had seen some swal-

lows flying round the house for some little time. He was much surprised, as he had not seen one for more than ten days or so. It would be curious to ascertain whether they have been seen so late as the 10th inst. elsewhere so far north as this. On the 24th ult. I saw numbers of swallows collecting as if for departure, though it was then fine and warm. I saw them both about the house and on the outskirts of the town. The next day (25th) I saw swallows similarly collecting on the electric telegraph wires, in the village of Kirkpatrick Fleming. On the following day (Sunday) I saw none, either here or in the town. Could they have had an instinctive preknowledge of what was coming, and have made an early start? for the 2d inst. was the first really cold day. Those seen yesterday were doubtless some belated sojourners on their way south. *J. A. C., Northfield, Annan, Oct. 11.*

Garden Operations.

FLOWER GARDEN.

Any tender bedding plants that it is desired to save must not be risked out-of-doors any longer. All the variegated *Pelargoniums* and other kinds, that will be needed for planting large vases next season, should be housed at once. In order to prolong the beauty of the garden—so far as circumstances admit—we propagate stock plants of all the varieties early in the season, and thus we can afford to risk the loss of the old plants, the remains of which are not cleared off till frost has done its worst, and then they are replaced by shrubs and other hardy plants supplementary to the hardy plants that have been used for summer bedding. We are now lifting *Australian Dracænas*, large *Echeverias*, *Grevilleas*, *Abutilons*, &c., that have during the summer done duty as dot plants on carpets of *Sedums*, *Herniaria*, and *Saxifraga*. The positions thus vacated will be filled with small plants of *Cupressus erecta viridis*, *Retinospora pisifera aurea*, golden Yews, variegated *Hollies*, &c. These are put in carefully with trowels or handforks with but little disturbance to the groundwork, and the beds are at once furnished for the winter, whilst the tender plants lifted are made to do duty for room and conservatory decoration throughout the winter. *Echeveria secunda*, and *E. secunda glauca*, though not quite hardy, have stood uninjured till the past two sharp winters, and so we mean to try them again this season, but have taken the precaution to get off all the offshoots possible, which will be wintered in cold frames to give us a stock in case of a mishap. As regards sub-tropicals those that must be saved should not be left out another day. We have not accommodation to winter large plants, and so for the most part ours are raised from seeds annually—a plan that gives most satisfactory results, with comparatively little labour. *Cannas* may live out in dry situations, but a covering of ashes, tan, or bracken will be necessary; but these coverings being unsightly, it is preferable to lift and winter them in a shed or cellar from which frost can be excluded. Dry soil or ashes about the roots will be necessary to keep them from shrivelling up. All the young struck stock of bedding plants should now be housed, but well exposed to the atmosphere on all favourable occasions—this the only means of avoiding an attenuated growth. *Calceolarias*, *Violas*, *Gnaphalium lanatum*, and *Leucophyton Brownii* should now be propagated; these with us strike freely, and winter with little trouble in cold pits that are thickly covered up in sharp weather. *Eunymus radicans variegata*, *Lonicera reticulata aurea*, and Golden *Thyme* strike well under like conditions, and cuttings put in now will make good plants for spring planting. The falling leaves and worm-casts now make it difficult to maintain neatness at all times, but the effort should be made; also to get hedges clipped and edgings trimmed for the winter, turf laid, walks regravelled, new walks made, and shrubs and trees planted as opportunity offers. *W. Wildsmith.*

HARDY FRUIT GARDEN.

The season has now arrived when planting and root-pruning will be the order of the day. There is no more interesting operation to the gardener than to make the barren fruit tree fertile. How this is to be accomplished, however, depends in a great measure upon the condition and age of the tree which is to be operated upon, and the antecedent preparation that is made for executing the work. It has been pointed out that the soil for renovating fruit borders need not in any case be stacked up more than a few weeks before it is used. Light soils especially should be used in a comparatively green state, owing to their losing their nutritive properties in a great degree after the first season or two. Drainage is so essential to health that however well all the other details are carried out, if this be neglected disappointment is sure to be the result. Drainage is frequently neglected because of some peculiarity of soil, forgetting that situation, and the rainfall of the district should be taken into account. A soil liable from its natural com-

ACMÉ LABELS.—We notice that Messrs. Stevens & Pinches, the manufacturers of the Acmé labels, have issued a new list, which contains the names of 850 Roses and 540 fruits.

position to get dry in summer, should not in all cases be looked upon as requiring no artificial aid in the shape of drainage to render it healthy in winter, for if a garden has a quick descent to the north, as many gardens have, the water will naturally percolate in that direction, and if there be stagnant wet a loss of root-power must be sustained. Root-pruning is one of the most effectual remedies that fruit growers have to aid them in checking over-luxuriant growth, but as a rule it is undertaken too early in the autumn. After a fine season like the present it might reasonably be supposed that the wood of fruit trees is exceptionally firm and well-ripened, but this is not the case everywhere, owing no doubt to the trees being so enfeebled after last winter that they started into growth late; therefore it will be better to defer the work until the first leaves begin to fall naturally. This has been my rule for the last ten years, both indoors and out, and it is the safest sign for cultivators to act upon.

Early varieties of trees in favourable situations may and do ripen their wood considerably earlier than later kinds in late situations, but no one can go wrong by following in the footsteps of Nature in the way suggested. Where large trees have to be taken in hand the safest course to follow would be to remove the surface soil to a depth of 6 or 9 inches, and replace it with a top-dressing of chopped fibry loam, mixed with a few $\frac{1}{2}$ -inch bones, and some horsedroppings, which will induce the emission of young feeders, and when the tree is furnished with these it will bear the large thong-like roots to be cut away without feeling the loss. In many cases a good surface dressing will have the desired effect, and in other cases of long standing neglect it may be judicious to operate upon one side of a tree only at a time. It is a barbarous practice to mutilate the roots of trees in the rough and ready way that is often done by cutting a trench at a certain radius from the bole and chopping off the large roots without either care or system. After the trench is cut round the tree at a proper distance a five-pronged fork should be used to work the soil carefully from about the roots, and the latter should be preserved by tying them together in bunches loosely. A workman who is handy with a fork will soon undermine an ordinary sized tree and divest its roots of all unhealthy soil. The rough knotty roots which are so fertile in bearing suckers, should then be cut away and the fibrous ones only retained. Large trees that are deficient of fibre should have the cleanest and best roots notched with a sharp knife, and laid in sandy loam to encourage them to make active feeders. All wall-trees that are operated upon to the extent of making new pits for their roots should be unnailed, in order that when the new soil subsides the roots may not be suspended in a vacuum between two layers of soil; and the surface of the ground after planting should be heavily mulched with rather dry littery manure that will answer the double purpose of arresting evaporation and admitting such warmth as we can now expect to penetrate to the roots without obstruction. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

VINES.—From this time until the Vines are clear of foliage will be found the most trying period in the whole year for keeping Grapes. Hamburgs intended for use through November, previously divested of all laterals, may now be cut back to within two buds of the bunch, and shoots from which the Grapes have been removed may also be shortened where the wood is crowded. If the internal borders are at all damp a good covering of dry Fern where it is plentiful will absorb a great deal of moisture, and gentle fires will be necessary, with careful attention to the ground-line ventilators, which must be kept closed when external conditions are unfavourable to the admission of air. The bunches will require looking over twice a week for decaying berries; every pot plant must be removed to other quarters, and the glass must be kept free from accumulations of all kinds that will impede the passage of light or pollute the atmosphere. By this time the renovation of all mid-season borders will have been brought to a close, and late houses in which the Grapes do not incline to finish will require attention. If the Vines have the run of internal and external borders, one or other may be taken out and remade at any time after the Grapes are ripe without detriment to the existing or succeeding crops of fruit. Dry mild weather answers best for the performance of this kind of work, as the exposed roots are less liable to injury, and the compost does not become close and adhesive. Well drained borders of medium width, and about 2 feet 6 inches in depth, are best adapted for low damp situations, as they are less expensive in the first instance, much warmer, and take more stimulating liquid with impunity than large masses of rich matter over which the cultivator has less control. When the borders are well made and only require keeping up to the mark by the application of the annual top-dressing, all old mulching may be removed down to the roots and replaced with good compost, consisting of rough turfy loam, crushed bones, and charred refuse. When the

fruit is ripe and the foliage begins to change colour, old lights or shutters should be placed over the outside borders, with a sharp pitch to the front for throwing off water; but they should not touch the border neither should they be enclosed at the ends, as a free circulation of air will be needed for admission into the house until the time arrives for cutting and removal to the Grape-room, when the lights may be removed altogether, as a good layer of litter will be quite sufficient for keeping out severe frost. An examination of the inside borders in early houses intended for starting next month should be made at once, and in the event of their having become very dry a series of waterings with water at a temperature of 90° will be necessary, as every particle of the soil should be properly moistened before the Vines are excited. Examine pot Vines as they are placed in position for forcing. Top-dress with rich compost, and enlarge the openings at the sides and bottoms of the pots, for the twofold purpose of letting the roots find their way into the plunging material, where quality is the object, and to allow the water, of which they require copious supplies, to pass away freely. Remove young Vines intended for cutting back or planting in the spring to a cold house or west wall, to which they can be made secure from injury by wind, and protect the pots with spent tan or litter. Take advantage of fine weather for getting a good supply of turf for future use; place a portion in a dry, open shed, and make the remainder up into narrow ridges in the open air. *W. Coleman, Eastnor.*

MELONS.

To ripen Melons satisfactorily in October there should, in connection with favourable weather, be a good supply of top and bottom heat at command, without which, during such weather as that which we have been having lately, the fruit must necessarily be wanting in flavour and colour. To attain these indispensable points the temperature during the ripening period of the fruits should be somewhat high, dry, and airy—these essential points can neither be acquired nor maintained in the absence of fire-heat in late autumn. Therefore, under these circumstances, the linings of Melon frames being made up after the end of August or the middle of September, according to the state of the weather, with a view to ripen or to hasten the maturation of the fruit, is not only labour misapplied, but is also calculated to thwart the very object that it was intended to accomplish—the quicker ripening and better flavouring of the fruit; inasmuch as the steam or ammonia which arises in the frames and settles upon the fruits in proportion to the temperature produced, by the frequent making up of the linings with fermenting material, is tantamount to a humid stagnant atmosphere, which renders the flavour of the fruit little better than that of a Pumpkin. However, the most that can be said in favour of Melons grown under such inauspicious circumstances is, that they make a "dish" when fruit in variety on the dessert-table is scarce. *H. W. Ward, Longford Castle.*

CUCUMBERS.

These, in consequence of the recent unfavourable change in the weather—from a bright and sunny sky, with a light and bracing atmosphere, to one wet and cloudy, and, as a consequence thereof, an atmosphere surcharged with moisture—must be treated in accordance therewith. Therefore, atmospheric moisture must be reduced to a minimum and air admitted very cautiously, otherwise mildew would be likely to attack the plants, in the event of which the leaves so affected should be dusted with flowers of sulphur while damp, after which the house should be kept rather dry and airy, weather permitting, until the disease has been thoroughly eradicated. A somewhat dry rather than a humid atmosphere should be maintained in the Cucumber-house during the next three or four months, but anything like approaching an arid heat should be avoided. Cut the fruits as soon as they have attained a suitable size for table, and stand them on the stems in saucers in which there is half an inch of water in the fruit-room or some other suitable place. The plants thus relieved of the demand for nutrition in this direction will direct the flow of sap to the swelling and finishing of the younger and smaller fruits, and so on during the whole fruiting period of the plants. Maintain a night temperature of from 65° to 70° (according to the state of the weather), and from 70° to 75° by day with fire, running up 10° or 15° with sun. Two very good Cucumbers of recent introduction are Sutton's Duke of Connaught, an excellent variety, and Freeman's Yard Long, an appropriate name enough, both of which have proved themselves during the present season here very good and prolific varieties; and, in consequence of the fine size and general good appearance of the fruit, and the luxuriant growth of the plants, the leaves being of an enormous size and of a dark rich green, have been very much admired. In order to thoroughly test the merits of the above-named Cucumbers as winter-bearing varieties, I planted several plants of each this autumn in our early house, with an equal number of Telegraph, and judging from their present prolific appearance they are

likely to prove as good winter-bearing Cucumbers as the latter, with the advantage of the fruit being larger than that (Telegraph) variety. Of course this is only a prospective opinion based upon present facts, and the behaviour of the plants during the winter months may possibly be the means of removing this previously formed favourable impression. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

STOVES.—Fine settled weather appears to have left us, and with it the sun, in the absence of which it will be necessary to use sufficient artificial heat to keep the temperature of these structures between 70° and 80°, allowing a drop of 10° or so by night, which will be quite warm enough from this time till the days begin to lengthen, when a gradual advance must be made to assist an early growth of the plants. Advantage should be taken of the present season to give the plants a thorough cleansing. As regards Gardenias, which are so frequently infested with mealy-bug, the best way is either to dip them in a solution of nicotine soap diluted according to directions on each bottle, or to lay them on their side and syringe them with paraffin and water in the proportion of a wineglass of the oil to 4 gal. of water; but whichever is made choice of it will be found far more potent by using the liquid at about 90° of heat, as then it at once penetrates the coating of the bugs and dissolves them. The nicotine soap answers admirably in ridding Crotons and such-like of thrips, on account of the active properties of tobacco it contains; to free the foliage from any deposit, the garden engine or syringe should be freely used.

GREENHOUSES.—Nothing assists so much in the autumnal adornment of these as Chrysanthemums, which should be got under cover, or so placed that they may be easily and quickly protected in the event of frost. If put into houses, they should be kept very cool and well ventilated, the plants being very impatient of a confined atmosphere, which brings on mildew, a parasite which, if not arrested and eradicated at once, spreads with great rapidity, and so damages the leaves as to cause them to perish. The only remedy is dry flowers of sulphur, dusted on through a fine distributor when the foliage is damp from night dew, as then it will adhere and do its work effectually, after which it may be washed off by watering overhead with clear water. The fast-advancing blooms will soon be making large demands on the plants, and to assist these to the fullest extent must now be one of the chief cares of the cultivator, for unless well fed many of the flowers when they come will be mere starvelings; and to thin out, as some do severely, with a view of getting them large, robs a specimen of much of its beauty. By giving plenty of liquid manure, sufficient vigour may be infused to enable most of the buds to expand, when, with such heads of blossoms, plants will be of great decorative value, as they will make a grand display. The rich glowing *Salvia splendens*, too, may be much benefited in the same way, as also *Schizostylis*, *Mignonette*, *Cyclamens*, *Cinerarias*, and *Primulas*, that have their pots well filled with roots; but in giving it to the last-named it will be necessary to be particular not to wet the crowns, as when that is done the water lodges there to such an extent as to bring about canker and cause them to rot. Although it is full early to commence forcing, the sooner plants are lifted and prepared for it the better, as not only may they be got out of the ground now with more speed and comfort, but they will have time to lay fresh hold of the soil before being set to work, and when they have done that, their condition and strength will be such as to enable them to bear the heat, and to flower with great strength. *Rhododendrons*, hardy *Azaleas*, *Kalmias*, *Lilacs*, and similar things will do very well as yet outside, but *Lily of the Valley*, *Spiraeas*, *Dielytras*, *Solomon's Seal*, and others of that class, should have the protection of a cold frame or pit, where, if plunged and partly covered with leaves or tan and kept close, they will be snug and come gently on, unaffected by any adverse changes of weather. The *Rhododendrons* and other plants mentioned, while not under cover, should have their pots plunged in dry litter or a bed of gently fermenting material, which will be a great help to them in giving a start, as also to *Roses*, and more especially the *Teas*, which so treated continue to yield blooms to a very late period. Where it is desired to increase the stock of either these or *Perpetuals* the present will be found a good time for grafting or for propagating by cuttings, as now that the wood is ripe they strike freely or unite well to stocks. If grafted, small *Manetti* plants are the best to work the scions on, but before grafting it is always advisable to place the stocks in a little heat to get them in advance, when, if cut back to within 3 inches or so of the roots, and the scions put on and carefully tied, a union is quickly effected. To aid in bringing this about, a close hotbed frame is the best situation, and for the cuttings a border where they can be sheltered by handlights, as there they will callus during the winter and form roots in the spring. *J. Sheppard.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Oct. 18	Sale of Dutch Bulbs, at Stevens' Rooms; and Lot the Auction Mart, by Protheroe & Morris.
TUESDAY,	Oct. 19	Clearance Sales of Nursery Stock at Parker's Nursery, Tooting, and Reeves' Nursery, Acton, by Protheroe & Morris. Sale of Orchids, Lilies, &c., at Stevens' Rooms.
WEDNESDAY,	Oct. 20	Sale of Aulacas and Camellias from Ghent, and Bulbs from Holland, at Stevens' Rooms. Continuation of Mr Parker's Sale, at Tooting.
SATURDAY,	Oct. 23	Sale of Bulbs and Plants, at Stevens' Rooms.

GARDENERS who flourished in the days of our forefathers, and many who live in the present day, were and are enforcers of the golden rule for gardeners: "Prepare the ground well for crops." From the days of the "grand old gardener" to the present time, of the thousands of failures that have occurred in the culture of vegetables, fruits, and flowers, a very large majority may be attributed to the soil not being well prepared, and to the neglect of frequent stirrings at depths suitable to the requirements of the plants. It is more than 200 years ago since there lived JETHRO TULL, the famous agriculturist, who was such an enthusiast for stirring the soil that he formed the opinion that crops could be produced without the aid of manure. It is a matter of considerable importance that the atmosphere should enrich and sweeten the soil, and unless its surface is in a fit condition to allow the air to permeate its valuable properties are lost. Travellers inform us that the Greeks in their vineyards throw up the earth between the Vines in ridges, the object being to enrich and sweeten the soil by exposure, adding and mixing manure with the ridge of earth before returning it to the roots, which it would appear they are in the habit of pruning annually.

We cannot too highly estimate the benefits derivable from deeply trenching the soil. They have been forcibly put by an intelligent writer in the following words:—"A greater degree of openness is given to the soil, so that the roots can penetrate it easily, and, in dry seasons, go down where the soil is more moist, and so escape, to a greater extent, the evils of drought. On the other hand, moisture, by the law of capillary attraction, ascends more freely from the subsoil when such is desirable. A more perfect access of air is secured, from which the soil imbibes ammonia and carbonic acid, and a greater supply of soluble matter is made available for the use of plants. In trenching some soils where the subsoil is a tenacious clay it is not desirable to bring to the surface much of such at a time. But if a small portion be thrown on the surface each time, and mixed with the lighter staple, manure, and quicklime, in process of time the depth of soil may be considerably increased and improved."

It is during frosty weather in the autumn and winter months that favourable opportunities offer for operating, and a good steel digging-fork is an excellent instrument for the purpose. It is an operation that can be performed at all times with advantage, and an old gardener remarks that "the operation of trenching performed from April to June, in the middle of the day when the sun shines, will greatly assist in adding warmth to the earth, and in the destruction of all weeds."

There is one system of tillage far too prevalent, in small gardens particularly, and we fear in not a few large ones. It is that of digging and manuring only one spit deep till a few inches of the top soil are poisoned with dung, and turned into a moving mass of slugs and grubs, while the subsoil is as hard as adamant: this cannot be too severely condemned. Gardens in such a condition would grow heavy crops for two or three seasons without any further manuring, if they were trenched and the subsoil well mixed with the top spit. By deep trenching, ground that is

naturally tenacious is rendered more open for the time, and water finds its way more quickly into the drains below; and the benefit derivable from manure by a given crop is increased by porosity, inasmuch as the decomposition of the vegetable matter in the soil is dependent more or less on the action of the air.

In an old gardening book reference is made to a successful gardener who could always produce finer vegetables and flowers than his neighbours. He is represented as one who examines the seed catalogues as carefully and with as much interest as if he were searching for some document by which to claim some property, and he also had made himself acquainted with the character of the plants that such and such seeds produced and their requirements; and, further, he had not neglected them through the stages of growth; and when he planted out in May and June he felt great satisfaction in knowing that he had prepared the ground well for the plants.

— PARIS BOTANICAL AND HORTICULTURAL CONGRESS OF 1878.—The report of proceedings of this Congress has lately been issued. The subjects treated of in the horticultural section, and reports of which are to be found in the publication before us, are the production of double flowers, the *Hortus Europæus*, the Orange Tree and its diseases, the changes in the root caused by the Phylloxera, the cultivation of the double Cocoa-nut, the influence of the age of the seed on the seedling, the production of varieties, the culture of Figs and Strawberries at Argenteuil, the Eucalyptus, artificial manures, insects injurious or favourable to horticulture, use of sewage in the cultivation of vegetables, horticultural nomenclature, &c. The principal matters discussed in the botanical section were the female flower of Conifers, the organisation of botanical and physiological laboratories, the arrangement of botanic gardens, the respiration of plants, the absorption of colouring matters by plants, descriptive notes concerning various botanical gardens, the classification of Ferns, Cucurbits, and Almonds; the embryogeny of Orchids, the formation of asparagin, &c.

— GREEN OYSTERS.—In *Nature*, vol. xvi., p. 397, mention was made of the fact that the green colour observed in oysters in certain localities is caused by a variety of *Navicula*, to which the name *Navicula ostræaria* has been given. Further particulars of experiments made by M. PUYSEGUR, at Sissable, as detailed in the current number of *Nature*, are not without interest. From the results of these experiments it appears to be established beyond dispute that the green hue in oysters is due exclusively to their absorption of certain *Naviculae* contained in the surrounding water. The facts are in perfect keeping with the observations of growers, that heavy rains (which increase the supply of fresh water) cause the disappearance of the green from the "clears," while, on the other hand, dry north-east gales, which greatly increase the saturation of the water, bring it, as it is called, "into condition."

— ISOTOMA AXILLARIS.—In the Kew herbaceous collection this charming little Australian *Lobelia* is flowering abundantly. It has pretty laciniated leaves and long-stalked pale blue blossoms, with long tubes and flat salver-shaped corollas.

— THE HOP CROP OF 1880.—We learn from the *Times* that an estimate of the English Hop crop of 1880, for the use of those engaged in the trade, has just been issued. In East and Mid-Kent, over an extent of 30,518 acres, a yield of 7 cwt. per acre (or a total of 213,626 cwt.) has been gathered in. Of this quantity 25 per cent. is more or less mouldy and brown, 25 per cent. medium, and 50 per cent. good. In the Weald of Kent, from 12,327 acres an average yield of 8½ cwt. has been grown, or a total of 104,779 cwt., the general quality of which is good. In other parts of Kent there are only 562 acres, yielding 7 cwt. each. The quality of the 3934 cwt. from these acres is from medium to fairly good. In Sussex a yield of 8 cwt. per acre has been gathered in from 9979 acres, or a total of 79,832 cwt. The quality of these Hops is good. A similar yield

per acre has been gathered in from 5,440 acres in Hampshire and Surrey—the total yield being 43,520 cwt. The quality is from medium to fairly good. Seven hundredweight per acre has been gathered in from 8556 acres in Herefordshire and Worcestershire, the quality of the 59,892 cwt. thus obtained being good and over average. The other counties, with an average production of 7 cwt. per acre, produce a total of 2023 cwt. from 289 acres. Here also the quality is good. Thus, from the whole 67,671 acres under Hop cultivation in this country an average yield of 7½ cwt. per acre, giving a total of 507,606 cwt., has this year been obtained.

— THE DOUGLAS FIR.—Mr. McCORQUODALE, writing in the *Journal of Forestry*, says that in his opinion, based on his own experience and that of others, this will become the most remunerative tree of all our Conifers. It will thrive in dry sandy subsoils, where Larch and Spruce become affected with dry rot.

— CANADIAN APPLES.—A large proportion of the fine Apples now appearing in the English market and ticketed "American," are (says *The Colonies and India*) imported from Canada, where this fruit thrives as well as in any part of the United States. The cultivation of the Apple tree receives more attention in America than in England, and with excellent results, for the American fruit has earned the character of being superior to those grown in this country. It is only lately that proprietors of orchards in Canada have given any care to the growth and collection of the fruit, yet the quality of the Apples grown in Ontario is inferior to none on either side of the Atlantic. One correspondent in that province speaks of millions of bushels of Apples of the finest description lying on the ground, left to rot, or to become food for pigs, only a small proportion of the harvest being utilised to supply local wants or for the manufacture of cider. The character of the fruit is, however, really too good for the latter purpose, and difficulties in the way of transport have prevented their shipment in any large quantities to Europe. A few growers and merchants have, however, lately taken the trade in hand on an organised scale, and the result will be to put a large sum of money into the pockets of the farmers and exporters in Canada, and, it may be hoped, will tend to cheapen the fruit in this country. A barrel of the finest Apples may be bought in almost any part of the colony for 2s., while retail dealers here are charging sometimes double that price per dozen.

— THE ORDER OF THE CHRYSANTHEMUM.—According to the *Revue de l'Horticulture Belge*, the King of the BELGIANS received lately the Order of the Chrysanthemum from the Emperor of JAPAN, through His Excellency NAONOBU-SAMESHIMA, the Minister Plenipotentiary at the Belgian Court.

— ORCHIDS IN FLOWER AT CLAPTON.—Among the Orchids now flowering in Mr. LOW's nurseries at Clapton are *Pilumna* (*Trichopilia*) *nobilis*, from Peru and Merida, a charming Orchid for a cool-house, the flowers being large, pure white with a yellow centre, and deliciously fragrant; some fine varieties of *Odontoglossum Alexandræ*; the rose-coloured *Mesospidium vulcanicum*, from the volcanic mountains of Eastern Peru; *Aerides quinquevulnerum*, with one or two spikes of flowers opening, but not yet in perfection; *Saccolabium Blumei* majus, with two large spikes of flowers, the longest being 15 inches; *Cattleya Loddigesii*, with several of its rosy-lilac flowers expanded; *Oncidium crispum*, with a long spike of cinnamon-brown flowers with yellow bars; *Dendrobium formosum* giganteum, with several spikes of its pure white flowers; also several forms of *Oncidium varicosum*, amongst them being one of great size and substance; *O. cheiroporum* has a good spike of its bright yellow, sweet-scented flowers.

— PERICOME CAUDATA.—This rare shrubby Composite, which is now flowering freely in the herbaceous ground at Kew, was raised from seeds collected in Colorado by Sir JOSEPH HOOKER. It has opposite, light green, triangular, long pointed leaves, and umbellate panicles of showy golden-yellow flower-heads. Should this prove quite hardy, it will be a valuable addition to our garden lists of ornamental shrubs. The Kew plant is from 3 to 4 feet high, by as much in diameter.

— KENTISH FRUIT GARDENS.—Passengers by rail through the fruit-producing parts of the county of Kent are often struck with the regularity in the appearance of the trees. In the case of several acres of trees a marked uniformity is apparent, and this is to be attributed in some degree to the large quantities which are cultivated of one particular variety, and thus, their habits of growth being alike in the mass, they present a decidedly noticeable even surface. Yet something is due to the management of the trees, which is done on what may be rightly termed scientific principles. Large plots of the Warrington Gooseberry, for instance, can be noticed, so carefully and evenly pruned that one tree might be taken as the fac-simile of the whole. A peculiar kind of knife—the old-fashioned sheath-knife—is used, made much

acre, *S. Lydium*, *S. hispanicum*, may all be used for this purpose, but *S. spurium*, otherwise so hardy, is apt to lose its lower leaves, and leave scraggy stems visible.

— APPLES FROM CORDONS.—The splendid fruit Mr. HAYCOCK, of Barham Court Gardens, Maidstone, has been gathering from cordon trees proves that there is something more to be said in favour of this system of training. He has sent to London examples of Emperor Alexander, represented by large and splendidly coloured fruit, very handsome in shape, some of them measuring 14 inches in girth; *Mère de Ménage*, very large, handsome, and abounding in colour; the Mother Apple, uncommonly fine; and Ribston Pippins of such size and finish as to

place to some wild and uncultured spot, or perchance whether a horde of wild beasts had not played havoc in the night for sport. It was exceedingly trying, perhaps the more so that, being Sunday, little could be done to reproduce the air of tidiness so dear to all good gardeners; but the autumn, with its changes and its fierce storms, is upon us, and the close-shaven lawn, the neatly rolled foot-path and the pretty neat parterre will often during the next two months have to present scenes of disorder such as it will test severely the temper of the gardener to endure with equanimity. There is abundant evidence that the leaf-falling season will be both a long and a heavy one. The trees have made strong growth that is almost luxuriant, and consequently the leaf crop is a thick one. Then whilst some trees will, as ever, let the season be what it may,



FIG. 93.—STOKE ROCHFORD, NEAR GRANTHAM. (SEE P. 495.)

larger than is usual. The knife is used with a freedom that may perhaps startle some gardeners, but the pruner knows perfectly well what he is about, and if spring frosts are but merciful, a good crop of fruit is the reward.

— BARE BEDS.—It is by no means necessary to leave the beds bare after the removal of the bedding plants. For beds in small gardens nothing is more effective than little plants of *Retinosporas*, *Ivies*, and other hardy evergreen shrubs, which may be had in pots, and sunk, pot and all, in the beds, so that they may be lifted without injury in the spring, and made to do duty on the balcony or in the winter garden. Many of the *Sedums* and some of the *Sempervivums* will do well planted on the beds in winter, and they too may be removed when no longer wanted. S.

convince any one that at Barham Court there is no evidence that this fine old Apple is wearing out. Hardy fruits are being made a feature at Barham Court, and in time to come we shall no doubt learn more of the success attending their culture.

— FALLING LEAVES.—Gardeners when they on Sunday morning last looked out over the scene of litter and disorder which the stormy wind and rain of the preceding night had created, must have felt some of the misery said to have been endured by the unfortunate being of whom old story-books tell that he was condemned to the eternal planting of Cabbages, the which an attendant demon came behind to pull up. Probably some of our readers rubbed their eyes somewhat, and wondered whether the gardens, left the day previous so trim and neat, had not given

begin shedding their foliage early in October, others, more enduring, will carry theirs pretty well into December. A dry October might have largely accelerated the fall, but already enough rain has fallen to give the month a wet reputation, and the trees seem to rejoice in it. Unpleasant, therefore, as are the garden aspects of a long autumn the season is not without some pleasing compensations. The heat and the growth of summer are past, and pending the complete leaf-fall the overworked gardener may take a little needful rest—it is well deserved; then there are elements of beauty in the foliage, changes of hue and tint that autumn only can give, but these may be of too æsthetic a nature to afford the severely practical man much pleasure, and therefore he will find perchance his greatest reward in the big heaps of leaves that have been gathered up, all significant

of good culture and garden usefulness in the years to come.

— **WATER.**—As the traveller journeys by rail or road through the lowland districts he sees "water, water everywhere," and the country looking almost as desolate as MARTIN CHUZZLEWIT found Eden. We have had a tremendous rainfall, that has been for the time far in excess of the requirements of the land, therefore the watercourses have become over-full and the rivers blocked, and all our great system of arterial drainage disordered and for the time inefficient. The moral of all this is that we are letting an immense bulk of water run to waste—allowing it to be, in fact, a positive injury rather than a great good. But it is all very well to complain of this waste and offer no suggestions as to its utilisation. Those unfortunate landowners and occupiers who see their fields, recently so green and beautiful, now a waste of waters, would be only too thankful for any one to take this incubus from off their lands as speedily as possible, and perchance just now think that they have at least enough of it without being troubled to put it in store. In fact we rarely, if ever, think of or suggest the utilisation of waste waters when the same waters are abundant. It is when a long spell of drought comes, when the soil is parched and the crops wither up in the heat, when all Nature is gasping for the wherewith to satisfy its great thirst, that we put forth schemes for giant tanks, enormous reservoirs, the bottling of the waters up in all sorts of places, in fact to do the impossible right out. Then comes the rain, and straightway we forget what sort of a terrible time a period of drought is. The new Balloon Society is anxious to utilise balloons for all sorts of purposes, even to the finding of the North Pole. Will the aeronauts care to test the use of balloons for the giving of artificial rains in hot weather? Let them first store the now too abundant water, and then in the hot summer time lift it by balloons to the cloud heights, and from thence permit it to descend in genial showers. That would be indeed a beneficent work, but whether capable of realisation others must determine.

— **MAMMOTH GOURDS.**—A correspondent, "J. C.," writes:—"A client of ours asks if we have seen or heard of larger mammoth Gourds than what he describes as follows:—One measures 6 feet 4 inches in circumference; weight, 130 lb. Another 6 feet 2 inches circumference; weight, 118 lb. Is this anything extraordinary?" Extraordinary or no, these weights are not often beaten, but a heavier one was grown at the Middlesex Industrial School, at Feltham, in 1869. This measured 6 feet 8 inches in circumference, and weighed 124 lb.—and at various times Gourds or Pumpkins of a heavier weight even than this have been recorded; the most remarkable being the Gourd grown by Lord RODNEY's gardener in 1834, which weighed 212 lb., and measured 8 feet in circumference; and the Pumpkin grown in 1861, by a market gardener at Orleans, which scaled 242½ lb. and measured 10 feet 4 inches in circumference.

— **MASON'S SCIENCE COLLEGE, BIRMINGHAM.**—The munificent gift of Sir JOSIAH MASON to the town of Birmingham of a Science College, fully equipped and richly endowed, was formally made on the 1st inst., when the College was opened. The proceedings in connection with this interesting event commenced at noon by an inaugural address delivered in the Town Hall by Professor HUXLEY, F.R.S. In the afternoon Sir JOSIAH MASON entertained at luncheon about 140 gentlemen, including many leading scientific men from a distance, and representatives of the principal local institutions. In the evening a *conversazione* took place in the College, and was attended by more than 1000 invited guests. During the evening Sir JOSIAH MASON formally transferred the College to the trustees. Holding the key of the building in his hand, and addressing Mr. G. J. JOHNSON, chairman of the trustees, he said:—"This key of my College is now mine, and I can say that the College is mine; but in a moment I shall be able to say so no longer, for I now present it, and with it the College, to my old friend Mr. JOHNSON, on behalf of my trustees, to be held by them in trust for the benefit of generations to come."—Mr. JOHNSON said:—"Sir JOSIAH MASON, I congratulate you, and I congratulate the town, on the munificent gift you have just made. I heartily unite with you in the wish that this gift may prove a benefit to generations

yet to come." The purchase of the site of the College and of the lands &c., which form its endowment (yielding at present £3700 per annum), cost £110,000; the College and its furniture, &c., £60,000; so that the total cost of Sir JOSIAH MASON'S gift is £170,000. What its value will be to Birmingham who can calculate?

— **FLORAL DECORATIONS.**—In connection with the opening of MASON'S Science College, at Birmingham, above referred to, it will probably interest some of our readers to read details of the plants used to adorn the reception, refreshment, and ball rooms, and the corridors and staircases, on the occasion of the evening *conversazione* we have mentioned. The floral arrangements were undertaken by Mr. R. H. VERTEGANS, of the Chad Valley Nurseries, Edgbaston, who employed something like 5000 plants in carrying them out, in a manner never before seen in Birmingham, winning commendation from all who were privileged to be present at the evening assembly. Aided by a local upholsterer, with apparently unlimited resources, the various rooms of the College were draped, carpeted, and furnished like a nobleman's mansion. Mr. VERTEGANS then commenced his labours, and when he had finished them produced a series of satisfactory and picturesque effects by means of stove and greenhouse plants and flowers artistically grouped. He used 600 Palms of various kinds, 400 Ferns, mostly *Adiantums* (farleyense, gracillimum, formosum, and cuneatum being those chiefly used), 50 *Caladiums*, 100 *Begonias*, 120 *Dracenas*, 45 *Crotons*, 370 *Lilies*, 300 *Tuberoses*, 200 *Pelargoniums*, 94 *Lycopodiums*, and vast numbers of *Isolepis gracilis* and other plants, including fine specimens of *Pancratium*, *Bougainvillea glabra*, *Banana*, *Solanums*, *Acacias*, *Coleus*, &c. Besides these more than 1000 hardy Conifers and shrubs in pots were used in the corridors and staircases, besides a great number of spikes of *Gladioli* and other flowers.

— **FROZEN WOOD.**—M. BRÉAL, in a recent number of the *Annales Agronomiques*, shows that wood which has become frozen is almost as good for firewood as wood that has not been frozen, so long as the wood is not wetted; but if the wood is exposed to moisture, as frozen wood absorbs more water than wood which is not frozen, it is the frozen wood which will most rapidly lose its heat-giving power, and which is the soonest spoiled by moulds and mildews.

— **IVY.**—The only possible objection there can be to Ivy as a hardy evergreen plant is the fact that it is indigenous and common. It will subsist and thrive anywhere, and under every phase of neglect and cultural indifference; yet it is worthy of every care and attention. There is, moreover, one, and that an excellent mode of culture possible in connection with it which we have never yet seen advocated, and one which brings out all the merits of the best selections beyond what is generally supposed possible. Many low walls, and they are very numerous as parting or party walls to suburban villas, detached and semi-detached houses, &c., might be clothed with the very best varieties, instead of having rows of common Laurel, &c., in front of them, for the only purpose of hiding them from view—a practice which does not enhance the beauty of limited spaces, and makes them, besides, more limited still. Upon such walls a good selection of Ivies would form a most pleasing feature. Each must, however, be planted and grown well, and then, whether the wall is only half covered, or whether a full screen of particoloured leaves of endless form and variety is seen, there are few objects so effective. In such a position the strange cut-leaved, bird's-foot-like *H. caenwoodiana*, *H. Helix aurea maculata*, a clouded-golden form; *H. H. marginata argentea*, silver-edged; *H. elegantissima*, a really variegated leaved form; *H. poetica*, so variable in leaf form; *H. marmorata minor*, *H. lucida*, &c. The freshness and beauty of such a wall facing does not end with its earlier growth. Year by year as the month of April comes round the older leaves should be removed, and in lieu of the old winter-worn leaves a fresh, uniform, and younger growth, better marked as regards variegation, and more evenly clothed, makes its appearance. For low walls there is absolutely no form of plant equal to this, and none that entails so small an original outlay, or which requires so limited an amount of after-work to maintain it in perfect order and neatness. The Ivy is also capable of forming

very handsome specimen plants in pots, and can be trained to almost any shape that can be devised. As such they are well adapted for placing beside walks, verandahs, porticos, &c., requiring very limited attention, yet always having a neat and effective appearance. The sorts best adapted for pot culture comprise, amongst others, minor, elegantissima, major, lucida, marmorata minor, lobata major, &c. Finally, how beautiful they are when judiciously selected and planted amidst rockwork so as to "run over" prominent stones, and occasionally against pillar or plinth.

— **APPLIED SCIENCE.**—Professor HUXLEY, in his address delivered on the occasion of the opening of Sir JOSIAH MASON'S Science College, at Birmingham, on Oct. 1, said:—"I often wish that this phrase, 'applied science,' had never been invented, for it suggests that there is a sort of scientific knowledge of direct practical use which can be studied apart from another sort of scientific knowledge which is of no practical utility, and which is termed 'pure science.' But there is no more complete fallacy than this. What people call applied science is nothing but the application of pure science to particular classes of problems. It consists of deductions from those general principles, established by reasoning and observation, which constitute pure science. No one can safely make these deductions until he has a firm grasp of the principles, and he can obtain that grasp only by personal experience of the processes of observation and of reasoning on which they are founded."

— **COED COCH,** the residence of J. LLOYD WYNNE, Esq., has long been celebrated for the beauty and interest of its garden, and has become quite classical as regards mycology, in consequence of the very numerous additions to our list of indigenous fungi, due to the exertions of Mrs. LLOYD WYNNE. It was suggested by Mrs. WYNNE, in conjunction with her neighbour, Mr. WALKER, of Colwyn, that after the meeting of the Woolhope Club at Hereford much might be found to interest the members in the neighbourhood of Coed Coch. Arrangements were therefore made to invite as many of the leading members and visitors as could be accommodated, and accordingly one party arrived on Saturday, October 9, at Colwyn, and another at Coed Coch, under the guidance of Dr. BULL, and amongst them M. MAX CORNU, a host in himself. Meanwhile collections were made on Saturday by Mr. BERKELEY and his daughter to greet them on their arrival, and an addition to our list was recorded in *Agaricus senilis*. A *Leveillianus* was abundant, and proved to be identical with *A. denissatus*, FRIES. Both parties joined on Monday in an excursion to the woods in the neighbourhood of Colwyn, when amongst other interesting matters *A. tumidus*, P., new to this country, was collected. *A. tepulatus*, BULLIARD, a form of *A. ulmarius*, occurred, altered by patches of a red *Fusisporium*, a similar change also taking place in *A. orcella*. The most interesting find, however, was *A. nudipes*, KALKDRENNER, which was gathered by Mrs. WYNNE herself. A single specimen of *Hygrophorus Wynnæ* was found, which excited great interest. On Monday the meet was joined by Sir W. GUISE and Mr. BUCKNELL, who brought with him *A. seminodis*, new to this country, and a very beautiful undescribed species of *Lepiota*. Mr. Renny sent from Lucerne a valuable collection, and some exquisite drawings. Mr. SHAW and Mr. BUCKNELL also brought drawings of rare species, and the meeting was well supplied with illustrative books. A joint excursion was again made on Tuesday to the Pine wood of Coed Coch, which furnished a plentiful supply of interesting species. All were accurately named and labelled as far as time would allow, so that the meeting was highly instructive, and M. CORNU closed the evening with a charming lecture on the comparative mycology of France and England. The weather was all that could be desired, so that the members thoroughly enjoyed themselves, and will long remember the happy days spent at Coed Coch and Colwyn. M. J. B. [The history of the Hereford Foray will be given in our next issue.]

— **MEMORIAL OAKS AT THE HULL BOTANIC GARDEN.**—On Monday last, on the occasion of the visit of the Duke of EDINBURGH to Hull, His Royal Highness was pleased to plant two memorial Oak trees in the new Hull Botanic Garden. Several sets of trees were presented for the purpose, and from

these Mr. J. C. NIVEN, the manager and secretary, selected one from Messrs. FISHER, SON & SIBBAY, of Sheffield, and one from Mr. E. HOLMES, of Lichfield, the former being one of six trees prepared for planting by H.R.H. Prince LEOPOLD on the occasion of the opening of Firth College, at Sheffield. Many influential persons of the town and neighbourhood were present at the ceremony, which, after the presentation of an address, was performed by the Prince, "in a manly way, evoking hearty cheers." On returning to the dais his Royal Highness was presented with a silver spade bearing an inscription, and an illuminated address read by Mr. NIVEN, in which, after thanking His Royal Highness for his condescension in planting these Royal Oaks, the directors add:—"May the Oak trees now planted—which, with your Royal Highness's permission, we will respectively name the Duke and Duchess of Edinburgh—long flourish, and form, as they are sure to do, interesting mementos of your Royal Highness's visit and objects, the growth and progress of which will be a source of gratification to future generations." The Duke warmly expressed the pleasure which his visit had given him, and wished success to the garden and the town.

— BIRMINGHAM SPRING FLOWER SHOW.—A spring flower show is announced for Easter Monday and Tuesday, April 18 and 19, in the spacious Town Hall at Birmingham. This is being promoted by the managers of the very successful Chrysanthemum show held in Birmingham in November, and the schedule of prizes just issued is a very comprehensive one, and should bring a good exhibition. It would seem that florists' flowers are receiving much more attention just now at Birmingham than has fallen to them yet of late years; and in the schedule of prizes just put forth there are classes for Auriculas, gold-laced Polyanthuses, Pansies, &c. The revived taste for Auriculas, Polyanthuses, &c., is spreading, and it is fitting that Birmingham, which thirty years ago was in the van of floricultural progression, should again take a foremost place in the culture of these and kindred subjects.

— CHRYSANTHEMUM SHOW IN FINSBURY PARK, N.—We understand that the Metropolitan Board of Works have arranged for a display of Chrysanthemums to be made in a temporary glasshouse in Finsbury Park, and to be opened on Saturday, the 23d inst. The Park Superintendent has, we believe, prepared a capital lot of plants, and the show will no doubt be highly appreciated.

— SHROPSHIRE HORTICULTURAL SOCIETY.—We are informed that the summer show of this Society, which was held in The Quarry, Shrewsbury, was a great success, resulting in a profit of nearly £500. The committee of management, after paying the probable loss on the Rose and autumn shows, expect to have a balance of more than £350 to add to the reserve fund, which last year amounted to £827.

— THE WEATHER.—General remarks on the weather during the week ending October 11, issued by the Meteorological Office, London:—"The weather has been cold but moderately fine at nearly all our western and north-western stations, very unsettled in all other places, with exceedingly heavy rain in the south and east of England. Thunder occurred at Pembroke on the 7th, and in several parts of England during the night of the 7th–8th. The temperature was below the mean in all districts, the deficit ranging from 5° in the "Midland Counties" to 1° in "England, S." The highest reading recorded was 67°, which occurred at Barnstaple on the 11th. The lowest of the minima were registered over central Ireland and at Glengalmond, where the thermometer fell to 29° or 30°. The rainfall was equal to the mean in "Ireland, S.," but less in all the other western and north-western districts; in the southern, central, and north-eastern parts of the kingdom the fall exceeded the mean value, and in "England, E." and "England, S." the excess was very large. Bright sunshine shows an increase in "Scotland, E." and "Ireland, N.," but a decided decrease elsewhere. Over the "Midland Counties," and in "England, E.," scarcely any sunshine was experienced, the percentage of total possible duration ranging from 8 in those districts to 49 in "Scotland, E." The wind during the first two days was south-westerly in the south-east, and north-easterly in all other places, but by the 7th the south-westerly wind had disappeared, and the north-easterly currents were blowing in all parts of the kingdom, reaching the force of a gale in the south-west and west, and continued to prevail during the remainder of the period.

THE CABBAGE MOTH.

NEVER in our long experience in kitchen gardening have the various kinds of Cabbage plants been so injured, and even entirely destroyed by insects, as during the present summer and early autumn. Our large summer Cabbages are in many instances reduced to perfect skeletons, the damage being increased by the habits of the chief depredator in boring from the outer leaves quite to the heart of the plant, leaving masses of its excrement in its way which accumulate at the base of the leaves, and especially after a shower of rain, rendering the plants very disgusting. There are several kinds of caterpillars which assist in causing this damage, especially those of the two common white butterflies, *Pieris Brassicæ* (the large white), and *P. Rapæ* (the small white); the caterpillar of the former is pale green, with very numerous black dots, and that of the latter is pale green and velvety, with a yellowish line down the back. But it is the larvæ of the Cabbage moth, *Noctua (Mamestra) Brassicæ*, which is the most injurious to this vegetable. This caterpillar, when full grown, attains the length of more than 1½ inch, and is as thick as a moderate quill pen. It has the body smooth and cylindrical, with the



FIG. 94.—THE CABBAGE MOTH.

twelfth segment slightly angulated on its upper side. It has three pairs of legs following the head, four pairs of middle prolegs and two clasping legs at the extremity of the body. It varies considerably in colour, the upper part of the body being of various shades of greenish or dirty buff, but more generally blackish, with still darker markings. There is a darker central line behind the head and a darker lateral line on each side of the body, separating the dorsal from the ventral surfaces. In this dark line there is a black dot on each side of each segment enclosing the white spiracle or breathing pores, of which there is one pair on the segment following the head, and a pair on each of the eight segments succeeding that which bears the third pair of legs, the two preceding segments (bearing the second and third pairs of legs) wanting the breathing pores. On the penultimate segment of the body there is a transverse black line, with its angles bent forwards, forming three sides of a square, uniting with the lateral dark line. The ventral part of the caterpillar, with the legs, is quite distinct, being pale buff or whitish. The dark markings are sometimes but very slightly indicated, especially in pale-coloured individuals. When full grown they are transformed to shining chestnut-coloured chrysalids beneath (or occasionally upon) the surface of the earth. The larvæ are to be found from June to October, enclosed in cocoons formed of the surrounding mould. The chrysalis state remains till

the following May, and the moth may be found from that month till September. These caterpillars, although, especially attacking the Cabbage tribes, are almost omnivorous, as they will devour Bindweed, Chickweed, Marigold, Mignonette, Forget-me-not, Dahlia, Hop, Horse-radish, Lettuce, Mustard, Poppy, Turnip, Vetch, and even the Tobacco plant. To the florist they are also very obnoxious, as they delight equally in the Pelargonium, consuming the flowers of certain varieties even more ravenously than the leaves; as for example—in a clergyman's garden in Wiltshire which we lately visited, where beds of distinct varieties of these flowers were arranged systematically opposite the principal windows of the house, we observed that every bloom of the variety *Vesuvius* was eaten, the other beds, filled individually with other varieties, being in full blaze of beauty.

The perfect moth measures about 1½ inch in the expanse of its fore wings, which are more or less variegated with dark and light brown markings, the fore margin with blackish streaks; there are two short waved black lines near the base of the wings: across the middle are also several slender waved black lines—some of these form two circles before reaching the middle of the wing, slightly beyond which is a white ear-shaped spot edged with black. An irregular fine white line, much toothed, runs near the extremity of the wing, followed by a submarginal row of black conical dots. The hind wings are brown, with the basal part paler. *I. O. W.*

THE GROVE, WATFORD.

OF the many historically interesting places with which the county of Hertford abounds, the seat of the Earl of Clarendon is one of the most important. The mansion is situated about three miles distant from the town of Watford, and is a fine specimen of architecture, the walls being densely clothed with Ivies and *Wistaria sinensis*, the latter a fine old specimen, which has taken years to form the massive stem from whose base the many rods ascend. Entering from the Watford road by the main lodge gates a beautiful and finely wooded park is opened to view, with sloping and undulating meadows all around. The carriage drive is curved, and on the right hand are many fine examples of Beech trees, for which this neighbourhood is famous. Continuing our course we enter by the gate which divides the deer park from the meadow land. The mansion is considerably elevated, and commands on a clear day a most interesting and varied view.

On the lawn at the south side of the mansion the old style of bedding is carried out, the margin of the lawn being planted with Irish Yews, which now form specimens unique in appearance. Here may be seen the old *Calceolaria amplexicaulis*, flowering profusely in the beds allotted to it, and which for purposes of bedding far surpasses the sorts of more modern origin, having the one great quality of being a sure bloomer. On the south-west side of the mansion is a Cedar of Lebanon, some 100 feet in height, whose sides and stem are almost Ivy-bound; the dimensions of the stem of this Cedar are as follows: at 4 feet above ground it measures 17 feet in circumference, the distance covered by the Ivy encircling the stem and branches, being 71 feet in circumference: this is indeed a feature. On the lawn in front of this are good specimens *Coniferae* in variety making good progress, and immediately to the left is a shrubby border containing *Fuchsia Riccartoni* and *F. elegans*, both of which, were left unprotected during the late severe winter; *Spirea callosa*, producing in abundance its rose-coloured flowers, and many others; at the end of which we come to a substantial hedge of Yew, from 15 to 20 feet high, and forming a dense mass. Situate near this point in a sheltered nook is a small rosery and a fountain, which faces the mansion on the western side.

Turning from the flower garden to the kitchen garden—which, by the way, is entirely new—we pass a fine batch of Silver Firs, varying from 100 feet to 140 feet in height, of clean growth and with fine timber; continuing, we enter the kitchen garden, which covers an area of about 7 acres, being divided into two parts, viz., the walled-in or central part, which is square, and the outer portion which surrounds it. This newly made garden is really a most creditable one; a wall some 10 feet high is wired from the ground to the top for the purpose of training fruit

trees throughout its entire length, and is also supplied with hooks for hanging nets to keep the fruit from the attack of birds, or for protection against spring frosts. That this garden has been by no means an easy one to establish will be gleaned from the fact that every inch of it has been sifted some 3 feet deep throughout, consequent upon the stony nature of the ground, and the surface has been replaced by something like 13,000 yards of new soil from another part of the estate. The gravel walks are wide, and by their side are drains made from 2 feet to 3 feet deep with rough sifted stones, which afford ample drains for both walks and garden. At the extreme end of this garden are the vineries and Peach-houses, which are of the length of 260 feet; these are well stocked with their respective trees. Entering, we come to the Fig-house, the principal variety grown being Brown Turkey, which for a good flavoured Fig and a sure and an abundant bearer is not surpassed. Negro Largo is also grown worked on to Brown Turkey, but it seems to make too rampant a growth; but when grown in pots, where the roots can be confined to a small space, it is a most desirable variety. The second house is a vinery, of which Black Alicante and Madresfield Court form the crop, the former with large and broad-shouldered bunches, well finished. The third house is also a vinery whose occupants are Black Hamburgh, Foster's Seedling, good bunches and largely berried; and Buckland Sweetwater. The fourth house is the earliest vinery for Grapes out of pots; and the fifth is occupied with Muscats, of which the crop has been a heavy one, the bunches large and well finished. The sixth house is also a vinery, the occupants of it being Lady Downe's, Muscat of Alexandria, Madresfield Court, and Golden Queen worked on West's St. Peter's, which seemed to suit it. The next and last of this range is a Peach-house, of which the occupants are Royal George, Barrington, Late Admiral, and Stanwick Nectarine; these have borne a heavy crop, and judging from the wood they are prepared to carry a good crop next season. The other crops in this garden, which consist of every requisite for kitchen use, have been good. Potatoes are a good crop of the several varieties grown, and fortunately little affected with disease; of winter greens a large quantity is grown.

Outside this boundary and at the back of this walk are large and convenient sheds for potting and storing, including Potato store, fruit and packing rooms, tool house, and other necessary rooms for storing in general. In front of this are stoves and pits, with other houses for forcing; the stoves, of which there are two, some 60 feet long and 24 feet wide, are well stocked. From the roof of one of these *Tacsonia Van Volxemii* is trained, and is one mass of bloom. Two plants of this *Tacsonia* are planted one on either side of the house, and trained right and left to the full length of the house, furnishing abundant supplies for decorative purposes. At one end a goodly plant of *Allamanda Hendersoni* is still flowering profusely, and is also most useful; the other occupants of these houses comprise the most useful flowering plants. Close to these are several ranges of heated pits for growing young pot Vines, Pines and Gardenias; these latter are grown in quantity, and look most healthy. The usefulness of these is too well known to require further comment. Another contains Neapolitan Violets, which are also largely grown; the pit in which these are grown is in the early season occupied with Potatoes for early work. Behind this is the Melon pit, in which there has been a quantity of fine fruit; and at the back is a Cucumber-house and a house with succession Pines, and another house which is used for pot Vines, of which a large batch is grown—it is now occupied with Poinsettia and Euphorbia jacinthiflora.

At the western extremity of this the bothy is situate, and at a glance one can see that the comfort of the occupants has been a matter of some consideration; it contains seven beds, and is fitted throughout with every possible convenience whereby comfort can be obtained. This, together with the ranges of forcing and plant houses, is from the plans of Mr. Myers, who has for nearly a quarter of a century held the position of gardener in this family. This extensive range of glass is heated by two boilers, the one being Ormson's convoluted, the other a terminal saddle; and these, with two others which are kept as a reserve in case of accident, work in conjunction with each other. This garden is surrounded on three sides by trees, many of which are

of large size. The woods adjoining the mansion are very extensive, and numerous rides have been formed throughout their entire length. In the deer park many fine Beech and Oak trees are to be seen; of the former there is an abundance, the major portion being of great size and bulk. ♀.

ROOT-PRUNING,

AND EARLY AUTUMNAL PLANTING AS AIDS TO PERFECT MATURATION OF THE BUDS AND WOOD OF FRUIT TREES.—This title is so long as almost to demand an apology; but I trust it may be found so suggestive by those who can read between the lines that they need read no more than the title, but at once proceed to act upon it. At first sight it seems impossible that root-pruning should aid maturity, but maturation may be hindered by an excess of food. The elaborating functions of plants are not seldom swamped beneath a plethora of crude juices. These continue to be sent up from the roots in excess of the needs of the tree, and beyond the power of disposing of them to the advantage of the buds and wood. Maturation under such conditions is hindered by an excess of water; hence the wisdom, efficiency and soundness of such depletive measures as root-pruning. By cutting off a few of the mains, the balance between demand and supply is readjusted in favour of maturity. Under natural conditions less water is forwarded in the autumn than during any other season of the year.

The heavy rains, genial warmth, and late growths of autumn, however, all tend to foster a late flow of water from the root upwards. As a matter of fact, too, it is found that such a flow is still vigorous. It is more so in late seasons than in early ones. For as nothing succeeds like success, so nothing causes so late and strong a flow as late and immature growths. These keep the collecting and conveying power of the roots in vigorous action. Sever the connection between the roots and the soil, or remove a portion of the former, and the supply of water is at once reduced and brought within more reasonable bounds, so that the light and heat of the sun may be able to turn a lessened volume of fluids to far more and better purpose than a larger amount. So far, therefore, the chief use of root-pruning is mechanical. It cuts off supplies that were worse than useless, and thus enables the plants to utilise the whole of the declining heat and warmth of the sun to the ripening of the wood and buds. In the absence of root-pruning it often happens that perhaps half of the sun's heat is wasted in getting rid of aqueous sap by evaporation or perspiration. It must be obvious to every one that the caloric thus wasted cannot be employed in the conversion of crude fluids into solid tissues, for the consolidation of the wood of the current year, or the laying of the foundation of fertility in the next. It may be that maturity, as a rule, is the concrete result of finished feeding. Plants are fed into perfect maturity as animals are for market, but under exceptional circumstances of time, climate, and condition, maturity is hastened by semi-starvation, and hence one of the main and more immediate advantages of root-pruning. Of course, it has other and more far-reaching effects on the plants in the future, but these in no way interfere with nor hinder its more direct and prompt effects on the current year's growth and buds.

If such be the results of root-pruning or the cutting of a few roots only, of course the effects of transplantation or the disturbance of all the roots must be still more pronounced. And it is; so much, in fact, is this the case, that autumnal transplanting must not be set about too soon, or the work of depletion will be carried too far, and wood and buds alike will be shrivelled into worthlessness instead of matured into fertility. For of course when a tree is transplanted, not only are all supplies of food cut off, but the plant loses sap or strength through every vessel or cell through which it gained both before disturbance; consequently, it needs much practical judgment to determine the exact time that it would prove safe to transplant a tree, to help the maturation of its wood and the finishing of its fruit-buds. This radical measure can only be adopted with advantage at an advanced stage of growth. After the major portion of the wood is of full size and beginning to change colour, when the forwardest leaves show symptoms of ripeness or begin to fall, and after the buds look fairly plump and full, transplanting will be safe to

check late growth, and complete the work of ripening already in progress.

Its after-benefits are not now under discussion, else it might be affirmed that these are so undoubted that the practice should be adopted even should a crop be sacrificed. But my point here and now is that the early transplantation of fruit trees in the autumn often ensures a crop the next year. No doubt this partly follows from the necessary depletion that ensues. But it also has other results: partly from being too full of water, and also probably from other causes, trees transplanted in the autumn are mostly harder in the following winter and spring. The wood, as a rule, is less injured by cold, the blossoms less blighted by spring frosts. No doubt part of this immunity arises from their tissues being too full of watery sap. But there are probably other reasons, and among these may possibly be the abnormal activity of the roots of all transplanted trees during the first winter. Be that as it may, the latter is a most suggestive hint in favour of root-pruning or transplanting. If any reader's trees are growing late, or if he has reason to believe that they are scant of roots, the remedy for both dangerous conditions is to root-prune or lift and replant at once—the sooner now the better. D. T. Fish.

Notices of Books.

Flora of Plymouth.—Mr. T. A. Briggs, a well-known and zealous botanist, has lately issued a full account of the flowering plants and Ferns found within twelve miles of Plymouth, with brief sketches of the topography, geology, and climate of the area. (Van Voorst.) The general plan followed is thus pretty much the same as that of the *Middlesex Flora*, published some years ago by Messrs. Trimen and Dyer, than which no better model for a local Flora could be wished. The climatal details, though brief, are such as we should like to see in a form readily accessible to gardeners and adapted to every county or district in the kingdom. Mr. Briggs enumerates and gives localities for some 377 species, but this includes about forty so-called species of Bramble. While the bulk of the plants are British or English in their nationality, five are of Scottish type, 16 of Germanic tendency, while the western position of the district is shown by the presence of thirty-six plants of the Atlantic type of distribution.

—NEW PUBLICATIONS.—Among the announcements for the coming season, it is stated that Mr. Murray is shortly about to publish the following works:—*The Power of Movement in Plants*. By Charles Darwin, F.R.S., assisted by Francis Darwin.—*A Popular Account of Peruvian Bark and its Introduction into British India, Ceylon, &c., and the Progress and Extent of its Cultivation*. By C. R. Markham, C.B.—*Rambles among the Hills in the Peak of Derbyshire, and on the South Downs, with Sketches of People by the Way*. By Louis J. Jennings.—*The Gardens of the Sun: or a Naturalist's Journal on the Mountains and in the Forests and Swamps of Borneo and the Sulu Archipelago*. By F. W. Burbidge.—*Unbeaten Tracts in Japan, Travels of a Lady in the Interior, including Visits to the Aborigines of Yezo and the Shrine of Nikko and Ise*. By Isabella Bird.—*Siberia in Europe; a Naturalist's Visit to the Valley of the Petchora in North-east Russia, with Descriptions of Birds and their Migrations*. By Henry Siebohm, F.R.G.S.—Messrs. Sampson Low, Marston & Co., announce *New Guinea, What I Did and What I Saw*. By L. M. D'Albertis.—*Mind*, No. xx., contains an article on "Botanical Classification" by L. Davidson.—The *Athenaeum* states that Dr. Andrew Wilson, F.R.S.E., of the Edinburgh Medical School, has in course of preparation a work entitled *Chapters on Evolution*. The work is designed as a popular exposition of the Darwinian theory, and will present in a popular dress the evidence for evolution, and include a history of the progress of that theory.

MEMORIAL TREES IN EPPING FOREST.—The *City Press* states that the Duke of Connaught, as Ranger of Epping Forest, has consented to plant two memorial trees this day (Saturday). He will be accompanied by the Duchess on the occasion.

Home Correspondence.

The Begonia as a Bedding Plant.—Some time last autumn I advocated the use of the tuberous-rooted Begonia as a bedding plant in your columns. That was after I had grown them for one summer in very bad weather. I have now had the experience of two seasons, the last somewhat better than of 1879. I must say that my admiration for them as a bedding plant has increased in a wonderful degree. Nothing that I can name in the way of bedding plants can stand the beating storms of heavy rain that we have had in the north of Yorkshire like the tuberous Begonia. For weeks in the early part of the summer, when we could not find a good flower on the Pelargonium, there the Begonia stood in all its glory, full of flower, and bidding defiance to wind and rain. It is not possible for the Begonia to banish the Pelargonium, but it will in time diminish the quantity grown in gardens; and, what is a great advantage, they can be grown so easily and without glass after the plants have been once procured. They may be wintered in a cellar or other place like Potatoes, and planted out in the beds just as you would plant out any kind of bulb, only not quite so deep. If space can be found they would certainly flower earlier if they were potted off and sheltered in a cold frame until the usual bedding plants are put out. A few of last year's plants, two in particular, were 18 inches in diameter, and one perfect mass of flower. At the time I am writing, when the scarlet Pelargonium is well nigh spoilt with damp, the Begonia is almost as grand as ever. They may be propagated by seed or cuttings—by the former they may be had in great abundance, but cuttings must perpetuate the choice kinds, and also give distinct colours for different beds. Seedlings must always be a mixed bed the first year they are grown. If they are wanted in separate colours, they should be marked and separated when taken up. The difficulty is to get hold of a good strain to start a stock of seedlings from. I have had seed from more than half-a-dozen sources, some of them very poor and not worth growing. All good seed must be from those who impregnate the flowers carefully by the hand. I would not grow from seed unless I could satisfy myself the seed was artificially impregnated: the best strain I have had came from Mr. Sibbald, of Bishop Auckland. Although I saw in your Notices to Correspondents a few weeks since, that you pronounced his Begonias not in advance of some known to you, I then wished you could have seen some of my stock from his seed, the leaves and flowers are considerably larger than any I have had from any other quarter. I have not seen Mr. Sibbald's Begonias for three years; they were then very fine, and I understood were all from seed artificially impregnated. Bedding plants have grown well this summer, and in fine weather the flower has been abundant; but I must say the Begonia beds have excited more admiration than all the other beds, perhaps a little from curiosity, because many had not seen them bedded out before. *William Culverwell, Thorpe Perrow.*

Large Potatoes.—On some new grounds I have been making for a gentleman at Stafford we planted, rather late in the spring, two sorts of Potatoes, viz., Snowflake and Magnum Bonum. The Snowflakes were lifted some time ago, and were very fine; the Magnum Bonums are being lifted now, and I think they are something remarkable. We have weighed eighteen Potatoes, which were over 20 lb., and two 1 lb. 9½ oz. and 1 lb. 5½ oz. respectively. These Potatoes were planted in clay, which when trenching in winter almost defied the spade; but the action of the frost broke it down like lime, the tubers were drilled on the top, and the clay drawn over them with a rake. *T. Wyke, Chester.*

The Champion Potato: Long Shaws.—Whilst lifting some Champions on a small patch of ground in my kitchen garden yesterday I had my attention drawn to the great length of some of the shaws. The plot of ground is on a slope, and a small portion at the bottom, say 6 yards by 3, comes under the influence of the shade of a large Apple tree; this I presume had drawn the shaws, which, though very much laid, were so remarkable for length that I measured a good many—7 feet was a common length, some were 8 feet odd inches, and one no less than 9 feet 6 inches. The rest of the shaws were tall, about 4 feet. The extreme length seemed to be confined to those under the Apple tree shade. *J. A. C., Northfield, Annan.*

"200 Spores."—In his amusing report of the Fungus Foray of the Epping Forest Club in your last number (p. 459), Mr. Worthington Smith refers to the "last page of House of Commons Report" (by which I presume he means the Report of the Select Committee on the Potato Crop) as containing the extraordinary statement that the conidia of *Phytophthora infestans* on bursting "produce 200 spores in a characteristic manner." As the author of the

Appendix containing this statement, perhaps you will allow me to explain that "200 spores" is only an easily accomplished misprint for the word "zoospores." No proof of the Appendix was shown to me. In the next line but one, "60 hours" is as obviously a misprint for "50 hours." *George Murray, British Museum.*

Onion Sauce or Sauce Robert (p. 459).—Will you kindly allow me to state that the white Onion Sauce used at French tables is called *à la Soubise*, after the name of the chef who introduced it? Sauce Robert is a brown sauce streaked with green, from the bits of Chives (or Rush Garlic) cut up and put in; this forms the proper accompaniment to pork cutlets where the *ménage* is managed in the French mode. *H. M. E., Oct. 11.*

Hypericum ægyptiacum.—This is a charming hardy undershrub, with tiny ovate acute leaves and small yellow flowers, like so many spangles, thickly studding the upper part of the much branched stems. It is a native of the South Mediterranean region, and



FIG. 95.—HYPERICUM ÆGYPTIACUM.

was long ago introduced, though it has been forgotten, like so many other good things. It is a good showy plant for the greenhouse, but is quite hardy at Kew, where it flowers in late autumn. For the specimen figured (fig. 95) we are indebted to Mr. Ware, of Tottenham. The plant was lately figured in the *Botanical Magazine*, t. 6481, and long ago in the *Botanical Register*, t. 196.

Cupressus funebris.—This plant has now stood for twenty years in the park of this city (Bath) quite uninjured by many severe winters. It is 15 to 20 feet in height. *G., Bath.*

—The instance recorded by "H. K." (p. 469) of this Conifer surviving our English winters is not the only one which has come under my notice. I remember a good specimen of it in the pinetum at Linton Park, near Maidstone, the beautiful seat of Viscount Holmesdale. This one has stood out to my knowledge since 1868, and how long previous to that cannot attempt to say, but I believe a record is preserved of the time it was planted. [1856. Eds.] It looked as well as ever when I saw it in January last. Speaking from memory it is about 16 feet high, and

is certainly a very distinct and pretty Conifer. I have understood it to be extensively used by the Chinese for cemetery decoration. From the fact of "H. K.'s" specimen having previously been in a conservatory I should say there need not be much doubt as to its hardiness; the one at Linton Park, however, occupies a sheltered position. *W. H. Divers, Bursghley.*

Self and Fancy Dahlias.—For the guidance of young exhibitors I may state that it has always been a recognised rule that light ground flowers with dark tips, edge, or shade, should be shown with selfs, and are called show varieties; while dark grounds with light tips or edge are shown with striped and spotted varieties, and are called fancies. They are also so described in the principal catalogues, such as those of Messrs. Keynes & Co. and Mr. Turner. When flowers from this class come "whole coloured" they must not be shown as fancies, but take their place among the show varieties. I understand that a self flower, the Rev. J. B. M. Camm, and Percy Taunton, a light ground with dark shade, were allowed to be shown in a winning stand of fancies at the Crystal Palace in August. This ought not to be while the distinction of show and fancies exists. A few examples may be useful:—Show varieties: Lady Gladys Herbert, The Countess, Mrs. Shirley Hibberd, John Bennett, Henry Walton, and Ethel Britton. Fancies: Mrs. Saunders, Nancy, Rev. J. B. M. Camm, George Barnes, Prospero, and Singularity. *George Ravelings, Romford.*

Wintering Strawberries in Pots.—The frost, which made an unwelcome appearance at an unusually early date (on the 3d inst.), and caught many people napping, will before this time have awakened the rank and file of cultivators into a state of active preparation for the winter campaign. There are few gardens where glass accommodation is anything like equal to the miscellaneous stock that require protection in winter. Half-hardy plants for the flower garden, Violets, and winter salading all press their claims for protection from severe weather, and are indispensable articles—especially the two latter—in their respective places during the winter. It is, therefore, I think, of the greatest importance to establish that Strawberries in pots require no glass protection from frost. I forget exactly the first time, that I expressed an opinion on the subject in the pages of the *Gardeners' Chronicle*, but I find, on referring to the number for October 12, 1878, at p. 467, in the Calendar written by me at the time, that I stated that Strawberries in pots were perfectly safe left out-of-doors for the winter. Subsequent experience has confirmed all that I have said upon the subject, as not a single pot was housed here last winter, nor did I protect the main stock at Otterspool the winter before I left there, except to scatter some dry litter or bracken over the pots, to preserve them from the action of the intense frost. The exposed treatment here cost us about a score of cracked pots, and I question very much whether we could have removed our stock into pits or frames, or to the borders of cool houses, as is the usual custom, at the same loss. I think this evidence is worthy of being recorded. Here are instances of plants having passed through two of the worst winters on record, one in the coldest and bleakest county in England (Lancashire), and the other in Dorset, in a low-lying district, where the cultivation of fruit is rendered extremely difficult from the humid atmosphere, which prevents thorough maturation except in very favourable seasons. The labour saved is a considerable item, but I do not look upon the labour as being of so much value as the space which is so unnecessarily occupied with plants that are more naturally situated out-of-doors. It has been averred from time to time that the altered conditions under which pot Strawberries are grown necessitates protection; now my observation leads me to a conclusion the reverse of this. We take runners early in the season, we hasten them forward with all the skill possible, we grow them in rich loam, taking care to drain the pots thoroughly, but, mark, we restrict the roots. In fact, every step we take in promoting early growth tends to make the plants hardier, and consequently they require less protection than plants in the open ground that are much later in making their growth. But I daresay some one will come forward and tell me that the roots at the sides of the pots will get injured, or that there will be great slaughter among the pots. To any such let me say, Compare the two systems by actual results. There is, however, still another view of the question, and that a vital one. I believe the housing of pot Strawberries has more to do with the many failures we hear of than anything else. During a late severe winter I saw a splendid batch of plants set upon the border of a late Peach-house which was heated with two rows of 4-inch piping; the pipes were lying flat upon the border at a few feet apart, and the Strawberry pots were set between the rows of pipes. There were bedding plants in the same house, and the pipes were warmed sufficiently to keep out

frost. The soil in the Strawberry pots was kept dry, in order to keep the plants at rest, and of course their rigid, well-ripened leaves showed no outward sign of distress, but I should like to have examined their roots. This notion of rest in the case of the Strawberry is a mistaken one. A Strawberry plant grows at the root all the year; check the roots other than by natural means and not only is the process of assimilation stopped, but you enfeeble the plant, and undo the good foundation that was laid in the early part of the season. I would never allow the soil in a Strawberry pot to get really dry. I would protect early batches from heavy rains, and on the approach of frost I would allow the soil in the pots to get moderately dry and cover them over a few inches thick with clean dry bracken. This material should be replaced occasionally, in case of wet; it soon rots with much use, and prevents air from circulating among the leaves of the plants. Sir Charles Napier is the only Strawberry I have ever grown in pots that seemed to require the accommodation of a pit or frame to keep its leaves perfectly safe from hard frost; with this exception a porous bottom for setting the pots upon and a supply of dry litter are the only requisites absolutely necessary for winter protection. *W. Hinds.*

Tom Thumb Ageratum.—This, one of our very best Ageratums, flowers so profusely during the summer and autumn months, that it is rather difficult to obtain a sufficient quantity of cuttings in the autumn, from which to propagate in spring an adequate supply for the summer embellishment of the flower garden, in which its dwarf compact habit of growth, and its light blue flowers render its presence almost indispensable. Under these circumstances it will be desirable to take up, if not before, immediately after, the frost, a couple of dozen plants; the old shoots or flower-spikes should be cut off down to the young growth, which, in the present case, they have protected from injury by frost, all the strong roots cut clean away, and the points of the young fibrous ones shortened a little, when they should be put in boxes of uniform size, in light mould, and placed in any house or pit from which frost and unnecessary damp can be excluded. The plants should be kept on the dry side all through the winter, and on the approach of spring put into a little heat and kept moderately moist at the roots, when they will soon start into growth, and furnish abundance of cuttings which will then strike freely. All gardeners are aware of the advantage of having a good stock of store plants to propagate from in the spring. *H. W. W.*

Notes on Bedding.—Bedding plants generally have succeeded in this locality unusually well this season. The weather being cold for a time after they were planted out prevented them from at once starting so freely into growth as they sometimes do, nevertheless when the favourable change came they speedily made up for lost time; and although our Pelargoniums were later in coming into blossom than usual I think the beds never looked brighter than they did during the last weeks of August and the first two of September. The delightfully fine dry weather which we were favoured with during that time checked and hardened the growth of the plants, and thereby increased their propensity to blossom, which they did abundantly; and the individual flowers, being for weeks undamaged by rain, remained for an unusually long time in perfection. But a storm of rain and hail, when the beds were at the height of their beauty, suddenly and completely divested them of their splendour. In a favourable season there is perhaps no set of plants which is better adapted for flower garden decoration than the Pelargonium, or which gives a more brilliant display for a minimum of labour and trouble than they do, but they cannot withstand inclement weather. It is, therefore, undesirable in this uncertain and changeable climate to use them in preponderating numbers, as is sometimes done, to the exclusion of other subjects of a more durable character. Beds of *Coleus Verschaffeltii* with suitable edgings when in perfection always attract admiration; they show up their rich crimson velvety hue to the greatest advantage immediately after warm showers or thunderstorms. To grow this valuable bedding-plant to perfection we have to prepare beds specially for it, our natural soil being too cold; we formerly mulched them with dung from spent Mushroom-beds, which materially assisted the plants, especially in dry seasons, but have discontinued the practice in consequence of birds being troublesome in scratching it off the beds, thus causing a continual untidy appearance. Of *Alternanthera amabilis*, *latifolia*, *paronychioides* major, and *magnifica* have succeeded most satisfactorily. *A. amena* and *A. versicolor grandis* have not done so well. We have discarded the *Mentha* on account of the great amount of labour required to keep it in good condition, and grow *Sedum Lydium* as a substitute. This answers our purpose better, and it takes care of itself in the winter months. Carpet bedding is both attractive and pleasing when well carried out; but to do this it de-

mands much attention, and it should not be attempted in places where there is a deficiency of hands employed or convenience allowed to propagate and establish the plants required. One or two isolated beds well done are far more effective, and are also more creditable to those in charge, than are a greater number indifferently executed. Therefore, where it cannot be properly carried out without some other more important branch of gardening being neglected, it is unadvisable to attempt it. Soft-wooded sub-tropical plants, such as *Ricinus*, *Wigandias*, and the various sorts of *Solanums*, have grown most luxuriantly. Large beds of these in sheltered situations have a noble appearance; we never fail to have a limited number of them. Ours were cut down by frost on the morning of the 3d, which was severe enough in character to completely kill all the most tender occupants of our flower beds, while the same varieties near by, but in elevated situations, were uninjured. This is an instance of the disadvantage of being situated in a low moist valley. *Thos. Coomber, Hendre Gardens, Monmouth.*

Celery Rotting.—I should like to hear if any of your readers have experienced the rot in their Celery this season? To my dismay I have experienced it to a considerable extent, nine out of every ten of the earliest batch having rotted. To the casual observer nothing would appear amiss, since the foliage retains its usual green colour; but on closer examination the heart is seen to be completely rotted quite down into the very root, and totally unfit for any use whatever, as will be seen from the specimens I herewith submit for your inspection. The later batch is similarly affected, although to a much less extent. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Clematis Miss Bateman.—This is one of the prettiest of the spring-blooming section of this charming class of climbers, and with me has proved quite hardy, having withstood, without any apparent injury, the two past severe winters, whilst close by, *tunbridgensis* and *Jackmanni*, both old-established plants, were cut down to the snow-line. Miss Bateman presented us this spring with a profusion of beautiful purple-anthered, pale lavender blooms of good size and substance, and is now blooming a second time. Is it usual for it to bloom twice in one season? *Alexander Welsh, Coldstream-on-Tweed, October 4.* [Miss Bateman should be a white-flowered, spring-blooming Clematis; you have perhaps got Mrs. Bateman, one of the later sorts. Eds.]

Second Flowering of Pear Trees (see p. 432).—We have in our garden at Colchester a Van Mons Léon le Clerc Pear, which every year since 1868, the date of its planting, has put forth a second crop of foliage after midsummer, and a second crop of blossom, resulting in fruit, which, however, has never produced fully-developed and fully-ripened Pears. It has never borne any Pears since its first crop of blossom, moreover its annual growth has been almost nil. I have always considered the result due to an unhealthy condition of the individual tree. But we have another young tree, Williams' Bon Chrétien, in good condition, which this year has produced from a first crop of blossom three fine Pears, and also carries a second crop of a dozen fruit, now half developed, from a midsummer crop of blossom. Probably others can cite similar instances. *Alex. Wallace.*

Herbaceous Lobelias.—Amongst the most interesting and ornamental of the plants now in flower in my garden are a set of Lobelias raised from Mr. W. Thompson's seed of hybrids between *L. syphilitica* and *L. cardinalis*. They were sown under glass in March, and planted out in June, have now been in flower for a month, and will continue for another month unless the frost is very severe. The colour varies from dark purple and violet to nearly white, some of the tints being very rich. I have grown some of these hybrids as well as *L. syphilitica*, both blue and white, for several years, and they have survived the last two winters, though apt to suffer from drought in spring. The flower-spikes are about 2 feet high, and produces many lateral spikes from the lower part. *C. Wolley Dod, Edge Hall, Malpas, Cheshire, October 4.*

Schizostylis coccinea.—Large plants of this, which were divided and planted out last April in rows from 15 inches to 18 inches apart, have, like kindred subjects similarly treated, made a fine growth during the intervening months. We have recently taken them up and potted them in 48 and 32-sized pots in an admixture of loam and leaf-mould, with a dash of drift-sand, to render the whole somewhat porous, and placed them in a cold pit upon some coal ashes, where they could be shaded from the sun's rays for a few days until they had established themselves, when, as a matter of course, it was discontinued altogether. A few of the most forward and promising of these plants are gradually "brought on" as required to

take the place of other plants, which will shortly have exhausted their floriferous powers for the time being, by introducing as many as may be necessary to keep up the supply at short intervals into a gentle heat. This plant, with its grass-like foliage and deep crimson flowers, which are produced on the stems from 9 inches to 15 inches long, to say nothing of its easy culture, has only to be seen to be admired. It is a very useful plant either grown in small-sized pots or in a cut state for house or table decoration. The habit of growth of the *Schizostylis*, the formation, colour, and profusion of its flowers, renders it an acquisition amongst our ordinary greenhouse flowering plants, more especially as it comes into flower at a time of year (from October to January) when scarlet and crimson flowers are but few. Moreover, in consequence of its easy culture and good constitution, it may be grown successfully by any one possessing an ordinary greenhouse or pit where there is sufficient heat at command to exclude frost. In such structures it has a very good effect when intermixed with *Chrysanthemums*. *H. W. W.*

Dahlia Walter H. Williams.—This is the name of a new Dahlia to be sent out next spring by Messrs. Keynes, of Salisbury. It is one of the finest double scarlet Dahlias in cultivation and was duly "certificated" by the Royal Horticultural Society. The habit of the plant is all that can be desired, while in form and colour it has no equal, the intense scarlet hue being, in the words of a great florist, perfectly electric. *Visitor.*

Successful Gleichenia Culture.—When in Yorkshire recently, I called at Lane House Nursery, Luddenden Foot—a by no means pretentious establishment, but in which, to my surprise, I found the most numerous and the grandest lot of Gleichenias I have ever seen, every plant—and there were thousands—from the smallest to the largest, bespeaking high culture. After expressing my astonishment to the proprietor (Mr. Eastwood) to find such plants, and in such numbers, in a district where apparently the demand for them must be very limited, he very coolly replied, "They all go, and we have sometimes a difficulty to keep up the stock!" Evidently it pays Mr. Eastwood to make these plants a speciality, and certainly he has found out the way to grow them to perfection, and that, too, at a minimum cost; for, whilst some of the larger plants have a greenhouse temperature, the great bulk are growing in cold pits. Stove temperatures are entirely eschewed; nay, even last winter numbers of plants were left to take their chance in an ordinary cold frame, the only protection being a covering of mats in the sharpest weather, yet they went through the ordeal successfully, and are now sturdy plants, far more vigorous than others that I have seen wintered in stoves. The plants are growing in a sandy peat obtained from the moors in the neighbourhood, and though it does not look very stimulating, it surely must be so, for there are plants in 10-inch pots a yard in width with fronds of an incredible size. I made no note of the varieties grown. I rather fancy Mr. Eastwood himself would be puzzled to name them, as he is constantly raising seedlings, and in this manner has obtained variations innumerable, ranging in colour from those with deep green pinnae and dark-brown stems, to those with black stems and light glaucous pinnae. It may safely be averred that for high culture and numbers the collection is unique. *W. Wildsmith.*

Storing Bedding Plants.—The frost (3°) with which we were visited on the early morning of the 3d inst. rendered not only the taking indoors (where it had not already been done) of such plants as *Richardias*, *Eupatoriums*, *Salvias*, and perpetual-flowering *Carnations*, &c., absolutely necessary, but also necessitated the taking up and storing away of such bedding plants as may be required for another year. Foremost among these are Pelargoniums and Echeverias, which are wintered in various ways, according to the accommodation which may exist in each individual garden establishment. It is a well-known fact that the storing of the plants in pots and boxes in pits or houses from which frost and damp can be excluded, is undoubtedly the best way of wintering Pelargoniums. But it sometimes happens, in fact it very often happens, that the only available place for wintering such plants is a cold pit, in which they are—the tops and roots having been previously considerably reduced—laid by the heels, and from which frost is excluded by covering with Fern or some other suitable protecting material, the condition of the weather occasionally necessitating their remaining covered up for a few days, or perhaps a week at a time, without light or air, with the result that a large percentage of the plants die through damp. However, in some seasons proper attention being paid to ventilation, &c., they can be successfully wintered in such places. Where there is no better accommodation at hand for wintering Pelargoniums, I would recommend their being "faggoted" and hung up by the heels in a dry shed. This is an old mode of wintering them, and one which

I, and doubtless many others, have known to answer very well. In storing Pelargoniums in boxes we put them as closely together as we can get them, previous to which we cut away all old roots and a portion of the old stem, and shorten back those which were formed near the surface of the soil during the summer months, making a corresponding reduction of the shoots, whether they be frosted or otherwise. There should, however, be 3 or 4 inches of young wood left to each shoot, for it not infrequently happens that during the winter they die back for a couple of inches from the point to which they have been cut back. These plants, like kindred subjects, will require little, if any, water during the winter months. In having boxes made it will be advisable, by way of economising room, to have them all made the same length and width, so that they may all fit closely together. We find boxes 2½ feet long, 9 inches wide, and 5 inches deep (inside measurement), for Pelargoniums, and from 2½ inches to 3½ inches deep for less robust-growing things, to be sufficient. In the case of *Echeveria secunda glauca*, when these, by the force of circumstances, are removed from their summer quarters, the removing and sizing of the offsets may proceed simultaneously with the boxing process. The two and three-year-old plants, if it be necessary to save them, should have an inch or more of their heels taken off before being boxed. Any cold, watertight pit, where a slight protection can be applied, in case of such a winter as that of 1879-80 repeating itself, will suit them. Failing this I have known them to be wintered satisfactorily in the following simple way, viz.:—The plants and soil having previously been pressed firmly in the boxes, the latter are placed against a south or west wall, at an angle of 50° or 55°, and 6-inch wide boards tacked along the top end of the boxes, thus forming a kind of coping, by which means the plants are protected from the consequences which might otherwise arise from a downpour of rain, succeeded by severe frosts. In this position 10° or 12° of frost will not injure them; but should it be likely to be more than that, it would be advisable to use some slight protection in the shape of mats or dry Fern, which should be slightly increased in proportion to any increase in the severity of the weather. H. W. W.

Root-Pruning.—At the risk of being regarded as exceedingly heterodox, I must protest against the advice given by "J. S." to root-prune fruit trees. I have never yet been able to learn that trees so served from time to time are more fruitful than are others left to the course of Nature below, and judiciously thinned above ground. It seems strange that we should recommend for fruit trees a course of treatment that, applied to any other trees, would be regarded as madness, and held up to ridicule. It is also strange that year after year other fruit-bearing but not edible trees should produce immense crops of their produce, and yet neither get nor require any such unnatural method of cultivation as is advocated for Apples and Pears. I can this year—thanks, at length, to a ripening season—see on a large number of trees that have never been root-pruned, and for the past two years scarcely top-pruned, almost every foot of branch studded with splendid fruit-spurs. Not all the root-pruned trees in the kingdom can show better. It is, therefore, evident that, because of this, the trees will next year make an extraordinary demand upon the roots to supply the needful nutriment for building up the fruit crop; and to cut away the source of this supply—to lop off the very feeders upon which so much of the maturation of the crop depends—would be as mad a proceeding as could be advised. The best tree and root pruner is a good crop of fruit. This some past inclement seasons have denied to us, but there is every prospect of our having such next year. If we do have it, enough will be taken out of the trees to prevent any large accumulation of wood the next season, and all the root-power will be needed to help the trees to recuperate; then, with continued warm summers, we may look for successive fruitful years. I for some time used to prune hard our young trees in the winter, but found it was a mistake, and then merely thinned out the branches, leaving others to grow as they list. As a result, nearly all the fruit I have gathered for the past two years has been taken from the very wood I used formerly to cut away. A. D.

Pentas carnea rosea.—This plant is not cultivated so extensively as it deserves to be. It is of a spreading and free-flowering habit, and produces an abundance of moderate-sized corymbs of delicate rose-coloured flowers. It is of easy culture, strikes freely, and may be grown successfully under the most ordinary stove treatment, and is a very useful plant to cut from. The flowers wire well, and are very suitable for bouquets. The plants may be had in flower pretty well all the year round by every spring and autumn striking a few cuttings, which, as soon as they are rooted, should be potted off singly in large 60s, and thence, when necessary, into 48 and 32-sized pots, in a mixture of light loam, leaf-mould, and

sand; and placed on a shelf near the glass to prevent their becoming drawn. They should be stopped three or four times when they have made a fresh growth after each succeeding stopping. In these sized pots they make very useful decorative plants, and produce a very pleasing effect when intermixed with similar sized plants of *Begonia fuchsoides*, *Eranthem pulchellum*, *Adiantum cuneatum*, &c. They also make nice plants when trained to a small pyramid-oval wire trellis. H. W. W.

Southwood Hardy Flower List : Sept. 27 :—

<i>Aplopappus spinulosus</i>	<i>Erpeton reniforme</i>
<i>Aster japonica</i> var.	<i>Funkia alba</i>
<i>Asteriscus maritimus</i>	<i>Gentiana saponaria</i>
<i>Aster cephalus parnassicus</i>	" <i>Kurtio</i>
<i>Achillea serrata</i>	<i>Ceranium Endresii</i>
<i>Aster Amellus</i>	<i>Harpatium rigidum</i>
" <i>besseralis</i>	<i>Helium grandifolium</i>
" <i>casubicus</i>	<i>Hypentum reptans</i>
" <i>Novae Anglie</i>	<i>Lilium tigrinum</i> var.
" <i>discolor</i>	<i>Linaria pilosa</i>
" <i>dumosus</i>	" <i>alpina</i>
" <i>Chapmanii</i>	<i>Linum tanacetum</i>
" <i>Shortii</i>	" <i>monagynum</i>
" <i>Tridacanti</i>	" <i>viscosum</i>
" <i>spectabilis</i>	<i>Lippia nodosa</i>
" <i>longifolia rosea</i>	<i>Leguimium rupestre</i>
" <i>pendulus</i>	<i>Mazus Pumiio</i>
" <i>ericoides</i>	<i>Nierenbergia rivularis</i>
" <i>horizontalis</i>	<i>Oenothera riparia</i>
<i>Pub. scodium tigrinum</i>	" <i>ataxactifolia</i>
<i>Colchicum aut. imale</i> var.	" <i>missouriensis</i>
<i>Cedronella cana</i>	" <i>eximia</i>
<i>Commelina ciliata</i>	" <i>speciosa</i>
<i>Centaurea ruthenica</i>	<i>Plumbago larpetae</i>
" <i>macrocephala atropur-</i>	<i>Polygonum capitatum</i>
<i>pura</i>	" <i>vaccinifolium</i>
<i>Convolvulus mauritanicus</i>	<i>Rhexia virginica</i>
<i>Ceropepis auriculata</i>	<i>Rudbeckia Neumannii</i>
<i>Chelone Lyoni</i>	" <i>purpurea</i>
" <i>rosea</i>	" <i>triloba</i>
" <i>palmaria</i>	<i>Salvia Grahami</i>
<i>Centaureidrum Drummondii</i>	" <i>taraxacifolia</i>
<i>Crocus pyrenaeus</i>	<i>Senecio pulcher</i>
" <i>serotinus</i>	<i>Stoeckia cyanea</i>
" <i>speciosus</i>	<i>Scutellaria altica</i>
" <i>nudiflorus</i>	<i>Scabiosa suaveolens</i>
<i>Dahlia gracilis perfecta</i>	" <i>caucasia</i>
<i>Dianthus crenatus</i>	<i>Scolymus hispanicus</i>
<i>Dracopis capitatum Ruyschi</i>	" <i>grandiflorus</i>
<i>ana</i> var. <i>japonicum</i>	<i>Silene Schaffa</i>
<i>Eupatorium purpureum</i>	" <i>Hookeri</i>
<i>Eriogonum bellidifolium</i>	<i>Spigelia marilandica</i>
" <i>glauca</i>	<i>Statice minuta</i>
<i>Eriogonum racemosum</i>	<i>Tulbaghia violacea</i>
<i>Erodium petraeum</i>	<i>Vernonia novboracensis</i>
" <i>hymenodes</i>	" <i>pratensis</i>
" <i>Reichardi</i>	

T. D. H.

Potatos in Ireland.—Having noticed in your columns a query as to how such Potatos as *Magnum Bonum* and *Champions* resisted the disease in Ireland, I wish to state that in the counties of Armagh, Meath, and King's County, they produced a magnificent crop, not more than 5½ per cent. being diseased. I only speak for the above, as I have not seen *Champions* or *Magnum Bonum* used elsewhere. It is much to be regretted that numbers of those who have such splendid Potatos are both selling and eating the same, and in all probability will, ere planting time comes round again, have eaten or sold them all. This refers more particularly to the South. The only complaints which I have heard are that, in the case of large *Champions*, some few have the centre hollow, and that the stalks and foliage are much too luxuriant. W. Morley, Reamshotton, The Deanery, Armagh, &c.

Schizostylis coccinea.—This lovely autumn flowering plant is now throwing up a profusion of elegant spikes of scarlet flowers. The flower-spikes resemble a miniature *Gladiolus* in form, and are greatly improved under high cultivation. Planted in clumps or patches in the shrubbery border they are very gay at this season, but the flowers succumb to the first touch of frost. They are very showy plants for the conservatory during this month and next, and are undoubtedly more useful as decorative subjects than as cut flowers, although for the latter purpose they are very effective also. The flowers, however, seldom open in sufficient number at a time to display their full beauty in a cut state, and for this reason I prefer the plant for the greenhouse or conservatory. We divided a lot of clumps last spring, and planted them in a rich deep soil, and are now more than compensated for our labour by having a most useful batch of plants for yielding scarlet flowers for the next six weeks. W. Hinds.

An Incubus.—Both for myself and my workmen, I contrive to have a dry job for a wet day. For instance, to-day it pours with rain, and my men are sacking up Potatos in the barn, while I have been probing amongst my new seedlings in the field, which were purposely left in the ground to try their disease-resisting powers to the uttermost, till I got wet through. But I found that the seedlings were all perfectly sound; and now, having put on some dry clothing, I will write you an account of my doings with the Potato this season. I had my land deeply ploughed and got ready so far, last autumn, for the winter frosts to work their way upon it, which they

did. The plough was set again to work at every convenient opportunity in the early spring, following with the cultivator "atbirt and across." Then I applied a good dressing of cinder-ashes (two-thirds), collected from the cottages around, and sifted through quarter-inch sieves; wood-ashes, a quarter; gypsum, one-third; bone-dust, one-sixth; and soot, one-sixth, in the proportions above indicated. These were mixed well together, and spread broadcast over the land at the rate of quite 6 cwt. per acre. The land had had a good dressing of farmyard manure for the previous Swede and Mangel Wurzel crops. Next followed a 1-horse plough, turning out the drills about 3 inches deep and 24 inches apart (a sound gravelly loam), into which the Potatos were dropped at from 14 to 18 inches apart, according to the sorts, my men drawing the soil back again over the sets with the hand cultivators. Thus the work proceeded, and I got my Potatos well planted in a fine tith by the latter end of April, the time so occupied being about five weeks. Now the cultivator was worked deeply by two horses in line up and down between the rows twice over, desisting when the Potato foliage began to appear above ground; and so soon as it became well prominent the hand hoes were set to work to eradicate the first weeds, and to give a first-mould-up to the young tops, followed in due time by a good earthing up with the 1-horse plough. Then again the men were set to close up the tops of the ridges with the hand cultivators. I am sorry to say three successive crops of weeds also had to be pulled out, so generous had my predecessors been in allowing the land to become well stocked with generations of weed seeds, so much so that the deeper I ploughed the more they came up and grow. As soon as the disease appeared on the Potatos which were ripening off I worked the cultivator again between the rows, which stirred, aerated, and lightened the soil, and did a great deal of good, for when wet came it did not remain about the tubers. This is my latest programme of culture on the larger scale that I now have to go upon. I think it a very good plan, and so I lay it before your readers. I wrote you how our first electric storm served the tops of my Woodstock Kidneys, Rector of Woodstock, and a few others. How I immediately set my men to work to pull up the haulms. Alas! just at that time the attraction of the harvest proved too powerful, and more than half my staff deserted me for the farmers' cornfields. It would have proved heartless work for the power left to continue the pulling—we could not have mastered the job in time to have prevented the passage of the parasite to the tubers, so the fungus was left to work its will, though, as the sequel proved, with much less virulence than usual, owing to the glorious sunshine we afterwards got. When the above kinds were lifted, however, it was easy to see that the tubers were most numerous where the haulm was pulled out, but when cooked those Potatos were pronounced best flavoured whose haulm had not been interfered with. The fitting of my men has thrown me sadly late in lifting my main stocks, such as *International*, *Schoolmaster*, and *Magnum Bonum*; but I am glad to find they are keeping very well in the ground. Where I probed this morning I found some *Champions* going rotten. I have recently been favoured with a Potato plough, so I shall be enabled to get them up quickly. I cannot help adding that I feel very proud of my newest seedlings, they do roll out such crops of healthy tubers. I felt very much pleased when I read your encouraging remarks about the twenty-four varieties of my own seedlings which I exhibited at the Crystal Palace. I have looked forward for many years to achieve that task with tried varieties that I knew were, and would become ultimately, recognised by the public as acquisitions, either for eating or for exhibition purposes. I suppose a raiser of new varieties of Potatos has his heart so much in his work, that the idea of pecuniary reward is not allowed to interfere with his enthusiasm. If I had arranged my work according to the rewards I have met with, Penn's seedlings would be now few indeed. I have always considered the importance of the esculent to be of far more consequence to my country than any prizes which could be awarded to me personally. I have lived to accomplish all that I formerly set myself to do, and whatever I have done practically and to the purpose I have given to the public through the pages of the horticultural press. I may honestly suppose that I have not been altogether working and writing in vain. Of course there must have been a corresponding outlay on my part. No one could work the greater part of his life at raising new varieties of Potatos, single-handed, without spending a great deal of money. The very act of exhibiting at the Royal Horticultural Society's meetings, and other places for many years has been a considerable item in itself; but I suppose I felt the "call," and by what I can see as a result, if I have met with no adequate pecuniary recompense, I shall leave the Potato world in a far better condition than I found it. Of course others have been working for a similar result, and I feel sure that my fellow workers will admit that there is a great compensation to every man who strives to do his best.

The paragraph in your leader afforded me more pleasure than anything I can remember to have been publicly said relative to my endeavours. Now look on the other side. I am told that "Fenn's fads" are all done away with at Woodstock. "Fenn's fads?" Well, those "fads" are fast rising and establishing themselves about me here, and if to replenish the earth with food is to be designated as a "fad" the sooner they resuscitate "Fenn's fads" at Woodstock the better. The season is too far advanced now, but should we live till next summer nothing would give me greater pleasure than to introduce those interested to "Fenn's fads" at my Cottage Farm, Sulhamstead Abbots. *Robert Fenn.*

Vegetable Marrow.—I cut, on October 4, a long white Marrow, which measured 2 feet 6 inches in length, and 3 feet 10 inches in circumference, and weighed 66 lb. It was grown on a heap of stable manure and garden rubbish, mixed. This is the largest I have ever seen, and I should be glad to know if any of the readers of the *Gardeners' Chronicle* have grown or seen one larger. *R. Tilley, Hensill, Harlowhurst.*

Raspberries in October.—I gathered to-day (October 4) a dish of very fine fruit from a row of canes that were planted last autumn; they made very strong growth, and the young wood is literally covered with fruit from top to bottom. I have never seen anything like it before. Is it a common occurrence this season? *O. Orpet, Cirencester.*

Mr. Peacock's Collection of Succulent Plants.—There appears to be an impression that the collection of succulents in these gardens has ceased to exist, or that the plants have all gone to Kew. This is not the case, though selections from the collection have been sent to Kew, the Alexandra Palace, and Regent's Park; yet the home collection is more varied than ever, with the addition of Orchids, &c. My employer has given me liberty to say that any student or amateur can obtain admission on Thursdays on application at Sudbury House. I am glad to be able to say that we have an emporium of these vegetable curiosities which is open to all who may wish to study them. *J. Croucher, Gr. to F. T. Peacock, Esq., Sudbury House, Hammersmith.*

Disaulming Potatoes.—In writing about Potatoes last week your correspondent, "A. D.," gave an excellent illustration of how it is possible for the fancy to run away with the argument, for he pits his crops of Potatoes free of disease, at least free up to the time he wrote, excepting about 1 per cent., against the, what he is pleased to term, disaulming panacea. Let him remember that no one supposes that disaulming is equal in its results to growing Potatoes free of disease without the aid of this or any other practice. *William Earley, Ilford.*

Geaster coliformis.—I have read Mr. Plowright's communication, at p. 439, as to Geaster coliformis, in which he suggests that the plant has not been found in England since 1810. I am not aware of any published notice of it, but knowing that my friend, Mr. G. B. Wollaston, had found it long since that time, I made enquiry of him. He tells me he found it in 1830, at Westwood, near Southfleet, in Kent, and again between 1836 and 1840 at Bridgen, near Bexley, in Kent; also that in 1840 he saw a specimen found by a lady at East Wickham, near Plumstead, in Kent; and he adds, "I have since found it recently, but when and where I do not recollect." I have thought that these facts might be of interest to your mycological readers. *Fredk. Currey.*

THE RICE TRADE OF JAPAN.

A VERY interesting account of the antiquity and development of Rice cultivation in Japan is embodied in a report furnished to the Foreign Office last autumn, from which we give the following abstracts:—

It appears that a very high antiquity is given by the Japanese to the origin of the Rice plant in their country, their legends stating that it sprang from the body of the daughter of the God of Clay and of the Goddess of Fresh-water. They also attribute to it the virtue of keeping away evil spirits. In Japanese lore is recorded the first instance of a manifestation of their belief in this virtue. It occurred when the Sun Goddess was seduced into leaving her dark cave by a variety of cunning devices, but more especially by the curiosity and jealousy excited in her breast by the reflection of her unconscious charms in the fatal mirror, for, being forthwith carried off to a new palace, her abode was at once and henceforth protected by encircling ropes of Rice straw. The continued existence and wide diffusion of the popular faith in this virtue are evident from the facts that ropes of the same material are to this day stretched across the portals of all

Shinto shrines as a protection against evil spirits, and that they are prominently used with the same intent in all New Year's Day decorations.

Until lately, the measure of a man's wealth and income was calculated in Rice, and it was almost universally used as the medium for the payment of salaries, wages, and taxes—as the standard of value, in short, in most of the daily transactions of life. Even now the principal item of national revenue, the land tax, is paid to a considerable extent in Rice, one year's experience of the law enforcing money payments having sufficed to show that their continued exaction would be unjust to the farmer. Finally, of all the products of the field, Rice is held in the highest honour, and there are, no doubt, still many Japanese who are at a loss to imagine how life can be sustained, or the concerns of a nation carried on, without it.

It is evident therefore, that, from very remote times, Rice has been one of the great staples of agricultural produce in Japan. Its cultivation has doubtless been developed with the growth and needs of the population, for it seems pretty certain that Japan has not, at any period of its history, had an export trade of any considerable extent. Unfortunately, no reliable data have yet been discovered relative to the number of the population in olden times, and opinions are not a little divided on the subject. Some living authorities maintain that the empire was as densely inhabited two and a half centuries ago as at present. Some state that the population retrograded until within the last twenty years; and others assert that it has increased by 7,000,000 or 8,000,000 since A.D. 1600. The question has not yet been thoroughly examined, and conjecture and inference appear to be the bases of all these opinions, the last of which is, perhaps, the most correct. The earliest statistics that have been obtained bearing upon the cultivation of Rice date from the time of Jyéyasu, the founder of the Tokugaya dynasty of Shôgunus, who abdicated in 1605. This ruler caused a survey of all the cultivated lands of the empire to be made, and it appears from it that the area then devoted to the cultivation of Rice was 889,246 chô, or about 2,223,115 acres. The survey was only accurate as regards the lands held by the Tokugaya clan, and a margin must therefore be allowed for the territories of the other Daimios. It may, however, be confidently assumed that at the date in question the total area of Rice land was at the utmost not more than 3,000,000 acres, and the total annual crop of Rice not more than 60,000,000 bushels, 20 bushels being considered the average yield per acre. At the present time the acreage of Rice land and the produce of Rice is more than double the above figures, and this fact undoubtedly favours the assumption of an increase in the population, though it must also be attributed in great measure to another cause, namely, increased prosperity, for it must not be supposed that Rice is the staple food of the whole people. It is, on the contrary, an expensive diet, in which large numbers of the lower classes, who live upon cheaper grains, such as Millet, Buckwheat, Beans, &c., can only indulge from time to time and in small proportions.

According to the most recent statistics, which were published in 1875, an average crop of Rice is in round numbers about 3,768,080 tons. These figures are, however, confessedly inaccurate and much below the truth. Since their publication three-fifths of a general survey of all cultivated land in the country—the first that has been made since the time of Jyéyasu—have been completed, and taking the results obtained in the surveyed portions of the empire as the basis of its calculations, the Ministry of Finance has compiled the following statistics relative to the subject:—The total area of Japan is estimated at 160,474 square miles, and it is supposed that a little more than one-tenth of it is under cultivation. Of this one-tenth—10,608 square miles, or 6,789,120 acres—are Rice lands, which at the average rate of 20 bushels per acre produce in an ordinary year a crop of 34,394,787 koku, or 135,782,400 bushels of Rice. This quantity is disposed of in the following manner:—

	Koku.*
Home consumption	21,225,053
Waste in storing	618,126
Waste in transport	613,500
Brewed into sake	3,980,500
Used in confectionery, cakes, &c. ..	1,690,873
For export, manufactures of starch, &c. ..	2,766,735
	31,394,787

* A koku is equal to 331 lb.

There are large numbers of people who consume quantities of Rice daily and a great many more who do not eat Rice daily, at all, but only on feasts and holidays. It would seem, indeed, that only about 13,000,000, or a little more than one-third of the population, make Rice the chief article of their daily food.

Regarding the cultivation we are told that the seed is first sown thickly in small nursery plots. In May, when the plants are about 6 inches high, they are transferred to the paddy fields which have been previously ploughed, or hoed, and manured. There they are planted in tufts of several plants, each tuft being about 6 inches distant from its neighbour. An illustration of this was given in our columns, 1877, p. 145, vol. vii. These are weeded twice, or at the utmost thrice, during the summer, and must be constantly kept supplied with the proper amount of water. The harvest generally commences in the second half of October, and rarely terminates before the end of November. As a rule only one crop is raised during the year, but there are some localities, near Yedo and in the Island of Kinshin for instance, where a second crop is obtained by cutting the first early in August; the plants then spring again, but this second cropping is not very remunerative, as its produce is very inferior both in quality and quantity. The cultivation of Rice is more profitable than that of any other grain. Given the proper supply of water a man can cultivate 2½ acres of Rice land, whereas he can only manage 1 acre of other arable land. The Rice cultivator has harder work at some seasons of the year, but on the whole more leisure than the grower of other agricultural produce. Rice, too, is still the favourite food of the Japanese, and though in Yedo and one or two other large cities there has been a growing consumption of animal food for the last five years the taste for it is on the increase. The cultivation will therefore probably be extended, as the quantity of waste land in Japan is enormous, and there is no doubt that much of it could be adapted to the Rice plant. Hill Rice, i.e., Rice grown on the terraced sides of hills, and without constant irrigation, is cultivated to a certain extent, but it seems that the grain is very inferior in quality and very troublesome to raise. The price of Rice varies considerably in the different provinces of the empire, chiefly on account of the want of easy means of transport; thus the lowest average price in the north, from 1870 to 1875, was 7s. 7d. per koku, whilst the highest average price in the south was £1 2s.

On the point of quality of Japan Rice some interesting facts are stated. It having been reported that owing to the lateness of the season in harvesting Rice in Japan the grains do not become thoroughly dry and hard, like that of Bengal, that the Rice loses so large a percentage in the hold of the ship as to make it unprofitable export. Mr. Mounsey points out that this statement originated in the fact that the first cargo of Japanese Rice which was sent to San Francisco was sold at a considerable loss in consequence of the damage incurred during the voyage. It is further stated, on the information of one of the most competent authorities on this subject in the European community of Yokohama, that Japanese Rice of the best quality does not possess the defects above described. It is on the contrary very hard, too hard indeed for many English millers, cleaner than Rangoon and Indian Rice, and it can with proper care be profitably exported to any part of the world. The high quality of Japanese Rice is attributed in a great measure to a careful selection of the best grains, only the chartering of high-classed vessels, and to extreme care in regard to their ventilation. This, indeed, is considered the most vital point of all. From trade and other reports, it appears that Japan Rice can be profitably exported to Europe, but that it requires a great deal of extra care in storage and ventilation. The Japanese Government, which has a special interest in the trade, has, we are told, just ordered a supply of Java seed, and experiments are to be made with it this year. Their alleged reason for this measure is, that Java Rice commands the highest price in Europe. They may also hope to obtain a grain which can be shipped on long voyages more easily and surely than the native article.

The superiority of Japanese Rice is said to be on account of its nutritive power, and that it contains a far larger proportion of fatty matter than any other Rice.

The drink known as saké, before referred to, is made wherever Rice is grown. It is the national beverage of the Japanese, and several kinds are

known, the chief of them being Nigori-saké, Lei-shin, Mirin-shin, and Shiro-saké, all of which are brewed. Nigori, or unclear saké, is the commonest and cheapest form. In appearance it resembles sour and half-curdled milk, and if to this a dash of spirit were added its taste might be approached. It is only drunk by the poorest classes, and costs about 6 cents, or 3*d.* per gallon. Lei-shin, or clear saké, is made by clarifying and purifying Nigori, and is the favourite drink of the Japanese. Of this there are several qualities, the best being not unlike common Manzanilla. It is said to contain from 10 to 12 per cent. of alcohol. Its price ranges from 5*d.* to 1*s.* per gallon. Mirin-shin is brewed from the finest Rice only, is sweetened, and much used as a liqueur and for culinary purposes. It contains from 15 to 20 per cent. of alcohol, and fetches from 1*s.* to 2*s.* per gallon. Shiro, or white saké, also brewed from the best Rice, is like milk in appearance. It is sweetened, and is considered a ladies' beverage. Price 1*s.* 2*d.* to 2*s.* per gallon. Various sorts of spirit and liqueur are also distilled from Rice. Shoshin, or "burning liquor," made from Nigori, is the chief of the former, and of the latter Mei-shin or "celebrated drink," is most esteemed. Flavoured with Plum juice, syrups of various kinds, ginger, &c., it is considered the most palatable liqueur. It is the most expensive, costing from 1*s.* 3*d.* to 6*s.* per gallon. To this category belong also Awamori-shin, Okinomizu-saké, and Kuwa-shin. They are, however, only made in very small quantities. Regarding the consumption of Nigori-saké, Lei-shin, and Shiro-saké it is estimated at 136,895,859 gallons, or about 4½ gallons per head of the population.

There are hard drinkers in Japan, as in most other countries, and, like most Asiatics, the Japanese seem to place less value on the flavour of their liquor than on its intoxicating power. They are certainly fond of carousing, and often given to excessive drinking at festivals and on holidays. This is more the case in large towns and in the capital, where the results of a laxity of military discipline as regards the sobriety of the soldiers are too often disagreeably manifest. But there is probably less drunkenness in Japan than in several European countries, and the Rice does not there lead to the same fatal consequences. Saké contains such a large proportion of fusel oil that derangements of the stomach cut short the course of intoxication, which in other countries and with other liquors results in delirium tremens, and this disease is said to be almost unknown in Japan. On the other hand, some European medical men have attributed the prevalence of paralysis and cognate maladies in certain provinces to the effects of saké.

Regarding the Japanese Rice trade, the Government of that country reserve to themselves the right of withholding permission to export the grain; thus the Rice trade may be said to be entirely in the hands of the Government, who also receive considerable quantities of Rice in payment of taxes, and they are in the habit of purchasing more with their reserve fund for export to Europe, so as to avoid the necessity of remitting corn or bullion in liquidation of the interest on their foreign debts, and for payment of orders for men-of-war, arms, &c. They are thus the largest dealers in Rice in the country; indeed, it is said that it is impossible for European merchants to obtain a full cargo of Rice without applying to the Government. For this reason, and also from uncertainty as to the continuation of the permission to export the grain in question, European mercantile houses cannot embark largely in a trade which must virtually remain a monopoly until the Government ceases to speculate in it, and until it sells its Rice at public auction, instead of, as at present, favouring one or two firms with its custom.

COLONIAL NOTES.

BRISBANE.—The following extracts are taken from the annual report of the Acclimatisation Society of Queensland for the year 1879:—

During the year a number of trees at Bowen Park have, for the first time, matured their fruit; and have thus not only afforded the opportunity of judging of their value, but by providing material for increasing species, obviated the necessity for any further importation of these trees. Among the additional fruits thus permanently established may be mentioned the Whampee (*Cookia punctata*), the Litchi (*Nephelium Litchi*), the Caramba (*Averrhoa carambola*), the Vi-apple (*Spondias dulcis*), two distinct specimens of the Wine Palm (*Diplothemum maritimum*), the Manilla

Tamarind (*Inga dulcis*), and *Musa superba*. The Bael-fruit (*Egle Marmelos*) has flowered magnificently. Other trees and plants, many of them fine accessories to ornamental planting here, also produced mature seed for the first time.

The special horticultural show of the Sydney International Exhibition, held on March 2, afforded an opportunity, of which your Council availed, of giving to the world substantial evidence of the practical and utilitarian character of the work being done at Bowen Park. Growing specimens of a large number of valuable economic plants were exhibited. With hardly any exceptions these exhibits were samples of plants in stock available for distribution; and various other economic plants, at the time in too tender a seedling state for exhibition, will be fit for distribution in the course of 1880.

The thorough character of the Society's work was exemplified at the summer show of the National Agricultural Society, held at Brisbane in January, by a collection of highly-cultivated exemplars of ornamental plants, which afforded types of excellence for the guidance of professional and amateur gardeners. On this occasion there was also exhibited a collection of economic plants, which were highly illustrative and received much attention from the public. It was therefore deemed advisable that the principal plantations and gardens of the older settlements along the line of coast northwards should be visited, and the Vice-President (Mr. L. A. Bernays) was accordingly deputed to undertake this interesting and important task. The result of this gentleman's investigation is embodied in a report to the Minister for Lands.

Since Mr. Bernays' return, and upon his advice, very large numbers of plants, the ultimate success of which is least assured—such as the Mangosteen and the Bread-fruit—together with others which afford good ground for hope—such as the Nutmeg, the Cocoa, Pepper, &c.—have been passed away among our northern constituents, the rainy season occurring opportunely and the stocks being ample for the purpose. Increased vigour has been imported into the introduction or propagation of those plants from which the best results are looked for, and measures have been adopted to introduce in quantity others which have yet to be tried, but which, from their similarity of habit or other analogy to some already in cultivation, may be expected to find a home in Queensland soil.

Economic Tropical Horticulture in Northern Queensland.—The following is extracted from the report by L. A. Bernays, F.L.S., F.R.G.S., Vice-President of the Acclimatisation Society of Queensland, alluded to above:—

The object in view was to gather information upon the progress and prospects of the cultivation of exotic tropical plants of economic value, upon the northern coast of Queensland.

Coast North of Endeavour River.—At Cape York it was well-known that there had been no population of any importance, and such as had been there from time to time had been wholly engaged in trade or pearl-fishing; while the settlement at Thursday Island was altogether too new to justify the expenditure of time and money which a visit would have involved. My inquiry, therefore, commenced at about 16° south of the line, and extended from thence southward to the Tropic of Capricorn. Between this point and the extreme southern boundary of the colony the capabilities of the climate for the successful growth of tropical plants were known to be uncertain and unsatisfactory.

Abandoned Plantations.—A fertile source of disappointment consisted in the frequent recurrence of instances in which gardens had been formed, and subsequently, for a variety of reasons, abandoned; and the best efforts of the Society thus neutralised by the inevitable losses and deterioration which follow neglect of cultivation or destruction of fences. Many valuable specimens for which the climate and soil were well adapted, have been in this way lost; a circumstance the more to be regretted from the evidences of vigour shown by those which remain, and which had presumed, at the time when cultivation ceased, reached an age at which they could better withstand neglect than the less mature specimens.

Making allowance for a certain amount of planting of similar kind done under other auspices, private and public, close personal observation leads me to estimate that not more than one-half of the plants distributed by the Society are living. This result may, however, be regarded as quite satisfactory in view of the fertile causes of loss to which plants are subjected after leaving the packer's hands.

Exposure to sun or saltwater, rough usage on wharfs and steamers, delays and mistakes of agents at ports, and accidents of land carriage, are prolific causes of loss before plants reach their destination; and when safely delivered they are all too frequently subjected to unskilful treatment in the planting, and to want of subsequent care. There can be no question that by means of mulching and shading during the first few seasons after planting, the test of their adaptability to the climate would be far more thoroughly applied to many plants of much interest

and intrinsic value, which are in fact often dealt with by their recipients with less care than if they were Cabbages, and which soon succumb to conditions of aridity and exposure. The abandonment of plantations, to which allusion has been made, in no single instance which came under my notice had for its cause infertility of soil, or unsuitableness of climate. Insufficiency of capital, or want of experience in the main industry involved in the plantation, death, failure of health and change of purpose, have all contributed to the result of abandonment, while the enormous area of rich Crown land open to selection accounts in measure for the fact that purchasers are not readily found for such properties.

A further serious obstacle to the work of acclimatising exotic plants of economic value is presented by want of knowledge of the habits of the plants, the method in each case of cultivation, and of the means and appliances for obtaining their products and educts.

This might be met by the publication, under authority of the Government, of a series of papers written in a practical and popular form, containing such information which is now beyond the reach of any but the very few who possess extensive libraries of reference on such subjects. The work would be laborious, as it would involve the comparison of many authorities so as to sift the wheat from the chaff, and to eliminate all matter but such as is essentially practical and would be easily intelligible. I am satisfied, however, that it would be a most useful work, and the knowledge that the Government were about to undertake it would be received with satisfaction by hundreds of cultivators of the soil who have all the will to enter upon new cultural enterprises, if they were shown how to conduct them with reasonable prospect of success.

I am glad, therefore, to be able to state that, with few exceptions, to be adverted to hereafter, the major proportion of the different varieties and species of plants distributed have their representatives in a condition of robust growth, and in many instances fruiting, at each of the older settlements.

It is from the produce of these specimens that the real work of acclimatisation will be accomplished; and it was satisfactory to find their owners distributing plants and seeds of the second generation among their neighbours. These in their turn carrying on the work, many trees and plants of economic value will thus in a few years become common wherever there is settlement on the coast, and their products be ready to hand when evoked by the demands of science or commerce.

Some of the best of the Indian timber trees are to be seen growing vigorously in many places; an interesting fact in view of the time which will inevitably come, unless the subject of forest conservancy receive timely attention from the Legislature, when large tracts of country, perhaps in the next generation, will have to be replanted with quick-growing trees. The Teak promises to attain very large dimensions on this coast.

(To be continued.)

Reports of Societies.

Royal Horticultural: Oct. 12.—At the afternoon meeting the Rev. G. Henslow commenced his lecture by inviting attention to some very effective specimens of *Pleione lagenaria* from the alpine regions of Northern India. The compact habit of growth, with a profusion of flowers, rendered it, when supported by green moss, as it has no leaves when blooming, a very striking object. Another Orchid, *Angraecum Kotschyi*, from Zanzibar, was peculiar for the more or less spirally twisted spur, suggesting the possibility of its acting as a tendril. If so it would illustrate a new departure for such an organ, tendrils being generally leaves (*Pea*), sometimes flowering branches (*Vine*), or else stipules (*Smilax*), or even supporting pitchers (*Nepenthes*). Allusion was made to its ally, *A. sesquipedale*, which, though its name implied a "foot and a half," had not really a spur of such length, though generally upwards of a foot. A third species is *A. fragrans*, the foliage of which is used in Bourbon as Tea, called "Faham."

Dahlias constituting the chief part of the exhibition, the lecturer gave a brief account of the history of their introduction. The first were received by the Marchioness of Bute, from Madrid, in 1789. The plants died, and a second importation was made, by Lady Holland, in 1804. This failed also, and in 1814 they were reintroduced, from France, where they had been cultivated under the idea that the tubers might be useful for food, but they proved unacceptable to both man and beast. There are only three or four species in general cultivation, *D. variabilis* furnishing the majority, if not all of the double garden forms, both large and small. This was first figured in 1817, when there were five varieties; *D. coccinea* and *D. glabrata* were both exhibited, but as single-flowered plants. It would seem that taste is now-a-days rather in favour of the single form, the fine flowers of the former species being very handsome. The lecturer mentioned how a party of tourists at the *Tête noire* a few weeks back were admiring a fine plant, quite unaware of its being a Dahlia at all! The giant species—*D. imperialis* (20 feet), and *D. xcelsa* (30 feet)—though cultivated in several gardens, were not represented. The lecturer finally explained the process of

"doubling," and drew the distinction between an ordinary double flower, as a Rose, produced simply by the conversion of carpels and stamens into petals, and a double Dahlia, in which the tubular florets of the "eye" are converted into strap-shaped florets like the "ray."

FLORAL COMMITTEE.—Mr. Denny in the chair. First-class Certificates were awarded to Messrs. James Veitch & Sons for *Angræcum Kotschy*, described in our last issue by Professor Reichenbach, and which bore a spike of ten white flowers with long curiously-twisted spurs; for *Cattleya Marstoniae* ×, a hybrid between *C. Loddigesii* and *C. labiata*, with rose-coloured sepals and petals, and a fine purple lip; and for *Lilium longiflorum verum*, with from one to three white flowers on a stem, and believed to be the true form of *L. longiflorum*, of which the plant already grown in gardens under that name is a variety. To the General Horticultural Company (John Wills), Limited, for *Cyperus latus variegatus*, a handsome and most useful decorative plant, variegated after the manner of the old-fashioned Ribbon-grass, and a free grower to boot, producing, unlike *C. latus*, a good tuft of leaves at the base of the stems. To Messrs. Rawlings Bros., Romford, for Dahlia William Rawlings, a fine shaped self flower of the colour of new port wine. To Mr. B. S. Williams a Botanical Commendation was awarded for *Saccolabium denticulatum*, a diminutive growing species, with a short dense spike of small orange and white flowers. Mr. Williams also showed a very fine specimen of his superb strain of Cockscombs (which was Commended) and, a few other good plants, including a handsome half specimen of *Croton Stewartii*. Besides the plants above noted the Messrs. Veitch exhibited a small collection of plants, which included three very fine masses of *Pleione lagenaria*, which received a Cultural Commendation; and also specimens of *Stevia glutinosa*, a useful winter-flowering plant, closely allied to *Eupatorium*, and bearing dense umbels of pinky-white flowers. The General Horticultural Company also exhibited a new *Dracæna*, named Countess of Latham, a dwarf, compact growing type of *D. terminalis*, and very bright in colour. Votes of thanks were awarded to Mr. Eckford, gr. to Dr. Sankey, Sandywell Park, Cheltenham, for a small group of seedling Coleuses; and to Mr. Cannell, for a collection of cut flowers, including brightly coloured *Pelargoniums* and still more glowing *Begonias*, the latter stand including a new double crimson flower with lacinated petals, and a pretty new double white, small in size but almost a model of a Hollyhock in shape. Mr. Cannell also showed some highly coloured leaves of *Chilian Beet*. From Chiswick Mr. Barron brought up an extensive and very complete collection of Pompon and single Dahlias, which made an excellent display, and gave a capital opportunity for comparing notes.

FRUIT COMMITTEE.—J. Lee, Esq., in the chair. The labours of the committee on this occasion were heavier than they have been for some time; and the subjects exhibited were of much more general interest than usual. Messrs. Thomas Rivers & Son exhibited a new Grape Gros Maroc, with large oval, black berries, of tender flesh and a fine brisk flavour, to which a First-class Certificate was awarded. The same firm also showed examples of three seedling Plums, one of which also gained a First-class Certificate—a medium-sized dark purple fruit, named Grand Duke. Several seedling Melons were shown by Mr. Carmichael, gr., Newton Court, Bury St. Edmunds; and Mr. Ross, gr., Welford Park, Newbury; and the last-named exhibitor received a First-class Certificate for a smooth ribbed, scarlet-fleshed variety of fine sugary flavour, named Welford Park—the result of a cross between Colston Bassett Seedling and Read's Scarlet-flesh. From Chiswick Mr. Barron brought up specimens of a Pear named Vincuse, a large, green, irregularly pyriform-shaped fruit, with greenish, deliciously-flavoured flesh. Its season is September, and being a good bearer it was awarded a First-class Certificate. Mr. Wilson, gr. to Earl Fortescue, Castle Hill, South Molton, exhibited eight very handsome Pine-apples, five Smooth Cayennes weighing collectively 36 lb. 6 oz.; and three Charlotte Rothschilds, of the aggregate weight of 18 lb. 14 oz., which gained for the exhibitor a Silver Banksian Medal. Mr. Wildsmith, gr. to Lord Eversley, Heckfield Place, received a Cultural Commendation for a remarkably fine dish of Pimston Duchess Pears; and Messrs. Veitch & Sons, and Messrs. H. Lane & Son, received votes of thanks for large collections of Apples, of which the former had eighty-six and the latter fifty dishes. Mr. Goodacre, gr., Elvaston Castle, exhibited a collection of Grapes—two bunches each of a dozen varieties, including a fine sample of Gros Colmar, and very good ones of Muscat of Alexandria, Madresfield Court, &c. Bunches of Alicante and Abercainey Seedling were also shown by Mr. Gilbert, gr., Burghley Park, to prove the distinctness of the latter from the former—the Abercainey Seedling being smaller in berry, distinct in the style of the bunch, and of a brisker, more pleasant flavour. We should add that Mr. Gilbert thinks very highly of it for pot culture. Mr. Gilbert again submitted samples, cooked and uncooked, of his new Cabbage Broccoli, which for productiveness, fine cooking qualities, and mildness of flavour, even in a season like the present, when the flavour of autumn greens of all kinds is much stronger than usual, well proved its worthiness of the First-class Certificate previously awarded to it. Mr. J. Muir, gr., Margam Park, South Wales, also sent examples of the same vegetable, with the statement that it is much valued at Margam for its fine flavour and heavy cropping qualities—a verdict that we are sure will become general when it comes into general use. Mr. Iggulden, gr., Orsett Hall, Romford, exhibited examples of his strain of "Cabbage Broccoli Improved," which, however, were inferior as regards solidness of the heads, though equally good in flavour. Mr. R. Dean, Ealing,

sent a dozen dishes of Apples and Pears, including heavily laden branches of two varieties of Pears cut from "non-spurred" trees, by which we presume is meant non-pruned. Mr. Woodbridge, gr., Syon House, exhibited two fruits of the new Rajah Banana, a distinct variety, introduced from Borneo by Mr. Burbridge; and from Mr. Hinds, gr., Canford Manor, came examples of the Otterspool Brussels Sprouts and a capital dish of Improved Trophy Tomatoes.

Cryptogamic Society of Scotland.—The sixth annual conference of this Society was held at Glasgow on the 27th ult. and succeeding days, by invitation of the Glasgow Society of Field Naturalists. The President was Dr. James Stirling, the well-known lichenologist. At the business meeting, after the transaction of ordinary business, the annual address was delivered by the President. While touching on some of the probable uses of fungi in medicine, he confined himself chiefly to an account of his microscopical investigations in Lichens, and took special note of the errors into which observers are liable to fall in the use of lenses of high power. Various papers followed. Mr. A. Stephen Wilson gave an interesting account of his recent observations on the Club-root fungus, *Plasmodiophora brassicæ* (see *ante*, p. 467). The secretary, Mr. B. White, read a paper by Mr. John Young, C.E., Perth, on "Dry-rot Fungus in Houses, and the Best Means of Eradicating It," and also one by himself on *Polypodium alpestre*, in which he sought to show that the variety *flexile* was entitled to rank as a sub-species. A supplement to *Mycologia Scotica* was laid upon the table, bringing the additions to the flora of Scotland up to the present date. During the past year about sixty species have been added. The most interesting of these are *Agaricus virosus*, Fr.; *A. Friesii*, Lasch.; *Cortinarius mucifluus*, Fr.; *Lactarius helvus*, Fr.; *Hydnum melaleucum*, Fr.; *Cyphella gibbosa*, Lev.; *Synchytrium mercurialis*, Fekl.; *Ustilago succise*, Mong.; *Æcidium depauperans*, Vize; *Peziza xanthomela*, Pers.; *P. sulphurata*, Schum.; *P. alnicella*, Nyl.; *P. bulbo-crinata*, Phil.; *P. leucopetra*, Pers.; *P. scutula*, Pers.; *P. nuda*, Phil.; *P. hirtococcinea*, Phil. and Plow.; *P. subularis*, Bull.; *P. pallido-virescens*, Phil.; *P. sordida*, Fekl.; *P. rhythmæ*, Phil.; *Phacidium tetrasporum*, Phil. and Keith; *Lophium lævisculum*, Karst.; *Nectria mammoidea*, Phil. and Plow.; *N. inaurata*, B. and Br.; *Valsella clyseata*, Fekl. The supplement will appear in the pages of the *Scottish Naturalist*. It was also intimated by the writer, that he has in view the publication of a primer of cryptogamic botany.

The following days were devoted to excursions and to a large public exhibition of cryptogams. The season throughout has been exceptionally unfavourable to the growth of fungi; yet, by the indefatigable exertions of the naturalists of Glasgow and their friends, the exhibition was in every sense a complete success. All the British Ferns, with the exception of three which die down earlier in the season, and most of their varieties, were exhibited. There were also collections of dried specimens of Ferns, mosses, fungi, and seaweeds. A fine collection of mosses mounted on microscopic slides in glycerine jelly, by Captain Cunliffe, Cheshire, elicited special admiration. Supplies of fungi were forwarded from all parts of the country by those interested in the success of the exhibition. While there was sufficient quantity to fill the large space allotted to them, there was a marked absence of many of the commoner species which are usually to be found in such collections. In brilliancy of colour also the species contrasted unfavourably with those of former years. It may be worthy of note that *Cortinarii* were almost entirely absent. On tables specially set apart for the purpose the various species exhibited were classified and named. Specimens of a few of the commoner edible and poisonous species were also grouped together. In an address to the visitors to the exhibition Colonel Harrington Stewart, of Torrance, gave some interesting information on edible fungi. The following may be noted as among the species of interest which were found among the collections contributed:—*Agaricus virosus*, Fr., from Cadder Wilderness, recently discovered as new to the British flora, by the Rev. J. Keith; *Agaricus Vahlia*, Schum., from Maudslai Castle; *Cortinarius claricolor*, Fr., from Keir; *Cortinarius infractus*, Pers.; *Polyporus roseus*, A. and S., from Thornlie Bank, found previously only at Glamis; and *Rhizina undulata*, Fr., from Sheriffmuir.

The most interesting of these excursions were to Cadzow Forest, Hamilton Palace, and Bothwell. Passing by Chateaufort on the richly wooded banks of the Avon, which rise to nearly 300 feet above the bed of the stream, a halt was made to inspect the ruins of Cadzow Castle, celebrated by Sir Walter Scott in his ballad on the murder of the Regent Murray, by Hamilton, of Bothwellhaugh. It is situated on a rock about 200 feet above the channel of the river. No date can be assigned for its foundation, but it is associated with the name of David I. The next place of special interest visited was the portion of the forest which is still the home of the celebrated white cattle, the wild cattle of Caledonia, "mightiest of all the beasts of chase." They are still preserved in a natural state. They cautiously drew near, inspected the intruders, and then quietly moved off to a safer distance. A portion of this enclosure is covered by grand old Oaks, "whose limbs a thousand years have borne." The largest of these fine trees measures 22 feet 9 inches in circumference at 5 feet from the ground, and the trunk contains 900 cubic feet of timber. *Fistulina hepatica*, the beefsteak fungus, was found growing upon these Oaks in great abundance, and also very fine specimens of *Polyporus sulphureus*. A few interesting plants were found in the course of the ramble through this portion of the forest:—*Agaricus infundibuliformis*

var. *membranaceus*, Fl. Dan., found previously in Scotland only at Glamis; *Polyporus dryadeus*, Pers., new to Scotland; *Ustilago succise*, found previously at Ranoch; and *Pseudo-Peziza ranunculi*, Fekl., on *Ranunculus repens*, recently discovered for the first time in Britain at Dunphail by Professor J. W. H. Trail. On leaving the forest the party drove to Hamilton Palace, where some time was spent in admiring the beauties of the park. After being welcomed by Provost Forrest, of Hamilton, they drove to Bothwell. A brief halt was made in the town to visit the ancient chapel where the marriage of the Duke of Rothesay, famed in the *Fair Maid of Perth*, was celebrated. It is connected with the parish church, and is still in a fine state of preservation. Bothwell Brig, where the Duke of Monmouth conquered the insurgents, and the ruins of Bothwell Castle, were visited, and excited deep interest.

Several excursions were made on succeeding days, the most interesting of which was to Calderwood and Torrance Glens, where the members were kindly received by Colonel Harrington Stewart. In Calderwood Glen *Pseudo-Peziza ranunculi* was again found. Professor Trail has since gathered the plant at Glamis. It will probably be found to be not uncommon.

Aquarium Flower Show: Oct. 9.—The principal feature in the display was the remarkably fine array of Gladioli made by Messrs. Kelway & Son, of Langport, and which occupied a table of considerable length. The flower-spikes were set up in a novel way, which is a decided improvement on the method ordinarily adopted of dotting them in formal lines in rectangular boxes, each spike being set up in a glass or earthenware vase, more or less ornamental, which greatly added to the general effect and enhanced the beauty of the show. The Gladioli, set up in this way, were arranged in groups down the centre of the table, supported by a variety of large and tastefully designed earthenware vases, and flanked on each side by various coloured Dahlias, set up in small glass vessels; the arrangement and the harmonious blendings of colour combining to make up a very pleasing picture of autumn flowers, thanks to the skill and taste of Mr. Johnson, to whose hands the arrangement was entrusted. The Dahlias were contributed by Messrs. Rawlings, of Romford, who, besides a series of Pompons shown in the form of bouquets, set up two stands of magnificent show flowers. There were no classes or prizes, but the whole was staged for effect, without the trammels of exhibiting in competition.

Besides the flowers there was a remarkably fine, if not large, display of fruit, the chief feature of which was the superb Grapes grown at Berkhamstead by Messrs. Lane & Son. Captain Hobson, the manager, also showed a fine assortment of Gros Colmar Grapes, which were of excellent quality, as were also several exhibits of Pears and Apples from the same gentleman. One of the Apples exhibited weighed 1½ lb. A fine collection of fruit was also brought forward by Mr. E. Bennett, of Rabley. The vegetable department was well illustrated by Messrs. Carter & Co., of Holborn, who showed a capital series of the different varieties of Cauliflowers, Cabbages, Beet, Carrots, Potatoes, &c.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, OCT. 13, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLASHER'S TABLE 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.	Degree of Humidity, 60° = 100.	Average Direction.
Oct. 7	29.46	-.02	63.6	46.2	17.4	51.6	+.00	49.5	82	N.E. 3.36
8	29.58	-.11	58.7	40.7	18.0	51.4	-.08	49.8	91	S.E. 1.28
9	29.52	-.17	51.0	43.5	10.5	49.6	-.23	47.6	93	E.N.E. 1.20
10	29.88	+.19	52.5	48.0	4.5	50.4	-.12	49.0	95	N.E. 1.28
11	30.08	+.38	58.3	43.5	10.8	49.8	-.15	41.6	83	E.N.E. 1.01
12	29.66	+.27	54.1	42.6	11.5	47.2	-.38	42.6	85	E.N.E. 1.01
13	30.12	+.41	56.3	42.7	13.6	49.2	-.15	42.6	78	N.N.W. 0.00
Mean	29.80	+.11	56.8	42.6	12.2	50.3	-.13	46.5	87	N.E. sum 3.20

Oct. 7.—A fine bright day. Mild. Heavy rain in early morning. Lightning at night.
8.—Overcast, dull, and wet, till noon. Fine afternoon; overcast and wet at night. Cool. Damp.
9.—A dull, overcast, miserable day. Cold. Heavy rain all day, especially heavy at night.
10.—A dull, cool day. Strong wind; gale in early morning; 1.03 inch of rain fell before 9 A.M., making an unusual total fall of 2½ inches in the twenty-four hours ending this time (9 A.M.); occasional rain fell during the day. Floods in Lewisham, Ladywell, &c.
11.—A fine bright day. Windy. Dull and showery from 2.30 to 4 P.M. Cold at night, and cloudless.

Oct. 12.—Generally fine and bright, but occasionally du and showery. Cold. Strong wind.
— 13.—A fine bright day. Partially cloudy and cool. Overcast at night.

LONDON: Barometer.—During the week ending Saturday, October 9, in the vicinity of London, the reading of the barometer at the level of the sea decreased from 29.97 inches at the beginning of the week to 29.25 inches by the afternoon of the 5th, increased to 29.79 inches by the evening of the 8th, decreased to 29.69 inches by the afternoon of the 9th, and was 29.71 inches at the end of the week. The mean reading for the week at sea level was 29.63 inches, being 0.65 inch below that of the preceding week, and 0.25 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 64° on the 5th to 46½° on the 4th; the mean value for the week was 56°. The lowest temperatures of the air observed by night varied from 35½° both on the 3d and 4th, to 48° on the 6th; the mean value for the week was 42½°. The mean daily range of temperature in the week was 13½°, the greatest range in the day being 22½° on the 5th, and the least, 4½° on the 6th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—October 3d, 43°·7, — 10°·2; 4th, 40°·6, — 12°·9; 5th, 54°·5, + 1°·3; 6th, 49°·6, — 3°·3; 7th, 54°·6, + 2°; 8th, 51°·4, — 0°·8; 9th, 49°·6, — 2°·3. The mean temperature of the air for the week was 49°·1, being 3°·7 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 128° on the 8th, 122° on the 7th, and 102° on the 3d; on the 4th and 9th the readings did not rise above 56°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30½° on the 3d, 32½° on the 4th, and below 40° on the 7th and 8th; the mean of the seven lowest readings was 40°.

Wind.—The direction of the wind was variable, and its strength moderately strong, especially on the 9th.

The weather during the week was generally dull, and the sky cloudy, except on the 3d and 7th, when it was fine. Very heavy rain fell on every day except the 3d, and lightning was seen on the 7th. The weather was cold throughout the week, but on the 3d and 4th it was exceptionally so.

Rain.—Rain fell on six days during the week; the amount measured was 3.10 inches, 1.20 inch of which fell on the 9th inst.

ENGLAND: Temperature.—During the week ending Saturday, October 9, the highest temperatures of the air observed by day were above 63° at Brighton, London (Blackheath), Cambridge, and Norwich, and below 55° at Sheffield and Liverpool; the general mean from all stations was 59½°. The lowest temperatures of the air observed by night were below 33° at Cambridge, Wolverhampton, Nottingham, and Hull, and above 38° at Liverpool and Sunderland; the mean value from all places was 34½°. The extreme range of temperature in the week was above 28° at London (Blackheath) and Cambridge, and below 20° at Sheffield and Liverpool; the mean range of temperature from all stations was 24½°.

The mean of the seven high day temperatures was above 57° at Plymouth, Brighton, and Cambridge, and below 52° at Wolverhampton, Sheffield, and Liverpool; the mean from all places was 54½°. The mean of the seven low night temperatures was below 41° at Birmingham, Wolverhampton, Nottingham, and Bradford, and above 45° at Truro, Brighton, and Sunderland; the general mean from all stations was 42½°. The mean daily range of temperature was above 15° at Plymouth and Cambridge, and below 10° at Sheffield, Liverpool, and Sunderland; the mean daily range of temperature from all places was 11½°.

The mean temperature of the air for the week from all stations was 47½°, being 3½° lower than the value for the corresponding week in 1879, and 9° below that of the preceding week. The mean temperature of the air was above 50° at Brighton and Plymouth, and below 46° at Wolverhampton, Nottingham, Sheffield, and Bradford.

Rain.—Rain fell on every day in the week at Hull, and on six days at most other places; the amounts were very large, causing destructive floods and loss of property. The heaviest falls were at Truro, 3.58 inch; Cambridge, 3.31 inch; Blackheath (London), 3.10 inch; Birmingham, 3.05 inch; Bristol, 3.02 inch; and Brighton, 2.97 inch. At Sunderland the total amount was 1.19 inch, and at Liverpool 1.32 inch; the average fall all over the country was 2½ inches, nearly. On October 4, at Truro, 3 inches of rain were measured, and at many places from 1 to 2 inches was recorded in one day.

The weather during the week was generally dull, cold, and very wet, with low barometer pressure. Lightning was seen at several places on the 7th.

SCOTLAND: Temperature.—During the week

ending Saturday, October 9, the highest temperatures of the air observed by day varied from 65° at Paisley to 52° at Leith; the mean value from all places was 55½°. The lowest temperatures of the air observed by night varied from 26° at Paisley to 37½° at Leith; the mean from all stations was 33°. The mean range of temperature in the week from all places was 22½°.

The mean temperature of the air for the week from all stations was 45½°, being 3½° lower than the value for the corresponding week in 1879. The mean temperature was above 47° at Dundee and Leith, and below 45° at Paisley and Perth.

Rain.—The heaviest falls of rain were at Edinburgh, 1.89 inch; Aberdeen, 1.62 inch; and Leith, 1.50 inch; and the least falls were at Dundee, 0.40 inch; and Perth, 0.90 inch. At Glasgow, Greenock and Paisley no rain was measured; the average fall over the country was three-quarters of an inch.

DUBLIN.—The highest temperature of the air was 53½°, the lowest 31½°, the extreme range 22°, the mean 46½°, and the amount of rain 3½ inches.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

QUERIES.—What is Bethabara wood, used in the United States for fishing-rod manufacture?—What is the Kennip tree of the West Indies? *Vide The Cruise of the Midge*, chap. xviii. [? Genipa].—I have a note to the effect that, in a work entitled *Astec Monuments* (which was advertised by Mr. Quirich, some years since, in his Catalogue, 286), there is an illustration of "the gigantic tree of S. Maria del Tule." [? Taxodium distichum]. Can any one tell me the name of the tree? A.

SALVIA LANTANIFOLIA.—Will some correspondent be so good as to inform me where I can obtain cuttings of the so-called *Salvia lantanifolia*? It has been grown in nurseries, but, I fear, may slip out of cultivation. *Curator Botanic Garden, Cambridge.*

Answers to Correspondents.

ABIES (PICEA) NOBILIS: G. D. The gouty swellings are due to the action of a grub which is particularly fond of this species. We know of no remedy but to pull up the trees, and burn them, before further mischief is done to other plants.

APPLE ROOM: W. W. We are afraid the fumes of the paraffin would communicate an unpleasant flavour to the fruit, and would recommend you to use a charcoal stove—say such a simple contrivance as that described in our columns for 1879, vol. xi., p. 633. It is easily made with three flower-pots.

APPLES CELLINI AND BLENHEIM ORANGE: W. W. Any Apple or Pear can be cooked, though some sorts are preferable for this purpose to others; but there are some varieties of both that cannot be considered as dessert fruits. The Blenheim Orange is usually passed as being a good variety for both purposes, but the Cellini is a culinary Apple pure and simple, and should be disqualified if shown in a class for dessert sorts only.

ARAUCARIAS: W. D. See p. 439. Messrs. Lane & Sons, Berkhamstead, have about 500 young trees raised from home-grown seed in their nursery.

BIRDS AND POISONOUS BERRIES: E. W. G. We have no exact knowledge to offer you on the point, but should most certainly decline to act upon the dictum that whatever a bird can eat a human being may, especially in the case of reputedly poisonous fruits. It is well known that rabbits and pigs can eat with impunity things that would be poisonous to human beings.

BOOKS: Cor. We are informed that the book of *Garden Plans* published at the office of the *Journal of Horticulture* has been out of print for some time.—*Young Gardener*. No such book as you require is published. The information may be gained from any botanical text-book.

DAPHNE INDICA RUBRA: F. The plant sometimes baffles the efforts of the best cultivators. We have known gardeners who have been able to grow it like a weed, who have afterwards utterly failed with it. Without seeing the plant, and knowing all the conditions, we cannot even guess at the cause of the sickness of your plant, nor suggest a remedy, and perhaps not even then.

FRUIT TREES UNFRUITFUL: H. B. By no means follow the advice given you. The treatment suggested is not only barbarous, but useless. Have the trees all carefully root-pruned, as directed by Mr. Hinds at p. 496; and thin out the shoots where they are too thickly placed, shortening none of the others back any more than you can possibly help.

GLASS: J. M. B. [The best English 21-oz. Certainly not rolled plate.

HEATING: Thatched House. Yes, the boiler will do the work; but you had better use 3-inch piping inside the conservatory, and protect the boiler from the weather.

HEATING GREENHOUSE: F. E. M. S. We have no faith in stoves. The best thing you can do is to put

in 3-inch hot-water pipes at the front of your small house, and connect them with a tiny boiler, which could be heated from the outside by a ring of gas burners set in a furnace-hole, or, if gas is not available, by burning coke or cinders in the furnace. The boiler should be set over the furnace and within the house, but the products of combustion, whether from gas or fuel, should be carried off by a flue-pipe.

HEDGES: S. Majendie. *Thuja occidentalis* makes the best evergreen hedge, and best stands clipping. If this grows freely we should prefer it to Hornbeam.

INSECTS: J. C. Your insect found on the Rose is the caterpillar of the brimstone-coloured swallow-tailed moth, belonging to the family of the loopers (*Geometridae*), so named from the manner in which the caterpillars bend their bodies into a loop when walking. I. O. W.

LILIUM GIGANTEUM: H. P. C. This being a large-growing plant, requires a pot of considerable size in which to perfect its bloom. It was originally so grown for exhibition by Messrs. Veitch & Sons, and should be potted in soil in which peat-earth preponderates. We have never heard of any difficulty being experienced in its cultivation.

MEALY-BUG ON VINES: J. H. During the dormant winter season have the stems and wood of the Vine thoroughly cleansed, by applying a solution of nicotine soap, warmed to 90°, afterwards washing them with tepid water.

NAMES OF PLANTS: J. E. Frewer. A *Salvia*, which we cannot further identify from the specimen sent.—*—Lymington.* *Rhamnus Frangula.*—*Jas. Day.* 1, *Statice Limonium*; 2, *Matricaria maritima*; 3, *Monarda didyma*; 4, *Clematis Vitalba*; 5, *Hyoscyamus niger*; 6, *Piptanthus nepalensis.*—*W. Moss.* 1, *Sambucus niger*, yellow-berried variety; 2, *S. niger*; 3, *S. niger*, var. *laciniata.*—*Camjee.* *Lycopodium dichotomum*, *Oncidium ornithorrhynchum* (1), *Lycaste Deppeii* (2).—*W. E.* *Ipomopsis elegans.*—*W. P. & Sons.* *Polygonum complexum.*—*P. R. Scott.* *Acer dasycarpum.*

NERTEA DEPRESSA: J. E. Daniel. A native of New Zealand.

ONION SEED: Bristol Market Gardener. Undoubtedly, if you can substantiate your statements, the law would give you a remedy. Consult your solicitor.

PINETUM: J. H. W. We cannot tell you.

RUDBECKIA NEUMANNI: Qudgeley. *Rudbeckia Neumannii* is propagated by division, and can be procured of the nurserymen who grow herbaceous plants. The present is a very good season for planting it, but February or March would perhaps be better.

SPRING BEDDING: Pen. *Silene pendula compacta* and *Nemophila*, sown late in August, as you suggest, should be available for spring bedding. The plants require to be pricked out singly in well prepared beds, not too rich, and then removed to their blooming quarters, either later in the autumn or early in spring. We suppose the Wallflowers, sown as you indicate, would bloom at the time required, if they grow on favourably.

STRAMONIUM CIGARETTES: H. V. C. These should be made of the leaves of the *Datura Stramonium*, using by preference those grown under a hotter sun than we get in this country. In no case make use of them without proper medical advice, as they are dangerous if carelessly used, or in unsuitable cases.

THRUSHES: A. E. W. There are several different kinds of Thrushes, as the Missel Thrush, *Turdus viscivorus*; the Goldvented Thrush, *T. chrysorrhæus*; the Rock Thrush, *T. saxatilis*; the Solitary Thrush, *T. solitarius*; White Thrush, *T. varius*; the Rose-coloured Thrush, or Rose-coloured Ouzel, *T. rosæus*; the Ring Thrush, or Ring Ouzel, *T. torquatus*; the Throistle, *T. musicus*; and the Fieldfare, *T. pilaris*. The latter is a migratory species, intermediate in size between the Missel Thrush and the Throistle, the former being 11 inches long, and the latter 9 inches. The bill of the Missel Thrush is dusky, that of the Fieldfare yellowish and black at the point.

* * Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

CATALOGUES RECEIVED.—George Prince (Market Street, Oxford), Catalogue of Roses Grown on the Seedling Brier.—John Jefferies & Sons (Cirencester), Catalogues of Roses and Clematis, Forest, Fruit, and Ornamental Trees, &c.—John George Hill (Merriott Nurseries, Crewkerne), Catalogue of Dutch Flower Roots, Fruit Trees, and General Nursery Stock.—Osborn & Sons (Fulham, S.W.). Trade List for 1880-81.—John Waterer & Sons (Bagshot, Surrey), Catalogue of Rhododendrons and other Hardy Plants.—V. Lemoine (Rue de l'Etang, Nancy), Price List of New Plants.

COMMUNICATIONS RECEIVED.—A. M.—J. H.—P. & M.—W. S.—Huyton.—W. S.—C. Ford.—D. C. P.—F. W. B.—A. B.—J. A. C.—W. H.—H. G. Rchb.—J. B.—E. J.—G. A. L.—Baron von Mueller.—W. E.—H. L.—A. S.—G. E. S.—G. M.—R. J. M.—G. M.—J. S. (Oaknext week).

Markets.

COVENT GARDEN, October 14.

We have no alteration to quote, trade being very quiet. Pines are in demand, and selling freely. Common samples of Grapes are heavy. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	.. 2 0 5 0	Melons, each	.. 2 0 3 0
Cobs, per lb.	.. 1 6 1 7	Peaches, per doz.	.. 6 0 12 0
Filberts, per lb.	.. 1 3 ..	Pears, per dozen	.. 1 6 2 6
Grapes, per lb.	.. 0 6 4 0	Pine-apples, per lb.	.. 2 0 5 0
Lemons, per 100	.. 6 0 10 0	Plums, ½-sieve	.. 2 0 4 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	.. 3 0 4 0	Horse Radish, p. bun.	4 0 ..
per doz.	.. 3 0 4 0	Lettuces, Cabbage,	.. 0 6 1 6
Aubergines, per doz.	3 0 ..	per doz.	.. 0 6 1 6
Beans, French, p. lb.	0 6 ..	Mint, green, bunch..	0 4 ..
Beet, per doz.	1 6 2 6	Mushrooms, p. basket.	1 6 2 0
Cabbages, per doz.	1 0 2 0	Onions, per bushel..	5 0 ..
Carrots, per bunch..	0 4 0 6	— Spring, per bun.	0 6 ..
Cauliflowers, Eng-	.. 0 3 0 6	Parsley, per bunch..	0 4 ..
lish, each	.. 0 3 0 6	Radishes, per bun.	0 2 ..
Celery, per bundle	.. 1 6 2 0	Small salad, pun.	0 4 ..
Chilis, per 100	.. 3 0 ..	Spinach, per bushel	2 6 ..
Cucumbers, per doz.	6 0 9 0	Tomatos, per lb.	0 9 1 0
Endive, per 2 doz.	1 6 3 0	Tunips, new, bunch	0 4 ..
Garlic, per lb.	.. 1 0 ..	Vegt. Marrows, doz.	2 0 ..
Herbs, per bunch	0 2 0 4		

POTATOS:—Kent Regents, 80s. to 105s.; Champions, 80s. to 95s.; Early Rose 60s. to 80s.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	.. 3 0 6 0	Euonymus, various,	.. 6 0 18 0
Begonias, per doz.	4 0 12 0	per dozen	.. 6 0 18 0
Bouvardias, per doz.	12 0 24 0	Evergreens, in var.,	.. 4 0 18 0
Chrysanth., per doz.	6 0 12 0	per dozen	.. 4 0 18 0
Cockscombs, p. doz.	3 0 6 0	Ferns, in variety, doz.	4 0 18 0
Coleus, per dozen	3 0 9 0	Ficus elasticus, each	1 6 7 6
Cyperus, per dozen	4 0 9 0	Foliage Plants, vari-	.. 2 0 10 6
Dracena terminalis	30 0 60 0	ous each	.. 2 0 10 6
— viridis, per doz.	12 0 24 0	Fuchsias, per dozen	3 0 9 0
Erica gracilis, per	.. 9 0 18 0	Myrtles, per doz.	6 0 12 0
dozen	.. 9 0 18 0	Palms in var., each	2 6 21 0
— cafra, per doz.	8 0 12 0	Solanums, per dozen	6 0 18 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Heliotropes, 12 sp.	0 6 1 0
Asters, 12 bunches	4 0 9 0	Mignonette, 12 bun.	2 0 6 0
Bouvardias, per bun.	1 0 3 0	Pelargoniums, 12	.. 1 0 1 6
Calceolarias, p. bunch	0 9 1 0	— zonal, 12 sprays	0 3 0 6
Camellias, per dozen	3 0 9 0	Primula, double, per	.. 1 0 1 6
Carnations, 12 blms.	1 0 2 0	bunch	.. 1 0 1 6
Dahlias, 12 bunches	3 0 6 0	Roses (indoor), doz.	1 0 6 0
Eucharis, per doz.	3 0 9 0	— outdoor, 12 bun.	6 0 15 0
Feverfew, 12 bun.	4 0 6 0	Stephanotis, 12 spr.	6 0 ..
Forget-me-not, 12	.. 3 0 9 0	Tropæolum, 12 bun.	1 0 3 0
bunches	.. 3 0 9 0	Tuberose, per dozen	1 0 2 0
Gardenias, 12 blms.	3 0 6 0		
Gladioli, 12 spikes	2 0 4 0		

SEEDS.

LONDON: Oct. 13.—No transaction of importance in any description of Clover seed can yet be reported: meantime values here are hardening all round, and Continental holders are also raising their quotations. Mail advices, just received, speak badly as to the quality of the American Clover crop. There is an inquiry for new English Cow-grass; and for a moderate quantity of same, if delivered forthwith, remunerative prices would be obtainable. The advance in Italian Rye-grass previously indicated has this week made further substantial progress. Winter Tares sell freely at full rates: fine dry parcels have become scarce. Rye is cheaper. English Linseed realises more money. Some fine new Sicilian Linseed is now offering on moderate terms. Blue Peas must be noted 2s. per quarter higher. For both Canary and Hemp seed currencies favour the holder. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

HAY.

From Tuesday's Whitechapel Market report we learn that, with a full supply and a quiet trade, prices were unaltered. Quotations:—Prime Clover, 100s. to 132s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 108s.; inferior, 30s. to 70s.; and straw, 30s. to 42s. per load. — On Thursday the large supply of fodder on sale met with a dull trade, except for best hay, but prices were unaltered. — Cumberland Market quotations:—Superior meadow hay, 100s. to 112s.; inferior, 50s. to 80s.; superior Clover, 120s. to 132s.; inferior, 80s. to 105s.; and straw, 36s. to 42s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that the arrivals have been tolerably extensive, but a large proportion is diseased. German Potatoes have been arriving liberally, and are of good quality:—Scotch Regents, 80s. to 90s.; Champions, 65s. to 75s.; Kent Regents, 100s. to 110s.; Victorias, 100s. to 110s. per ton.—The imports into London last week consisted of 10,288 bags from Hamburg, 400 bags from Rotterdam, and 52 tons from Roscoff.

COALS.

The following are the quotations current at market during the week:—East Wylam, 16s.; Ravensworth West Hartley, 14s. 3d.; Walls End—Hetton, 18s.; Hetton Lyons, 16s. 6d.; Hawthorns, 16s. 9d.; Lambton, 17s. 6d.; Wear, 16s. 6d.; Tunstall, 16s. 6d.; Tees, 17s. 9d.; South Hetton, 18s.

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck. **BLACK FIBROUS PEAT**, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton. Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each. Fresh **SPHAGNUM**, 10s. 6d. per bag. **WALKER AND CO.**, Farnborough Station, Hants.

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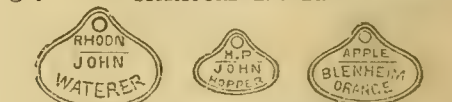
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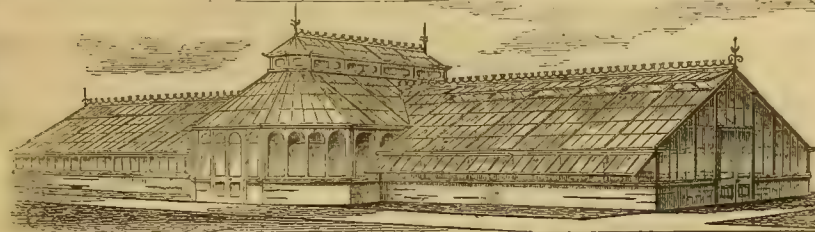
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3 feet by 5 feet, 1s. 6d. per blanket	5 feet by 5 feet, 2s. 6d. per blanket
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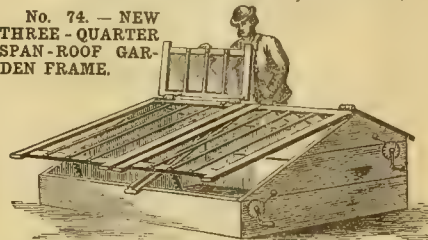
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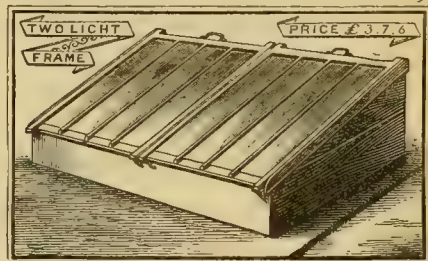
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Size.	Long.	From front to back.	Gearing extra to 8 ft. size and upwards.	Packing Cases.	
No. 1.	4 feet	6 feet	£3 0 0	—	£0 4 0
No. 2.	8 feet	6 feet	4 15 0	£0 15 0	0 5 0
No. 3.	12 feet	6 feet	6 10 0	1 2 0	0 6 6
No. 4.	16 feet	6 feet	8 5 0	1 10 0	0 8 6
No. 5.	20 feet	6 feet	10 0 0	1 16 0	0 9 6



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2-light Frame	8 feet by 6 feet	£3 7 6	4 5 0	Packing Cases.	
3-light "	12 feet by 6 feet	4 17 6	4 5 0	4 5 0	4 5 0
4-light "	16 feet by 6 feet	6 7 6	5 5 0	5 5 0	5 5 0
5-light "	20 feet by 6 feet	7 17 6	6 5 0	6 5 0	6 5 0
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The Best
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This Joint, being easily removed, is specially adapted for Tenants.

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Joint complete, with Rubbers and Pins, 2-in., 11d. each; 3-in., 1s. 3d.; 4-in., 1s. 6d.

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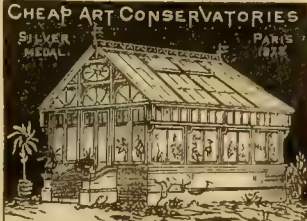
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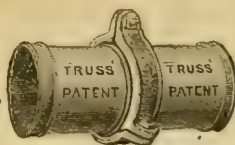
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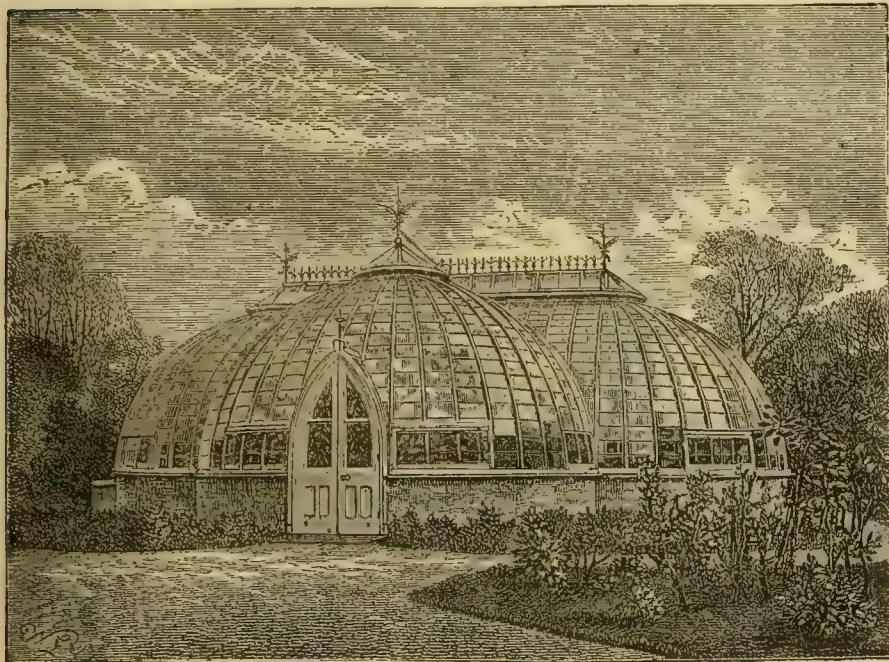
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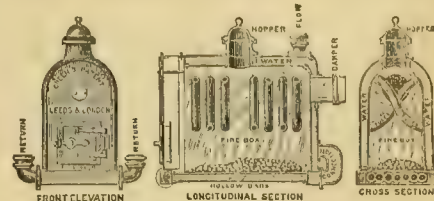
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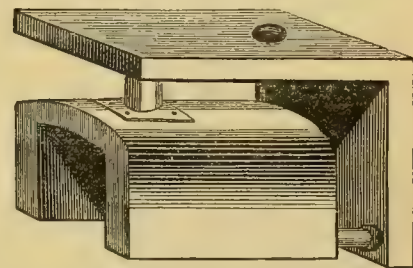
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20 "	18 "	30 "	500	9 0 0
24 "	24 "	24 "	700	12 0 0
24 "	24 "	30 "	850	14 0 0
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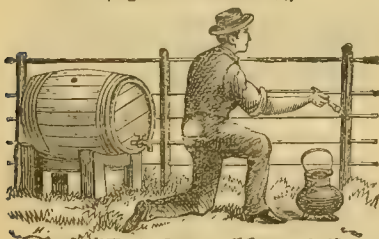
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The OCTOBER NUMBER contains Plates of the BROWN TURKEY FIG, and two CHOICE PICOTEES. Also Orchard-house Notes by G. D.; Vines and Vine Culture, with figure of Black Prince, by Mr. A. F. Barron; the Tulip Season, by S. Barlow, Esq.; Arnebia echinoides, by Mr. J. C. Niven; Pelargonium tricolor, with figure; Wall Fruit Trees, by Mr. J. Cox; Davallia Mariesii, with figure; Suburban Gardening for October; Auriculars as Border Plants, by Mr. D. T. Fish; Mr. Dodwell's New Carnations and Picotees; Belle Baucé Peach, by Mr. H. J. Clayton; Hardy Varieties of Apples, by the Editor; New Pitcher Plants, with figures; the International Potato Exhibition; Winter-flowering Bouvardias; Garden Gossip; in Memoriam.

The following COLOURED PLATES have been published during the present year:—Prinula sinensis purpurea punctata, Select White Grapes, Rhododendron Prince of Wales, New Laced Alpine Auriculars, Amaryllis Mrs. Baker, Early Silver Peach, New Show Pelargoniums, Choice Gooseberries (two plates), Choice Lilies, Hardy Primulas, Rose Her Majesty, Hardy Double Azaleas, Anthurium Andréanum, New Yellow Picotees, Dahlia coccinea var. Scarlet Dwarf.

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No. 356.—VOL. XIV. { NEW SERIES. } SATURDAY, OCTOBER 23, 1880.

{ Registered at the General Post-office as a Newspaper. } Price 5d. POST FREE, 5½d.

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WANTED, English GRAPES and FRUIT

of all kinds, suitable for Sale in Smithfield Market.

Manchester. Good prices realised, and prompt cash. Moderate

commission.

DORAN and SON, Stretford, Manchester.

WANTED, 1000 Lancashire Lad GOOSE-

BERRY TREES; also fifty Standard Victoria

PLUMS. Must be all good trees, ready for fruiting. All

particulars and lowest price for cash to

THOMAS CARLTON, Wildernesse, Sevenoaks.

Gloxinias.

HUGH LOW AND CO. having a large stock of fine named GLOXINIAS, erect and drooping-flowered, offer good bulbs in upwards of ninety varieties, at 50s. per 100. Clapton Nursery, London, E.

POET'S NARCISSUS.—A quantity of these

Bulbs for Sale. Apply to

BEN. TURNER, White Bridge Gardens, Bedford, Middlesex.

NARCISSUS BULBS, good Double, at

10s. per bushel; and a good, strong, SPRING CART, for Sale, at

Worton Gardens, Isleworth, W.

HERM. SCHIRMER, Gardener to the

Trade, Gärtnerstrasse, 82, Hamburg, has for disposal about 150,000 LILIES of the VALLEY, to bloom for Forcing, in superior qualities only, at 30s. per 1000.

STRAWBERRIES.—The fact of my

being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.

CATALOGUE post-free. Special Prices for large quantities.

H. CANNELL, Swanley.

CHARLES TURNER'S Descriptive Select

LIST is now ready. Strong Plants that will fruit next season may be had at the shortest notice.

The Royal Nurseries, Slough.

CAMELLIAS, in Bud, small plants, at £3

per 100; larger, £6 per 100; AZALEAS, in Bud, at

£4 per 100; beautiful Crowns, at £5 per 100; LILY OF THE

VALLEY, 35s. per 1000; CHRISTMAS ROSES, £4 per 1000;

SPIRÆA JAPONICA, £4 per 1000.

PETER DE COCK, The White Flower Nursery, Meirelbeke, Ghent, Belgium.

To Planters on a Large Scale.

FOR SALE, to effect a clearance, thou-

sands of CONIFERÆ in many varieties, LAURELS,

YEWs, RHODODENDRONS, finest named in largest

specimens. They can be delivered to Great Northern Railway, or London and North-Western Railway, or Midland. Apply to,

Rev. J. B. NORMAN, Edgware, London.

Hardy Rhododendrons and Azaleas.

ANTHONY WATERER has to offer many

thousands of healthy, well furnished, and well budded

RHODODENDRONS, of the best and most popular kinds.

HARDY AZALEAS, a selection of the most beautiful kinds

known, all well furnished with buds.

Knapp Hill Nursery, Woking, Surrey.

COMMON LAURELS, good bushy plants,

from 1 to 2 feet high, 2s. per dozen, 12s. per 100, or £5

per 1000, nett cash.

J. FARWELL, Nurseryman and Seedsman, Wimborne.

FOR SALE, 3 and 4-yr. THORN QUICKS,

extra strong. Prices per 1000 and per 100,000 on

application to

JOSEPH TREMBLE AND SONS, The Nurseries, Penrith.

Christmas Roses.

BUDDENBORG BROS., BULB GROWERS,

Hillegom, near Haarlem, Holland, have an immense

stock of the above in vigorous growth. Have not been so fine

for years. Can be highly recommended. Price and all

particulars given on application. Any quantity can be supplied.

CATALOGUE of Hyacinths, Tulips, and other Bulbs, sent

post-free on application.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES, HERE-

FORD. (Established 1785.)

Descriptive CATALOGUES on application. Address

CRANSTON'S NURSERY and SEED COMPANY

(Limited), King's Acre, near Hereford.

Fruit Trees, Roses, and General Nursery Stock.

W. B. ROWE AND CO. (Limited) offer a

large and very extensive collection of the above, in

fine condition, well rooted for removal. Inspection solicited.

Barbourne Nurseries, Worcester.

Deutzia gracilis and Ligustrum ovalifolium,

R. AND G. NEAL beg to offer the above,

extra fine plants, by the 100 or 1000. Samples and

Trade LIST on application to

The Nurseries, Wandsworth Common, London, S.W.

Gardenias.

MESSRS. JOHN STANDISH AND CO.

have a magnificent stock of the above plants to offer.

They may be had in all sizes from 24s. per dozen to 21s. each,

mostly set with bloom-buds. Every plant is warranted abso-

lutely free from mealy-bug.

Royal Nurseries, Ascot, Berks.

TWELVE GARDENIA INTERMEDIA

for 12s.—Strong, well-grown, clean plants in 5-inch pots

of this, the best variety for winter flower. Packages gratis for

cash with order.

J. H. LEY, Royal Nursery, Croydon.

Bulbous Flower Roots.

FIRST QUALITY, CARRIAGE FREE.

JAMES DICKSON AND SONS

have received, in the finest possible condition, their first

large annual consignment. Priced CATALOGUE post-free.

108, Eastgate Street, Chester.

SALES BY AUCTION.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., every **MONDAY, WEDNESDAY, and SATURDAY**, during October, at half-past 12 o'clock precisely each day, consignments of **DUTCH BULBS** arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

Bulbs and Plants.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **WEDNESDAY, October 27**, at half-past 12 o'clock precisely, a small Collection of Specimen **CAMELLIAS, Indian AZALEAS, PALMS, and other ORNAMENTAL STOVE and GREENHOUSE PLANTS, Carnations, Pinks, Violets, Lily of the Valley, Spirea japonica, and other Hardy Herbaceous Plants, &c., Hyacinths, Tulips, Crocuses, and other Bulbs, from well-known Farms in Holland, in lots to suit all Buyers.**

On view the morning of Sale, and Catalogues had.

Valuable Orchids.

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company to **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY, October 28**, at half-past 12 o'clock precisely, a splendid **COLLECTION of CHOICE ORCHIDS**, consisting of the following varieties (many in flower, and others with flower-spikes):—*Odontoglossum Alexandrie, O. coccineum, O. nigrum, O. roseum, O. Rossi majus, O. Pescatorei, O. triumphans, O. hastulatum, Oncidium Lancanum, O. Gardnerianum, O. serratum, O. superbum, O. pretextum; Cattleya Eldorado, C. Mendelii; Laelia pedunculata, Aerides Fieldingii, A. cylindricum; Saccolabium of sorts, Masdevallia elephantipes, M. Shuttleworthii, M. coccinea, M. Harryana, M. Tovarensis; Renanthera coccinea, Vanda cœrulea, Colax jugosus, Cattleya bicolor, Oncidium scarce, Sophronitis violacea, &c.;* hardy *Cypripediums*, and an importation from New Grenada.

May be viewed the morning of Sale, and Catalogues had.

Every Monday.

SALES of DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE and MORRIS will **SELL** at the Mart, on **MONDAY NEXT**, and every following Monday, at half-past 11 o'clock precisely, extensive consignments of first-class **HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS** from Holland, in lots to suit all buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Important Sale of a First-class Collection of DUTCH BULBS, 4000 Handsome Standard and other **ROSES, Selected Fruit TREES, Hardy SHRUBS, AMERICAN PLANTS, &c.**

MESSRS. PROTHEROE and MORRIS will **SELL** the above by **AUCTION**, at the City Auction Rooms, 98 and 99, Gracechurch Street, E.C., on **TUESDAY, October 26**, at 12 o'clock precisely.

On view the morning of sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Ivy Farm, Brockley, Lewisham, Kent.

IMPORTANT CLEARANCE SALE of NURSERY and FARMING STOCK.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. B. Mailer and Mr. J. Horton to **SELL** by **AUCTION**, Without Reserve, on the Premises as above, on **WEDNESDAY NEXT, October 27**, at 12 o'clock precisely, a valuable collection of **NURSERY and FARMING STOCK**, including 2000 Evergreen Shrubs, 4000 Ornamental Trees, 250 Standard Roses to name, 1000 Standard, Pyramid, and Draw-trained Fruit Trees, Standard Flowering Almonds, &c.; also a valuable Cart Horse, a 2-yr.-old Colt, 8 Store Pigs, 6 Cows in calf, Carts, Waggons, and other effects.

Loughton-In Epping Forest.

ANNUAL SALE of Well Cultivated NURSERY STOCK.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. Wm. Paul to **SELL** by **AUCTION**, on the Premises, the Sale Nurseries, Loughton, on **THURSDAY and FRIDAY NEXT, October 28 and 29**, at 12 o'clock precisely each day, several Acres of first-class **NURSERY STOCK**, in fine condition for removal, having been kept constantly transplanted, comprising a great variety of Evergreens, a large quantity of Gold and Silver Variegated Hollies, Deciduous Trees and Shrubs, 8000 Limes, 7 to 12 feet; an assortment of Fruit Trees and Roses, and other Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Friday Next.

1000 **CAMELLIAS** and **AZALEA INDICA**, all named and well set with bloom-buds; 200 **FICUS ELASTICA, PALMS, and other PLANTS**, consigned from Belgium for unserved sale; a few lots of established **ORCHIDS, CARNATIONS, ANEMONES, and 400 lots of first-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other ROOTS** from Holland.

MESSRS. PROTHEROE and MORRIS will **SELL** the above at the Auction Mart, Tokenhouse Yard, opposite the Bank of England, E.C., on **FRIDAY NEXT, October 29**, at half-past 11 o'clock precisely.

View morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Muswell Hill, N.**CLEARANCE SALE.**

MESSRS. PROTHEROE and MORRIS are instructed by J. H. Renton, Esq., who is leaving the neighbourhood, to **SELL** by **AUCTION**, Without Reserve, on the Premises, Fortis House, Fortis Green, Muswell Hill, N., on **MONDAY, November 1**, at 12 o'clock precisely, the whole of the well-grown **STOVE and GREENHOUSE PLANTS**, including 20 splendid Plants of *Eucharis amazonica*, 50 large *Camellias* and *Azaleas*, from 3 to 10 feet, beautiful specimens, and full of flower-buds; 100 Roses in pots, 5000 Bedding Plants, 1500 Strawberries; also 4 **DAIRY COWS, 4 PIGS, 200 Head of POULTRY, CHAISE, CARTS, HARNESS, GARDEN SEATS and UTENSILS, 12 Loads of MEADOW HAY**, and numerous other items.

View day prior to Sale. Catalogues of Mr. MILLS, the Gardener, on the Premises; and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

[Linton, near Maidstone.—Great Clearance Sale of ROSES.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. J. Grant (Rose Grower) to **SELL** by **AUCTION**, on the Premises, Wester Hill, Linton, near Maidstone, on **TUESDAY, November 2**, at half-past 12 o'clock precisely, about 16,000 Standard and Half-standard ROSES, consisting of the choicest and most approved kinds of H.P., Noisette, Tea and Bourbon varieties; also 5000 Dwarf Roses on the Manetti stock, in variety. Lotted to suit the Trade and Private Buyers.

May be viewed. Catalogues had on the Premises; and of the Auctioneers, Land Agents, and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

The Willows Nurseries, Leicester.

GREAT SALE of NURSERY STOCK, now Growing upon Land required by the Great Northern Railway for the extension of the line.

MESSRS. PROTHEROE and MORRIS have received instructions from Messrs. Harrison & Sons to **SELL** by **AUCTION**, entirely Without Reserve, on the Premises, as above, on **TUESDAY, November 2**, and three following days, at 11 o'clock precisely each day, a large quantity of **NURSERY STOCK**, well grown and in excellent condition for removal, consisting of upwards of 70,000 fine **FRUIT TREES**, which include Apples, Pears, Cherries, Gooseberries, Currants, &c., of all leading and well-known kinds; 80,000 **ORNAMENTAL SHRUBS**, comprising Aucuba japonica, Cupressus, Hollies, Laurels, and Berberis of sorts, Rhododendrons, Pines, Privet, &c.; 270,000 **ORNAMENTAL and FOREST TREES**, viz., Ash, Horse Chestnuts, Elms, Limes, Maples, Oaks, Poplars, Sycamores, Quichthorn, and a general collection of other Nursery Stock. May be viewed. Catalogues obtained of Messrs. HARRISON AND SONS, Market Place, Leicester; and of the Auctioneers, 98, Gracechurch Street, London, E.C.

Woking, Surrey, near the Station.

EXTENSIVE CLEARANCE SALE of the whole of the NURSERY STOCK, IMPLEMENTS, and EFFECTS, without the slightest reserve.

MESSRS. PROTHEROE and MORRIS are instructed to **SELL** by **AUCTION**, on the Premises, Trigg's Nursery, Woking, on **WEDNESDAY, November 3**, and following days, at 12 o'clock precisely each day, the whole of the well-grown **NURSERY STOCK**, in excellent condition for removal, including 10,000 Green Hollies, 1 to 4 feet; 1500 Gold and Silver Hollies, 1 to 4 feet; 8000 Common Yews, 3 to 5 feet; large quantities of Portugal Laurels, Aucubas, Common Laurels, Arbor-vitæ, and other Evergreens; 11,000 Fruit Trees, 14,000 Fruit Stocks, 15,000 Quicks, 85,000 Ornamental and Forest Trees, consisting of 3000 Limes, 6 to 9 feet; 4000 Gold and Silver Yews, 6 to 9 feet; 1500 Horse Chestnuts, 6 to 8 feet; 20,000 Ash, 20,000 Beech, and 35,000 Spanish Chestnuts; also the **FARMING IMPLEMENTS, CART MAKE, HARNESS, and EFFECTS**.

May be viewed. Catalogues had on the Premises, and of the Auctioneers, Land Agents, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. THE VALUABLE ESTATE, part Freehold and part Copyhold, having an important frontage to the high road, to be **SOLD by PRIVATE TREATY**. Apply to the Auctioneers as above.

South End Nurseries, Dorking.

TO NOBLEMEN, GENTLEMEN, the TRADE, and PUBLIC GENERALLY.

NOTICE of EARLY SALE by PUBLIC AUCTION of a large variety of surplus **NURSERY STOCK**, comprising in **FOREST TREES and EVERGREENS**, Scotch, Larch, Spruce, Austrian and Silver Firs; *Cupressus Lobbiani* and *Lawsonianum*, Holly, Yew, Arbor-vitæ, Common and Portugal Laurels, Aucuba, Lilac, Laburnum, Horse Chestnut, Sweet Chestnut, Sycamore, Beech, Birch, Lime, Elm, Variegated and Green Tree Box, Privet, &c.; and in **FRUIT TREES**, Apples, Pears, Plums, Cherries, Filberts, Currants, &c.

MESSRS. WHITE and SONS are favoured with instructions from Mr. Henry Leeds, to submit the above to **SALE by AUCTION**, at the Nurseries, adjoining the Coldharbour Road, South Street, Dorking, on **FRIDAY and SATURDAY, October 29 and 30**, commencing each day at 10 for 11 o'clock precisely on account of the number of lots. The Stock, which is of proper size, and in excellent condition for removal,

May be seen one week prior to the Sale, on application to Mr. LUCAS, Nurseryman, South Street, Dorking. Catalogues may be obtained in due time at the usual Inns in the Surrey and Sussex Market Towns and Villages; of Mr. LUCAS, Nurseryman, South Street, Dorking; and of the Auctioneers, Dorking.

Addlestone, Surrey.

CLEARANCE SALE, the Land being Sold.

MESSRS. R. and J. WATERER and SON are instructed by the Executors of the late Mr. J. Fuller to **SELL** by **AUCTION**, on **TUESDAY, November 2**, at 11 for 12 o'clock precisely, upon the Premises, the remaining portion of the well-grown **NURSERY STOCK**, comprising about 3000 Rhododendron ponticum, 115 Kalmia latifolia, 10,000 Green Hollies, from 9 inches to 3 feet; 400 Variegated Hollies, including some fine Specimen Plants; 500 Aucuba japonica, 6000 Deutzia gracilis, 1000 Dwarf Roses, 12,000 Manetti Stocks, 3000 Lily of the Valley, Portugal and Common Laurel, 400 Scarlet and Common Horse Chestnut, a quantity of Lombardy, Black Italian, and Balsam Poplars and Limes, from 10 to 14 feet; 100 Cupressus Lawsoniana, 6 feet high; Weymouth Pines, a quantity of Trained and Standard Fruit Trees, 30 lots of Border Shrubs, and other Stock and Garden Tools.

May be viewed three days prior to the Sale, and Catalogues had upon the Premises; at the "Duke's Head" and "Railway" Inns, Addlestone; and of Messrs. R. and J. WATERER and SON, Auctioneers and Valuers, Chertsey.

The Dorset Nurseries, Blandford, Close to the Railway Station.

MESSRS. PARK and CROOM have received instructions from the Executors of the late Mr. H. Blandford, who are reducing their stock, to **SELL** by **AUCTION**, on the Premises, the Nursery, at the top of Salisbury Street, Blandford, at 2 o'clock precisely (Refreshments at 1 o'clock), on **WEDNESDAY, November 3**, and following day, if necessary, an immense quantity of **ORNAMENTAL TREES and SHRUBS**, including Cedrus Deodara, Araucarias, Cupressus (of sorts), Golden Yews, Thuja aurea and elegantissima, Cryptomeria, Thuopsis, Acers, &c.; and about 1000 splendid Dwarf ROSES, named; 3000 Common LAURELS, 200 choice named FERNS, Standard HORSE CHESTNUTS, LIMES, POPLARS, for Avenues, &c.; some fine SPRUCE FIRS, BEECH, and other NURSERY STOCK too numerous to mention.

Catalogues to be obtained of the Auctioneers, Blandford.

Wonersh Nursery, near Guildford, Surrey.

TO NOBLEMEN, GENTLEMEN, CONTRACTORS, and OTHERS.

IMPORTANT ANNOUNCEMENT.

MESSRS. THOS. DREWITT and SONS will **SELL** by **AUCTION**, on the Premises as above, on **WEDNESDAY, THURSDAY, and FRIDAY, November 3, 4, and 5**, commencing each day punctually at 1 o'clock, by order of Mr. W. Virgo, the extensive and well-known Nurseryman and Florist, a well-grown Stock of **TREES and SHRUBS**, consisting of Spruce Fir, various heights; 20,000 Spanish Chestnuts (2-yr. seedlings), 20,000 Hazel, 20,000 each of Ash, Alder, and Willow, quantity of Scarlet Oak, 400 English Yews, 200 Green Holly, 200 Hornbeam 2½ to 3½ feet; a good collection of Ornamental Trees of various heights, Mountain Ash, Laburnum, Wych Elm, Hornbeam, Sycamore, Double White, Pink, and Scarlet Thorns; Limes, Poplars, Horse Chestnuts, Common Laurels, Portugal Laurels, Box, Weymouth Pine, and Silver Fir; 20,000 strong transplanted Quicks, Black Currants, variety of Standard Apples and Pears in sorts, quantity of Walnut Trees, several dozen of choice Rose Trees, Standards and Half-standards.

NOTE.—The whole of the Stock is in good condition for removing. Wonersh Nursery is a short distance from Bramley Station on the Horsham line, where a conveyance will each day meet the 11.42 o'clock train.

May be viewed two days prior to the Sale, and Catalogues obtained of Mr. W. VIRGO, Wonersh Nursery; "Grantley Arms," Wonersh; "Jolly Farmer," Bramley; "Albion Hotel," Woking Station; "Red House Hotel," Woking Station; "King's Arms," Godalming; "Bush Hotel," Farnham; "Queen's Hotel," Farnborough; "Talbot Hotel," Ripley; and of the Auctioneers, 24, High Street, Guildford, Surrey.

Hassock's Gate, Sussex.

Within five minutes' walk of the Station.

MR. THOMAS SINNOCK is instructed by Mr. H. Hensby to **SELL** by **AUCTION**, on the Premises on **WEDNESDAY, November 3**, about 1500 well-grown Standard **ELM, LIME, CHESTNUT, MAPLE, &c.**, of sorts; Choice **EVERGREEN SHRUBS and TREES**, Pyramid APPLE and PEAR, GOOSEBERRY, and CURRANT BUSHES, ROSES, &c., the ground being required for other purposes.

May be viewed two days before the Sale. Catalogues may be had on the Premises, or of the Auctioneer, Burgess Hill, Hurstpierpoint.

FOR SALE, in consequence of continued ill-health, the **LEASE of the CLAPHAM ROAD NURSERY**, with Glass Erections, about 14,000 feet, all Heated with Hot Water, with Stock and all thereon; or **TO LET**—The Stock to be taken at a valuation.

Apply to Messrs. PROTHEROE and MORRIS, Auctioneers, 98, Gracechurch Street, London, E.C.

FOR Immediate SALE, a very old-established **NURSERY and SEED BUSINESS**, about 25 miles from London. Excellent locality for business. Nursery Stock, Trade Fixtures, and Implements at valuation. Cash required, about £250. For further particulars apply to Mr. G. C. COOKMAN, 14, Henrietta Street, Covent Garden, W.C.

FOR SALE, a great Bargain, with immediate possession, the **LEASE of most convenient NURSERYMAN'S PREMISES**, consisting of three extensive Forcing Houses, thoroughly Heated with Hot Water, and full Stock. Well stocked Garden, good Stabling and Cart Sheds, and House with Shop Window in main thoroughfare. All in first-rate order. Full particulars on application to HENRY CONISBEE, Madras Cottages, Southgate.

To Market Gardeners, Seedsmen, and Others.

TO BE LET, with immediate possession, half an Acre of good LAND, walled in, upon which are newly-erected Greenhouse, Propagating House, Seed Shop, &c., Heated with Cannell's patent Hot-water Apparatus. Attached to the above is a young but growing Florist's and Seed Trade, which offers a most advantageous opening for an energetic man with small capital. It is situated upon the turnpike road from Southam to Ipswich, five minutes' walk from Woodbridge, and commands the trade of a large district.

Apply to H. W. COLLINS, Valuer and Estate Agent, Woodbridge, Suffolk.

To Florists, Nurserymen, and Gardeners.

TO LET, by Tender, **FLORA COTTAGE**, Coniscliff Lane, Darlington, with 2 Acres of Garden Ground, well stocked with the choicest kinds of Apple, Pear, and Plum Trees, both wall and standards, all of named varieties, and other smaller fruits; 2 Vineries, containing 19 healthy Vines each bearing, under an area of 125 superficial yards of Glass; Peach and Nectarine House, containing 7 Peach, 3 Nectarine, and 1 Fig Tree, under an area of 135 superficial yards of Glass, the whole fitted up with complete staging for plants; 3 Hot Frames for bedding plants, containing an area of 60 superficial yards of Glass; 1 Forcing Pit, containing an area of 27 superficial yards of Glass. The whole of the above is Heated by patent Hot-water Apparatus, in excellent working order. In addition are 13 Cold Frames, containing an area of 75 superficial yards of Glass. The Garden is fully planted with Vegetables, is well sheltered on the north, east, and west, and has an abundant supply of water laid on. Yard containing Root-house, Mushroom-house, and Fruit-room, fitted with drawers and shelves, the whole heated with hot water; Potting-shed, Lumber-shed, &c. The Cottage contains Kitchen, Sitting-room, Two Bed-rooms, Sullery and Pantry, Yard, and Conveniences on Ground Floor, and two good Cellars underneath, with Gas in each room. Also Three Fields of Good Old GRASS LAND, with Buildings, viz.:—No. 1, area 2 a. 2 r. 25 p., with two Loose Boxes and 2 Boxes; No. 3, area 2 r. 25 p., with 4-Stamped Cow-byre, 3 Piggeries, 3 Poultry-sheds and Yards, with Water in each; Calve-house, Boiling-house, and Store-Room, Manure Tank and Pump. The whole of the Buildings are well and substantially built, and in excellent order.

Apply to W. WRATHER, Gardener, to view the above Grounds. Tenders to be forwarded to Mr. R. B. SAUNDERS, Hutton Grange, Guisborough, Yorks, Agent for the Estate of the Executors of the late Edward Pease, Esq., on or before November 15.

Tender for Planting.

WANTED, TENDERS for PLANTING the **SOUTHGATE BURIAL GROUND**. Particulars as to Plants required and Work to be done can be obtained from Mr. BAINES, Fern Cottage, Palmers' Green, Southgate.

Tenders (sealed) to be addressed, not later than Nov. 6, to Mr. A. CAMPION, Clerk to the Burial Board, Southgate. N.B. The Board does not bind itself to accept the lowest or any tender.

STRAWBERRIES.

The best sorts for fruiting next year.
V. H. DE THURY. Strong plants, all well rooted, in small pots, prepared for forcing, 10s. per 100.
SIR JOSEPH PAXTON, President.
 Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1000. Package free. Extra plants for carriage. Cash from unknown correspondents.
H. J. HARDY, F.R.H.S., Stour Valley Seed Grounds, Bures Suffolk.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Enfield Market and Rainham. Apply to Mr. T. DAVIES, Tangle, near Guildford.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.
 Strong HAWTHORN QUICK, 25s. to 30s. per 1000.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Flowers for Cutting.
PANCRATIUM ROTATUM.—A most useful plant for cutting for bouquets, or any other decoration. It produces snowy-white flowers, in clusters of nine to twelve, on stiff, erect scapes, deliciously fragrant and extremely elegant. Two guineas per dozen.

PANCRATIUM AMENUM.—White flowers, very useful for cutting, and deliciously fragrant. Two guineas per dozen.

PANCRATIUM FRAGRANS.—White and fragrant. Not only good for cutting, but one of the handsomest flowering plants known. Four guineas per dozen.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale. **THOMAS RIVERS AND SON,** Sawbridgeworth, Herts.

HARDLY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.
JAMES DICKSON & SONS, NEWTON Nurseries, CHESTER.

Blooming Rhododendrons.

H. LANE AND SON, Nurseries, Berkhamstead, Herts., can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Potentillas, very cheap.

SPRUCE FIRS.—100,000 for Sale, cheap, all sizes. Prices and samples on application to **J. GEO. HILL,** The Royal Nurseries, Merriott, Somerset.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

FINE FOLIAGE.—Intending Planters should visit **H. LANE AND SON'S** Nurseries, Berkhamstead, to see the variety of Foliage and different styles of Plants.

Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING, and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Dr. Denny's Splendid White Zonal Pelargonium, "PRIMA DONNA."

GEORGE SMITH begs to announce that, by an arrangement with Dr. Denny, he has the honour of sending out the first really pure White Zonal Pelargonium raised. "Prima Donna" was exhibited at the Royal Horticultural Society's Gardens, June 29, on the occasion of the Pelargonium Society's Show, when it received the award of First-class Certificate of Merit, also First Prize in the Premier Class for Novelty, and attracted universal attention and admiration, and was pronounced by all who saw it to be the finest White Zonal ever exhibited.

Price 10s. 6d. per plant.

Double Zonals.

GEORGE SMITH will at the same time distribute a selection of thirteen distinct varieties of the free-flowering type of Doubles raised by Dr. Denny. These varieties were all contained in the First and Second Prize-taking Exhibits of the Pelargonium Society's Show; and four of the varieties were awarded First-class Certificates of Merit. Price 3s. each, or 30s. the set of thirteen varieties. Usual discount to the Trade. The following is a brief description of the above, viz.:

GORGEOUS, a large brilliant Scarlet.
DAUNTLESS, First-class Certificate, a dark Scarlet.
FANCY, soft Orange-Scarlet.
HOPEFUL, a dark Magenta.
REFINEMENT, White edged with Magenta.
PIONEER, First-class Certificate, a dark Cerise.
CHARMING, a bright bluish Magenta.
PROGRESS, First-class Certificate, a dark Scarlet.
CONSTANCY, a Lavender-Magenta.
SPARKLING, a Cerise-Scarlet.
PERFECTION, an Orange-Scarlet.
ILLUMINATOR, a brilliant Scarlet.
ENCHANTING, First-class Certificate, a brilliant Magenta.

The above are now ready, in good strong plants. All orders from unknown correspondents must be accompanied by Money Orders.

Tollington Nursery, Hornsey Road, Islington, London, N.
CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

CARTERS' HOME-GROWN SEEDS.

Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.

CARTERS, the Queen's Seedsmen, High Holborn, London.

Seakale—Seakale.

RHUBARB and **ASPARAGUS** for Forcing. The best house in the Trade. Also **DUTCH BULBS** and **FLOWER ROOTS.**

H. THORNTON AND CO. (late A. Dancer), NURSERYMEN and SEEDSMEN, Fulham, London, S.W. **HYACINTHS, TULIPS, CROCUS,** and other **BULBS** of the very best quality. Priced CATALOGUES free on application.

N.B. We make the Growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can possibly be procured in the Trade.

To insure their being supplied, we beg that our Customers may give their orders early, to prevent disappointment, as we are continually receiving orders from all parts, which will be strictly executed in rotation.

Best MILLTRACK MUSHROOM SPAWN.

MATS, very good for covering Mushroom Beds, 25s. per 100. **Dancer's Nurseries, Fulham, S.W.**

FRUIT TREES of all kinds, for Gardens,

Orchards, Walls, Forcing-houses, &c.

Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade Only.

DOUBLE FRENCH RANUNCULUS.

LEONARD ROOZEN AND SONS'

superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities.

Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)

LEONARD ROOZEN AND SONS, Bulb Growers, Overveen, near Haarlem, Holland.

STRAWBERRIES.

Strong Roots for fruiting next year, 4s. per 100.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Note Prices.

FOR AUTUMN PLANTING.

CABBAGE PLANTS Warranted free from Club-root.

Early Enfield Market	Wheel's Imperial
Early Nonpareil	Robinson's Champion
Early (Dwarf) York	Robinson's Drumhead
Early Battersea	Imperial Oxheart
Sugarloaf	Early Rainham
Thousand-head	Red Pickling
East Ham	

At 3s. per 1000.

LETTUCE PLANTS.—Hardy Hammersmith, Hicks' Hardy White Cos, Giant Broad Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.

Testimonials and samples on application.

EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

N.B.—Above Plants are from Messrs. Gibbs' Seed, and Purchasers may depend on good Plants, and true to name.

E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford. Extra Plants to compensate Carriage.

FLOWERING SHRUBS in great variety, such as **HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS,** &c., 8s. per dozen, 50s. per 100.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

A. M. C. JONGKINDT CONINCK

begs to offer a large stock of

VERY SOUND, HOME-GROWN LILUM AURATUM.

Prices on application.

Dedemsvaart, near Zwolle, Netherlands.

Special Cash Offer

TO THE TRADE.—Spruce Fir, Quicks,

Oval-leaved Privet, Hazel, Limes, Maiden Apples and Plums, Dwarf-trained Fruiting Pears, Plums, Cherries, and Apricots; Standard Plums and Cherries, Gooseberries, Currants, Strawberries, Medlars, Nuts and Filberts, Globe Artichokes.

Special low prices on application to

J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

Fruiting Trees of

APPLES, PEARS, PLUMS, CHERRIES,

&c., of all shapes and sizes, well set with Fruit Buds.

Priced LIST on application to

J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

To the Trade.

GREEN HOLLIES.—1-y. Seedlings, fine;

also 2-y. bedded Hollies, healthy good rooted stuff, 4 to 9 inches. Price and terms on application to

C. WHITEHOUSE, Brereton Nurseries, Rugeley.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.

J. E. ALDERSON, Bell Farm, Hershham, near Walton-on-Thames, Surrey.

STRAWBERRIES IN POTS.

Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

H. CANNELL, Swanley, Kent.

Specialty Cheap Offer of FINE SPECIMEN CONIFERS, &c.

Splendid specimen Thuopsis dolabrata, borealis, aurea; Cupressus, Austrian Pine, and about 1000 other Conifers, &c., from 4 to 9 feet. Choice Dwarf ROSES, sample dozen 4s. 6d. 200,000 fine transplanted QUICKS, from 12s. 6d. to 30s. per 1000. Fine SPURGE FIR, 2 to 4 feet.
W. GROVE, St. Owen's Nursery, Hereford.

Raspberry Cane.

MR. R. BATH, Crayford, Kent, begs to announce he is now booking Orders for his famous "EASTLE" CANES, which will be ready for delivery in a few weeks, at 4s. per 100. Cheque or P.O.O. with order.

ONE HUNDRED THOUSAND HARDY

HEATHS, in 42 varieties, at 4s. per dozen, 25s. per 100, or £10 per 1000. This is now a proper time to plant these fine plants, which are suitable for covering mounds or banks, or for rockwork. Fine plants can be ensured.

JAMES SMITH, Darley Dale Nurseries, near Matlock.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of **GARDEN and FIELD SEEDS** of 1880 growth, carefully grown on their own Farms, and of the finest quality. Seed Growing Establishment, Wisbech.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

VIOLAS, PANSIES, HARDY

PERENNIALS, &c.—In consequence of our Nursery Grounds being sold to the new Stechford and Aston Railway Co., we propose to Sell our Stock in Guinea Hampers, consisting of Twenty Dozen Spring and Summer Plants in over thirty varieties, including eight dozen Violas and Pansies, and forming a complete permanent Garden Collection, really worth £5.

One dozen of Hollyhocks or Spiræa japonica will be sent to cover carriage with basket gratis. The two best double Daisies, The Bride, pure white, and The Sweep, vermillion-shaded black, 5s. per 100; Viola Blue Bell, 8s. per 100. Everything we have is separately transplanted, not rooted offshoots.

CATALOGUE gratis.

JOHN PIRIE AND CO., Stechford, Birmingham.

STRAWBERRY RUNNERS.—Twelve

leading varieties, 2s. per 100, or 15s. per 1000. True to name.

J. G. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

MATRICARIA INODORA, fl.-pl.—Where

an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this."

Two Cuttings, post-free, for 1s. 2d.

One Plant, post-free, 1s. 6d.

The Home for Flowers, Swanley, Kent.

ANTHONY WATERER respectfully invites

the attention of intending Planters to the following

LIST of desirable and in every way First-class

Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWs, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

"Golden, many thousands, 3, 4, 5 to 10 feet high.

"Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

"laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

"Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

"Golden Queen, 4, 5, 6 to 10 feet high.

"Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring,

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS and 5 feet.

ARGENTEA, 4 and 5 feet.

LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet

hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER-AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

THE MOST SUPERB ROSES

that money can buy.

Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.

Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—

White Garden LILIES, 12s. 6d. per 100; Winter

ACONITES, 12s. 6d. per 1000; ANEMONE FULGENS, 16s. per 100; single French ANEMONES, 20s. per 1000;

Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to

SANDEK AND CO., Seed Growers, St. Albans.

ONE HUNDRED STOVE and GREEN-HOUSE PLANTS for 42s., or, Extra Strong, 62s.—Good strong stuff in small pots, fit to pot-on at once, being full of roots for months past. Choice and valuable sorts included of Marantas, Crotons, Alocasias, Alamanadas, Acacias, and all plants most desirable for an amateur commencing cultivation of plants. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

Special Offer of Spruce Firs.

CHARLES EVEREST begs to offer a few thousands of the above, well furnished, and with perfect leaders, transplanted, 6 to 7 feet high, 40s. per 100, free on rail. Also **HORSE CHESTNUTS**, 10 to 12 feet, 40s. per 100. Alexandra Nursery and Seed Establishment, London Road, Reading.

Grape Vines and Forest Trees.

EDWARD MORSE begs to offer Fruiting and Planting Canes of the following kinds:—Black Hamburgh, Foster's Seedling, Black Alicante and Lady Downe's Seedling. Price, from 30s. to 60s. per dozen.

E. M. has also to offer splendidly grown trees of Horse Chestnuts, Sycamores, Norway Maples, Limes, Walnuts, and Elms, fit for General and Avenue Planting.

Original Nurseries, Epsom.

A Bargain.

ONE HUNDRED CHOICE and RARE ORCHIDS for £10 10s., consisting of the most beautiful and fragrant sorts in cultivation, and forming in itself a select collection for the amateur. Could not be bought anywhere else in Europe for £50. This offer is for cash only, and during the present month, to make room before winter. Package included for cash with order. All correctly named, and packed to travel any distance safely. Will produce quantities of flower during winter and spring. Selected for cold or warm house, or mixed. Inspection requested. Nursery close to stations L. B. & S. C. R.; twenty minutes from London Bridge or Victoria.

JOHN H. LEY, Royal Nursery, London Road, West Croydon.

To the Trade and Large Buyers.

EWING AND CO. offer large quantities of the following, viz., **BLACK CURRANT BUSHES**, **NUF and FILBERT BUSHES**; **ELMS** of many sorts, large and small trees; **POPLARS**, ditto; **RED-TWIGGED LIMES**, **WILLOWS**, and **HORSE CHESTNUTS**, large and small trees, **MYROBELIA** (**PRUNUS MYROBALANA**), for fencing, &c.

The Royal Norfolk Nurseries, Eaton, near Norwich.

Autumn, 1880.

WOOD and INGRAM'S abridged Trade LIST of Fruit Trees, Forest Trees, Ornamental Trees and Shrubs, Roses, and other Nursery Stock, is now ready, and will be forwarded (to the Trade only), on application. The Nurseries, Huntingdon.

TWELVE EUCHARIS AMAZONICA for 21s.—The most lovely pure white flower in existence; each bulb has produced spikes of flower three and four times a year, and five to seven flowers on each spike; bulbs now offered will flower again at Christmas. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—**GRAPE VINES**, extra strong, and warranted free from Phylloxera, Oidium, and all Disease. Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. **ORCHARD-HOUSE TREES**, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.

Descriptive Price LIST for 1d. stamp.

RICHARD SMITH and CO., Nurserymen, Worcester.

C. BOELSENS and SON, NURSERYMEN, Ledeberg, Ghent, Belgium, have to offer selections of **AMARYLLIS** of flowering size, **AZALEA INDICA** and **CAMELLIAS** with buds, **DRACÆNA INDIVISA**, **INDIVISA LINEATA**, **TERMINALIS**, **CANNÆFOLIA**; **LATANIA BORBONICA**, **PHENIX RECLINATA**, **CORYPHA AUSTRALIS**, **FICUS ELASTICA**, and a great many other Ornamental Market Plants. **HOTELA (SPIRÆA) JAPONICA** for forcing, per 100, 6s. 6d. Other prices on application.

SIX FILMY FERNS, 21s.—Fine plants, well established, and growing freely, of the following five rare and beautiful sorts, in 3 and 4-inch pots:—*Todea superba*, *T. pellucida*, *Trichomanes radicans*, *T. Andreanum*, and *Hypenophyllum demissum*. Carefully packed (to travel safely) gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

Webb's Prize Cob Filberts.

MR. COOPER having succeeded to the whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.

Calcot Gardens, near Reading, Berks.

Twelfth Edition

"WEBB'S PRIZE COB FILBERTS, AND HOW TO GROW THEM."

This Pamphlet will be forwarded to any one sending Two Postage Stamps to Mr. COOPER, Calcot Gardens, near Reading, Berks.

TWELVE NEW CROTONS for 21s.—Fine Plants in 5-inch pots; clean, well-grown plants, which will rapidly make specimens of most beautiful sorts, as majestica, Disraeli, angustifolium, Rex, Andreanum, Mooreana, &c. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

NEW CATALOGUE for AUTUMN, 1880, post-free, of the finest and cheapest DUTCH, FRENCH, and other FLOWERING BULBS. For prices, see last week's large Advertisement.

SPRING FLOWERING PLANTS, 100,000 fine plants, now ready.

HARDY FLORIST FLOWERS, and the choicest HERBACEOUS PLANTS for Garden Decoration. See CATALOGUE and last week's large Advertisement.

WINTER FLOWERING PLANTS for Indoors. A fine stock of the best sorts, well set with bloom. See CATALOGUE. **PLANTS and ROOTS** for forcing, very fine.

DWARF ROSES, well rooted, strong good plants. **FRUIT TREES**, **STRAWBERRY PLANTS**, **EVER-GREEN** and **DECIDUOUS TREES** and **SHRUBS**, &c.

For prices, List of sorts, and descriptions, see CATALOGUE. **WM. CLIBRAN and SON**, Oldfield Nursery, Altrincham.

VINES—VINES—VINES.—

B. S. W. has much pleasure in announcing that his Stock of VINES is this year unusually fine, and comprises all the leading kinds including **ALNWICK SEEDLING**. For descriptions and prices, see B. S. W.'s Bulb CATALOGUE for this year.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, N.

DUTCH AND OTHER BULBS.

WM. CUTBUSH & SON'S CATALOGUE

Is now ready. Post-free on application.

HIGHGATE, LONDON, N., or BARNET, HERTS.

CABBAGE PLANTS—CABBAGE PLANTS.

NOW READY FOR AUTUMN PLANTING.

W. VIRGO can now supply, in any quantity, very good, extra strong-grown, healthy Plants, of the following, for spring use, which cannot be equalled for sorts and growth. Seed from the very best stock:—Early Battersea, Early Enfield Market, Nonpareil, Sugarloaf, Wheeler's Imperial, Red Pickling, and Robinson's Champion Drumhead. All the above delivered free on rail at 3s. per 1000. Brown Cos, Hardy Green Cos, and Tom Thumb LETUCE, at 4s. per 1000.

N.B.—Samples forwarded if required.

Womersley Nurseries, near Guildford, Surrey.

GEO. JACKMAN & SON (ESTABLISHED 1810.)

Cultivators of

FRUIT and FOREST TREES,

Evergreen and Flowering

TREES and SHRUBS,

ROSES, RHODODENDRONS,

Conifers and Hardy Climbers.

THE CLEMATIS

A SPECIALTY.



Descriptive Priced Catalogues free.

WOKING NURSERY, SURREY.

NEW ENGLISH ROSE,

H.P. MRS. JOWITT (Cranston's).

First-class Certificate awarded by the Royal Horticultural Society, South Kensington, July 27, 1880.

First-class Certificate awarded at Wirral Rose Show, July 24, 1880.

First-class Certificate awarded at Shrewsbury, July 28, 1880.

First-class Certificate awarded at Liverpool Rose Show, July 31 and August 2, 1880.

We are now booking orders for this superb New Rose, to be sent out this Autumn. For description see our new ROSE CATALOGUE, now published.

Extra strong ground plants, 7s. 6d. each.

Usual Discount to the Trade.

CRANSTON'S NURSERY & SEED CO. (LIMITED),

KING'S ACRE, HEREFORD.

TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

Trade terms on application.

MAIRIS and CO., Weston-in-Gordano, Bristol.

LIST of all the **EVERGREEN FIR TRIBE** suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.

RICHARD SMITH and CO., Nurserymen, Worcester.

To the Trade.

JOHN PERKINS and SON beg to call attention to their large Stock of the following, the whole of which are good plants and well rooted:—**CEDRUS DEODARA**, 3 to 4, and 4 to 5 feet. **HOLLY**, Green, 1½ to 2, 2 to 2½, and 2½ to 3 feet. **LAURELS**, Common, 1½ to 2, 2 to 2½, and 2½ to 3 feet. Portugal, 1½ to 2, 2 to 2½, and 3½ to 4 feet. **PICEA NORDMANNIANA**, 3 to 4, and 4 to 6 feet. **THUJA AUREA**, 1 to 1½ foot, and 1½ to 2 feet. **WELLINGTONIA GIGANTEA**, 2 to 2½, and 2½ to 3 feet. **YEW**, English, 1 to 4, and 4 to 5 feet.

Wholesale CATALOGUES on application. 52, Market Square, Northampton.

THE LARGEST ROSE GARDENS IN ENGLAND.

CRANSTON'S NURSERIES.

(ESTABLISHED 1785.)

New Rose Catalogue for 1880-81,

now ready and may be had post-free on application.

Awarded over 60 First Prizes for Rose Blooms this season.

CRANSTON'S NURSERY and SEED CO. (LIMITED), King's Acre Hereford.

SPECIAL TRADE OFFER

of FOREST TREE SEEDLINGS, &c.

APPLE, Crabs, 1-yr., very fine, 3s. 6d. per 100

PEARS, Stocks, 1-yr., very fine, 4s. per 100

ACACIA, 1-yr., fine, 2s. per 1000

ALDER, 1-yr., fine, 2s. 6d.; 2-yr., fine, 5s. per 1000

ASH, 1-yr., fine, 2s.; 2-yr., fine, 4s. per 1000

BEECH, 1-yr., very fine, 3s. per 1000

BIRCH, 1-yr., 3s.; 2-yr., 5s. per 1000

BRIER, Sweet, 1-yr., 4s. per 1000

BROOM, 1-yr., strong, 2s. 6d. per 1000

CHESTNUT, Horse, 2-yr., 10s. per 1000

Spanish, 1-yr., 4s. 6d.; 2-yr., 7s. 6d. per 1000

ELM, Scotch, 1-yr., fine, 3s. 6d.; 2-yr., fine, 6s. per 1000

HAZEL, 2-yr., drilled, 9 to 14 inches, 10s. per 1000

HOLLY, 1-yr., good, 3s. 6d.; 2-yr., good, 6s. per 1000

LABURNUM, 1-yr., extra strong, 3s. per 1000

OAK, 1-yr., fine, 4s. 6d.; 2-yr., fine, drilled, 7s. 6d. per 1000

SYCAMORE, 1-yr., fine, 3s.; 2-yr., 5s. per 1000

THORN, or **QUICK**, 1-yr., 3s.; 2-yr., fine, 5s. per 1000

PINE, Austrian, 1-yr., 2s.; 2-yr., 5s. per 1000

Corsican, 1-yr., 2s. 6d.; 2-yr., 5s. per 1000

LARCH, 2-yr., with leaders, 6s. per 1000, or £25 per 100,000

PINE, Pinaster, 1-yr., 2s. 6d. per 1000

FIR, Scots, true Native, 2-yr., scarce, 6s.; 2-yr. 2-yr., 9 to 15 inches, 17s. 6d. per 1000

SPRUCE, Norway, 2-yr., 1s. 6d.; 3-yr., 2s. 6d. per 1000

JUNIPER, 3-yr., 6 to 12 inches, 10s. per 1000

AUCUBA JAPONICA, 1-yr. cuttings, extra fine, 60s. per 1000

Samples of any of the above per post free.

We can also offer a splendid general stock of transplanted NURSERY STUFF, including Larches, 2 to 3½ feet; Scots Fir and Spruce, 9 to 15 inches; Austrian Pine, Pinaster Pine, and nearly all kinds of Hardwoods, and will be glad to send samples and quote prices to intending buyers.

PETER S. ROBERTSON & CO.,

TRINITY NURSERIES, EDINBURGH.



TWO HUNDRED THOUSAND HERBACEOUS and ALPINE PLANTS, for Borders, Rockwork, &c. See Descriptive LIST, giving colour, height, time of flowering &c., free by post for one penny stamp.

R. S. & Co.'s selection of 100 good showy varieties, for 25s. **RICHARD SMITH and CO.**, Nurserymen, Worcester.

THE GENERAL HORTICULTURAL COMPANY (JOHN WILLS, Limited).

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THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 23, 1880.

THE GARDENS AT ALNWICK.

DURING a tour in the North of England I
felt much interest in visiting the gardens
at Alnwick Castle, the residence of the Duke of
Northumberland (see p. 533). There are 20 acres
of flower garden under Mr. Ingram's care, and 7
acres of kitchen garden, all within walls, besides
a mile or two of walks and shrubbery below the
Castle along the stream of the Aln. About thirty-
five gardeners assist the presiding genius. In
passing Mr. Ingram's office, adjoining his house,
I asked for the fruit-room. It was planned by
himself—30 feet long, 18 feet wide, and 12 feet
high, with a space 6 inches deep above the ceil-
ing, then 1 foot of dry heather, covered by a
slated roof. The walls are 2 feet thick, and the
windows double and insect-proof. In such an
apartment there is the least possible variation of
temperature.

When the subject of a lecture lies out-of-
doors, when the lecturer is eloquent and the
weather warm, the peripatetic method is the
best. Mr. Ingram lectures well, and on the
occasion of my visit he lectured out-of-doors.
I found him as eloquent as he is enthusiastic.
He is quite Gladstonian in his wealth of lan-
guage, describing with the same facility and
interest the cultivation of the humblest culinary
vegetable and of the noblest specimen of the
stove or conservatory. If the limitations of
memory and of space permitted, I should confer
a boon by publishing the whole of his discourse,
in all its parts and branches, relating to every
subject that came before us. But, most unfor-
tunately, I must abbreviate.

One of the shortest lectures, delivered *inter
alia*, related to the cultivation of the Carrot.
"What capital beds of Carrots!" I remarked.
"Yes," said my instructor, and he pulled up
the first that came to hand, and showed its
shape and quality. Such a Carrot! crisp and
tender, and a yard long, more or less. "How
do you manage the crop?" I asked. "In old
garden ground Carrots are so very liable to the
attacks of insects and other pests that their
cultivation has in many places been abandoned."
"I am aware of that," said this excellent
magician—a man of skill is better than a
magician—and then in these few words he
revealed his secret. "Trench in autumn.
Trench deep, and lay the manure at the bottom
of the trench. In spring rake down, lay on
an inch of wood ashes and dig them lightly in."

Green Peas and Apricots were in full season
at the end of August. The family are at the
Castle in August and September, and in those
months the green Peas are in perfection, last-
ing sometimes till November. I never before
knew why families remain in town during the
pleasantest months in the year, and quit the
metropolis for the North in August and Sep-
tember. "Is it management or climate?" I
inquired, referring to the late season for green
Peas at Alnwick. "Oh, management," was
the reply—"Management and climate." Some
persons, devoid of artistic pride, would have
put the climate first, but Mr. Ingram loves his
art too well, and taking me between two tall
and spreading rows of *Ne Plus Ultra* late
Pea, sown May 20, and thickly hung with pods,

he pinched off the tips of several shoots. "They should be kept topped," he said. "The best tool for the purpose is a small pair of hand-shears." I have no doubt the plan is a good one; and passing now to the fruit trees—Pears, Apples, Peaches, Nectarines, Apricots, Plums, &c.—which cover a great extent of wall-surface here, I may say in connection with topping, that the whole of these trees have been summer-pruned, or pinched rather; and so thoroughly has this plan been carried out, that I did not observe one remaining twig which will require the knife in winter. Wall trees should be stopped and topped all through the summer with nimble fingers.

I found Mr. Ingram in the midst of improvement. Since his arrival, on the accession of the present Duke of Northumberland, thirteen years since, the improvements have been continuous. At present he is reorganising the heating apparatus of the numerous houses. A lecture was delivered on the subject, but I led my guide away into a Grape-house, and we walked and talked passing through five Grape-houses—wide houses, with Vines at back as well as front. There are five Grape-houses and five Pine-houses, besides pits for suckers. Desiring to write a column or two only, I did not seek to tax Mr. Ingram much on the subject of Grapes, Melons, or Pines, and I can do little more than say of them in homely phrase, "first-rate." The Melons sometimes weigh 6½ lb., and the average weight is from 3 lb. to 5 lb. each. I observed, as we passed, some prodigious bunches of Grapes, and the Vines are afflicted by none of the ills which they may sometimes suffer when the management and climate are not quite what they should be. The Pines are perfect. The number grown is very great, and they are all in the best possible condition. A house of suckers taken off at the January shift, to fruit next year, were getting air day and night, and looked most vigorous and promising. Many Pines are now ripe or approaching ripeness. There is a splendid show of that most useful Pine, the Queen. The Peach-houses yield an average crop of 150 dozen. Among the fruits upon the walls outdoors, 350 miles north of London and 5 miles only from the North Sea, I was surprised to find such Pears as Marie Louise, Chaumontel, and Beurré Rance. These sorts ripen here in good years, assisted as they must be by management and a warm, dry soil.

I must return to the kitchen garden, which we passed through more than once, to notice the "little Cabbages" which are looked for and asked for early in October at the Castle, where about one hundred persons dine daily—or twice a day, as some might argue. These "little Cabbages" which are so much admired are Coleworts, the Coleworts of the London market, which poor people can enjoy—as they can most things worth having—as well as the rich. There are no better Winter Greens. The extent of the beds here is about a quarter of an acre, and the season for them lasts, with management, from October to May, when they are frequently mistaken for early Cabbages. It is not a gardener's duty, under such circumstances, to say anything. The Cocoa-nut Cabbage is an approved sort here. The Reading Onion is the favourite, and at the end of August its neck was still stretched above the big bulbs, just ready to be broken with the back of a rake. Even in these splendid gardens I paused with pleasure among the humble crops of the kitchen garden—the food of the million and the delight and care of country people. They are magnificent this year, and although that blessing may be due in great measure to climate, we must give to skill its meed of merit, and admire the active mind and energy, and, I may add, the enthusiasm and zeal, which leave not a neglected corner in so large a garden.

The flower garden extends over two levels, and is therefore terraced. The central point of this part of the grounds is a small pond, where Earl Percy's nine children can skate in safety as they reach the proper age. Such a pond, in such a site and in such a highly-decorated garden, must of course be artificial; its banks and margin are of stone. Near it is a grove of Lime trees, which enclose and shade the grassy playground of the same young people. The flower garden covers a great extent of ground on the opposite bank of the little lake. In one direction, on the lower level, there are numerous geometric beds in gorgeous blossom, and on the higher ground, extending to the pinetum in one direction, there are beds boldly placed, and containing many interesting devices, floral and evergreen. There is a great deal of originality about this part of the grounds, especially in the encircling banks which form their background, planted as they are with festoons and chains of low-growing and hardy shrubs. While among the flowers I ought to mention that the sick poor of Newcastle probably derive as much keen delight from the flower-gardens of Alnwick as almost any other persons. A basket of flowers, from the borders and greenhouses, is sent every week to the nurses' home, and thence the gift is distributed to many a sick bed, where a flower, like the Passion-flower in "Picciola," may prove a physician, and something more.

Having now described these great gardens at sufficient length, having referred to the luxuries of the rich and their love of "little Cabbages," and having spoken of climate and of management more than once, I cannot refrain from quoting Mr. Ingram's brief autobiography at p. 657, vol. v., of the *Gardeners' Chronicle*, 1876. Mentioning some of the circumstances of his early training, at the Editors' request, he says:—"At an early age I took a great fancy for gardening, but having no friend or relation connected with the profession, I had to pave the way for myself;" and so at the age of sixteen he "got into" a private establishment as "garden boy;" and so, omitting the details, by means of the best of trainings for a practical career, with the aid of industry, energy, and integrity, and with the love of a true artist for his art, he became, thirteen years since, the head gardener at Alnwick. H. E.

New Garden Plants.

LILium LONGIFLORUM VAR. FORMOSANUM, Baker.

In his beautiful Lily monograph, lately completed, Mr. Elwes has drawn special attention to a variety from Formosa of *L. longiflorum*, which, by its more numerous and narrower leaves, recedes from the type in the direction of *L. philippinense*. At the date when Mr. Elwes wrote, it had never been seen alive in this country. In his recent travels for Messrs. Veitch Mr. Maries met with this plant, which we knew before only from the dried specimens sent home by Consul Swinhoe and Mr. Oldham. Mr. Maries imported a supply of bulbs, from which flowering specimens have been raised this autumn. To the courtesy of Messrs. Veitch I owe the opportunity of studying the plant carefully in a living state, and have drawn up from their specimens the following description:—

Stems 2–3 feet long, terete, about ¼ inch in diameter, green, slightly tinted in some places with purplish-red. Leaves 30–40, linear, spreading, the lower ones half a foot long, the uppermost dwindling down to 2–3 inches, not more than ¼–½ inch broad, green on both sides, entirely glabrous, the ribs not more than three, a distinct midrib and two fainter side veins. Flowers one or two to a stem, if the latter on short erecto-patent peduncles. Perianth 5–7 inches long, the oblancoate segments forming a permanent tube for the lower two-thirds only, the upper third falcate in the expanded flower, all the six distinctly keeled with red on the outside, tinged with green in the lower part both inside and outside, keeled with green in the lower part on the inside, the rest white, without any tinge of yellow, the outer segments 1 inch and the inner ½ inch broad three-quarters of the way up. Stamens 3½

—5 inches long; filaments greenish-white; anthers linear-oblong, under 1 inch long; pollen fulvous. Style about 1 inch longer than the stamens, terminated by a very large distinctly three-lobed capitate stigma. Tube of the flower at its throat 1½ inch in diameter.

I do not think that this can properly be considered botanically as more than a variety of *L. longiflorum*, but horticulturally its longer, narrower, more numerous leaves, with never more than three ribs, give it a different aspect, and I do not think the type ever has the same distinct red keel down the outside of the perianth-segments, so that it may well take rank as a marked geographical variety. J. G. Baker.

EPIDENDRUM CHLOROPS, n. sp.*

This was introduced recently from Mexico by Messrs. Backhouse, of York, who kindly sent me a plant, whose greatest charms are the very thick big roots, quite as strong as those of *Poneria striata*. To name the plant was unusually difficult, as I had to make an especial study of two very little known species, the *Epidendrum anisatum* La Llave, and the *E. gladiatum* of Lindley. Both are well distinguished by their quite cartilaginous hard narrow leaves, with a narrow middle rib prominent beneath. Having in former times been inclined to think them identical, in opposition to the views of Dr. Lindley, I think now, after having had much richer materials under hand than he had, that his second view, pronounced in *Folia* (against his former view in *Bentham, Plantæ Hartwegianæ*), was the right one, and that both species are distinct. I do not, however, rely on the nature of the bracts, but on the number and nature of the leaves and the organisation of the flowers.

Epidendrum anisatum La Llave, of Dr. Lindley, I call *Jürgenseni*, since it is decidedly not Lexarga's plant which is described as having a totally different lip (labelli lacinia intermedia profunde bilobata, lobulis acutis, lamina convexa, 3-line, purpurinis). It appears to be well distinct from *E. gladiatum* by the shorter fewer leaves, a much shorter growth, rounded side lacinia of lip without projecting angles, and a small narrow middle lacinia. This appears to have but one middle keel to the lip. To my knowledge it has but three times been introduced. It was discovered by our excellent Theodor Hartweg when in the service of the mighty Horticultural Society; then it was collected by Jürgensen for Galeotti, and, as the herbarium of Copenhagen gives evidence, by Liebmann.

Epidendrum gladiatum is a much taller plant, with numerous longer leaves and a profusion of flowers. The side lacinia of the lip are well rounded, the middle lacinia dilated at the apex, three equidistant keels run from the basilar calli to the top of the lip. It is only known from Ruiz and Pavon, and only seen in the herbaria of the British Museum (from Lambert's collection, Dr. Lindley's type—I have a sketch made *loco* at hand), of M. Edmund Boissier, of Geneva and Valeyres, and a little note concerning it in my collection, kindly given me by my excellent friend.

The Backhouseian plant has much broader, and softer, and lanceolate leaves, numerous, as in *Epidendrum gladiatum*, and the lip is as in *E. Jürgenseni*, but the keels are blunt, well-developed, three. It is decidedly of the highest interest for science, but I am afraid, if Messrs. Backhouse's gardens did not contain so many points of attraction for amateurs, our *Epidendrum chlorops* would not bring many visitors to Holgate House. Messrs. Backhouse were so kind as to leave me an unusually long time for reconsidering the naming of this plant, which gave me so great difficulties.

Dr. Lindley has named a very rare species that stands so near *Epidendrum gladiatum* as to make one think whether it is not the same. It is *Epidendrum vandifolium*. This one has flowers of ochre, with very many purple markings. It was only seen once, in the Loddigesian nursery. Consul Schiller purchased the plant, and I have a splendid specimen, an inflorescence, and a sketch made from the living plant at hands. It was well grown a good while under the care of Mr. Stange. H. G. Rehb. f.

CYPRIPEDIUM MEIRAX, n. hybr., inc. orig.

This is the smallest of a lot of fresh hybrids, raised by Mr. Robert Warner, whose history is not known, probably in consequence of a lost pocket-book. No doubt all these things, chloroneurum, polium, melanophthalmum, and the present plant, had *Cypridium venustum* as one of the parents. Had this one curved petals, I should guess one parent was the rare *Cypridium fairianum*. The leaves scarcely exceed 5 inches in length to 5½ inches in breadth. The flower is equal to that of the just named

* *Epidendrum chlorops*, n. sp.—Affine *Epidendro gladiato*, Lindl. Foliis distichis pluribus, lanceolato-acutis; racemo subvaginatis acutis paucis plurifloris, cernuo; sepalis ligulatis obtusis, petalis multo angustioribus; labelli trifidi lacinia lateralibus ovatis transversis, lacinia mediana linearis apice obtuse biloba, callis angulatis geminis in basi, lineis incrassatis ternis parvatis, per discum, linea mediana longiori; columna apice triloba, lobo mediano subcucullato lobis lateralibus semiovatis, sursum angulatis. Flores virides. Mexico. H. G. Rehb. f.

species. The odd sepal is very broad, as in *Cypripedium purpuratum*, white, with green nerves and washed outside with mauve-purple. Connate pair sepals very short, well combined. Petals large, spreading, without warts, ciliate, white with green nerves and transverse green nervilli, washed with purple between some of the nerves. Lip face rather conical, with triangular short lateral angles, green, and the anterior part of the limb purple-mauve. Staminode transverse, oblong, cut away in anterior and posterior middle, brown (always?). Ovary green with violet ribs. *H. G. Rehb. f.*

CYPRIPEDIUM CHLORONEURUM, n. *hyb.*, inc. *orig.*

This is rather pretty. Leaves of *Cypripedium venustum*, very dark; flowers large, very shining, as if varnished. Odd sepal light green, with darker longitudinal and transversal veins. Pair sepals ligulate acute, white, with green nerves, very small and narrow. Petals divided by a longitudinal purple-maroon broad streak, white, with green nerves on side towards the lip, green on the other sides, light brown to the apex, with green nerves and indian-purple wartlike spots on the basilar limb and some spots near the base. Lip's sac very broad, with short blunt lateral horns, light copper coloured with green reticulations and a yellow border. Staminode transverse,

acute, white, with green nerves and an indian-purple wash at base. Pair sepals much shorter than the large lip, with blunt face. This face has a reddish ground-colour with darker veins and a green base and yellowish horns. Inflexed limb of nail as in *Cypripedium politum*. Petals ciliate, reddish-white at the base with green nerves. Dark blackish wart-like spots on the superior border and similar blotches on base. Staminode nearly blunt, hexagonal, emarginate in front with a small tooth inside, whitish with green reticulations.

In the way of *Cypripedium venustum*, but with light green leaves. Origin unknown, probably from loss of notes, which were no doubt taken. Raised by Mr. R. Warner. *H. G. Rehb. f.*

BULBOPHYLLUM BECCARII, *Rehb. f.*

Messrs. Veitch have just sent me a very good rich inflorescence of this gorgeous Orchid, showing a few slight differences in the marking from the Hendersonian flowers. It is, however, very inferior to those as to the perfume. If Mr. Harry Veitch calls it "the most stinking plant" he knows, I wished he had experienced the inhalation of the smell of the Hendersonian flowers, which in this point were *hors de ligne*. Compared to those of the Veitchian inflorescence it is, if not quite sweet-scented, yet

collected. To the new corm on the top of the old one is evidently entrusted the duty of growing and flowering for the present season and the next. To do this it must have abundant food, and we see it gets it in three ways—or, at least, from three sources. First there is the old corm with its reserve store; that store would be of little use without water to dissolve it, and enable it to circulate. The fibrous roots provide for this, and the fleshy roots act, among other things, as reservoirs of water: when this is exhausted they dry up. The object of the shoots is clear enough. Lastly, there are the runners, or offsets. Their object is clear enough too; they have, as their office, to spread the plant into fresh fields and pastures new—to disperse it abroad, and thus provide against the exhaustion of the soil in one locality. As all these operations are going on vigorously now, the inference is that the plants should not be disturbed more than is unavoidable, and that if circumstances demand that it shall be lifted, that the corms be not left out of the ground longer than can be helped. The plant has proved hardy at Mr. Ware's nursery at Tottenham, and elsewhere.



FIG. 96.—THE DUKE OF CONNAUGHT'S CONSERVATORY AT BAGSHOT.

excise at the middle of the base, semi-ovate with a small middle tooth at anterior side, yellowish, with dark green middle line and similar lateral reticulations. Raised by Mr. Robert Warner. Origin unknown. *Cypripedium venustum* has no doubt one parent. *H. G. Rehb. f.*

CYPRIPEDIUM POLITUM, n. *hyb.*, inc. *orig.*

Leaves rather large, with numerous dark green transverse marks. Flower equal to that of a good *Cypripedium Argus*. Sepal triangular, white, with a reddish wash. Nerves green. Indian-purple spot at base. Pair sepals well connate, surpassing in length the lip for a little space. Lip's face blunt, copper-coloured, with green nerves in front, greenish on the sides. Involved margins of nail (viz., the basilar channel) ochre-coloured, with brown warts. Petals broad, ciliate, totally reddish at top, the remaining part half white, half light brown, the first part, towards the odd sepal, with numerous indian-purple blotches, the other one with green nerves and similar blotches. Staminode transverse, with two large exterior teeth in front and a small inner tooth, light brown with green markings. Raised by Mr. R. Warner. Origin unknown, no doubt in consequence of the loss of notes, which certainly were taken. *H. G. Rehb. f.*

CYPRIPEDIUM MELANOPHTHALMUM, n. *hyb.*, inc. *orig.*

Leaves of very light yellowish-green colour with dark markings. Odd sepal transverse, elliptical

quite tolerable. Growers of this curiosity might have a look out for very powerful pastiles of incense. *Stapelias* and *Dracunculus* are totally beaten. *H. G. Rehb. f.*

MONTBRETIA POTSII.

THE organisation of this comparatively new Iridaceous plant is worth notice. In a specimen before us there is, first in order, the old corm marked with the circular scars of former leaves, but the roots have all gone. On the top of this is the corm of the year, giving off at its base two sorts of roots, some fleshy, some fibrous. From the top and the sides of this come off shoots, the biggest at the bottom. The central one apparently formed the flower-spike of the season's growth just passed; the larger side ones are destined to throw up bloom next year. In addition to these shoots are others running along underground like a Strawberry runner, and ending in a small corm, which in its turn produces shoots and leaves. To fully understand the meaning of this arrangement, one ought to see the underground apparatus when the plant is in full flower, but sundry matters are evident now. First that the old corm, still hard and firm, is still of use, for though it no longer collects food, but acts as a store for that which it has formerly

THE DUKE OF CONNAUGHT'S CONSERVATORY AT BAGSHOT.

THE conservatory of his Royal Highness the Duke of Connaught forms an agreeable contrast to the usual run of conservatories, in so far it is not the conventional square usually considered indispensable in conservatory buildings. It is built on to an angle of the wall, and thereby enables an entrance to be obtained from the boudoir at one end facing the garden entrance. At the far end, on entering from the boudoir, a pleasing surprise is obtained as the visitor advances, the angle of the house doubling the width, and producing an effect scarcely expected from the narrow approach as viewed from the boudoir. In the centre of this wall is the dining-room; to the right and left of this, taking advantage of the angle in the wall at the left side, a piece of rockwork has been built with waterfalls, streams, and fish-ponds—at all times agreeable features in conservatory decoration. The view from the dining-room is charming, disclosing one of the most extensive scenes across the park. To preserve this the decoration has of necessity been kept low; a fountain in the centre is the chief object of attraction seen from the dining-room, and it is only on entering from this door that the main features of the decoration are disclosed. Considering the short space of time allowed, the gardener (Mr. Barden) is to be congratulated on the effective appearance of his plants. The dwarf brickwork is charmingly covered with growing Ferns, Lycopods, mosses, &c., by a very simple and effective arrangement in tufa, the material of which the whole of the rockwork is constructed, and which enables the walls to become a mass of living foliage, forming a lively and permanent background, and giving effect to the show plants from time to time arranged in the borders in front. The rockwork and internal decoration have been carried out by Messrs. Dick Radclyffe & Co., of High Holborn, who make such work a special feature, seeking to imitate Nature in the display of floral treasures. The illustration (fig. 96) is taken from the angle of the wall entering from the boudoir-door. The conservatory illustrated is designed to accord with the dwelling-house. The materials used in the construction were oak and yellow deal, and especial attention was paid to making provision for internal condensation, an item of recognised importance. This was effected, with successful results, by providing water-grooves to each sash-bar, connected with the main gutter. In the coldest nights hitherto there have been no signs of drip.

The arrangements for ventilation consist of French casements to the sills, and lifting sashes in the roof, arranged to open simultaneously by an arrangement worked from below.

The floor is laid with Minton's tiles of special design, with an ornamental fountain in the centre.

The house being much exposed to the sun's rays, it has been found necessary to protect every part by means of spring-roller outside blinds, arranged to be raised and lowered from the inside. The warming is effected by means of hot-water pipes connected with the boiler serving the dwelling-house; these pipes are placed under the floor and covered with gratings, with valves for regulating the heat.

Hot and cold water is laid on to the conservatory. The decorations are of a very quiet description, so as to show the plants to the best advantage, in accordance with instructions from the Duke.

The contractors for this work were Messrs. Rosser & Russell, of Charing Cross, who have also fitted up the hot and cold water supply, cooking apparatus, &c., throughout the dwelling-house.

The water supplied to the house is brought from a reservoir 3 miles distant, and is pumped into three large tanks provided in the tower. The motive-power is obtained from a small stream running through the grounds. The overflow from these tanks is utilised to work a water-engine placed in the basement to pump up the rain-water from an underground reservoir to a fourth tank in the tower. This is automatic in action, and requires no supervision.

The architect of the mansion was Mr. Ferney, under whose superintendence the works have been carried out. *Builder.*

ORCHIDS FLOWERING AT YORK.

A FEW days ago I had an opportunity, which gave me much pleasure, of looking over the very fine, extensive and healthy collection of Orchids in the nurseries of Messrs. Backhouse & Son. In passing from house to house, well stocked with all the leading kinds, I jotted down those which attracted most attention, thinking it might prove of interest to lovers of these singular members of the floral world. The first house I was ushered into was a long, low span-roofed building, where the plants looked more healthy than I presume they would even in their native haunts. In this house the first plant which attracted attention was *Vanda cœrulea*, with its lovely transparent pale blue blossoms which are irregularly netted with a slightly deeper blue, while the centre of the flower is a dark clear blue, relieved by a slight touch of orange in the throat. The blooms are 2 to 3 inches in diameter, borne on nearly erect stems 9 to 15 inches long. The plants were growing in small wooden baskets suspended from the roof. A few paces from this were some fine examples of *Cymbidium eburneum*, so healthy that the flower-stems arising out of a tuft of broad grass-like leaves, reminded me of tufts of a *Hemerocallis*, bearing exquisite large, snow-white, fragrant blossoms. Then was seen the rare *Batemaniana Burtii*, which is a veritable giant amongst Orchids, the flowers of which are truly singular: they are about 3 inches or more in diameter, the inner half of the flower white, with two conspicuous purple blotches at the base of each petal, while the outer half of the blossom is a sort of varnished light chocolate with small wart-like spots; the appearance is beautiful and unique.

Here also I saw flowering abundantly *Cypripedium insigne*, var. *Maulei*, which is a decided improvement on the old form; its large upper sepal being pure white contrasts well with the other portion and markings on the flower. *Odontoglossum Rossi majus* was well represented, amongst them I noticed some fine forms. It is a very pleasing and chaste Orchid, with blossoms 2 to 3 inches across, white, sometimes slightly suffused with delicate pink; the inner portion of the flower is prettily netted or barred with purplish-brown relieved by a small touch of orange in the throat. *Odontoglossum cirrosum* was not far from the latter, with its insect-like flowers, which are white with distinct markings of crimson. *Trichopilia fragrans*, a well known kind, with lovely and useful snow-white, deliciously fragrant bloom. In the same house were seen *Cypripedium longifolium*, *C. barbatum superbum*, *C. lævigatum*, *C. Sedeni*; *Colax jugosus*, *Vanda multiflora*, *Odontoglossum Roezii*, *Miltonia Clowesii*, and *Odontoglossum maculatum*, many of which were fine specimens. There was also the rare *Bollea cœlestis*, with its even rarer variety *anabilis*, which has much darker and more intensely coloured blossoms.

We now entered another long range entirely devoted to this class of plants, and similarly constructed to those just left. They are very light and airy, and exposed to the full rays of the sun. We have no sooner entered than our eyes rested upon some pieces of *Cattleya marginata* suspended from the roof, bearing beautiful, circular, rosy-purple solitary blossoms. *Lælia Dayana* was hanging near the latter, and is very similar to it in colour. *Sophranites grandiflora* is a decidedly distinct kind, having a colour all its own, brilliant

fiery scarlet. A few paces beyond were a number of nice healthy pieces of *Oncidium varicosum*, flowering most profusely; blossoms bright orange-yellow, borne on much-branched spikes. At the end of the range were a number of extraordinary specimens of the beautiful *Lælia autumnalis*, var. *atropurpurea*. The masses are so healthy that there is literally a forest of flower-stems a foot to a yard high, bearing from five to ten blossoms, each flower being upwards of 5 inches in diameter. The tips of the sepals and petals are of the most intense dark purple, then brilliant rosy-purple, and gradually shading off to nearly white towards and in the centre of the flower. It is one of the finest sights we need wish to see, so many of these immense blossoms fully expanded at this season of the year; it is, in fact, one of those kinds that no collection will be complete without.

Odontoglossum Londesboroughianum I was much pleased to meet with again. I remember so well seeing it when it flowered for the first time some years ago; at that time I experienced some disappointment, but such was not the case on this occasion, for it really is a stately Orchid, and one not difficult to grow according to the look of the plants here. It was bearing immense arching, branching spikes of brilliant, clear yellow blooms, which are charmingly barred near the base of sepals and petals with purple-crimson. The plants (some of which are very large) are the very picture of health. Not far from the above was seen a nice batch of *Lælia peduncularis* just about to expand its flowers. To mention all I saw I find would occupy too much space: I will, however, just allude to *Barkeria Lindleyana*, which was flowering very freely. It is a pretty Orchid, with good-sized lovely rosy-purple blossoms. *Barkeria elegans*, *Epidendrum decorum*, var. *amabile*, and the mysterious *Barkeria cyclotella*, were close companions. *R. P.*

MARKET PLUMS.

THE Plum crop has this year proved to be one of the best of what may be denominated hardy fruits, *i.e.*, fruits grown wholly in the open gardens in contradistinction to those having the protection and assistance of walls. There have been gathered many bushels of Plums, in fact crops far beyond the most sanguine expectations formed in early summer; and generally the crop has been fine in quality, and remunerative in price. We saw magnificent Victoria Plums among others; perhaps the fruit cultivator would have to turn back the dial-finger of Time some years in order to revert to a season when Victoria Plums were so grand in quality.

In one of his rural essays Mr. A. J. Downing set forth in very pleasant reading an account of a personal interview with the distinguished deities that preside over the garden and the orchard—*Flora* and *Pomona*; and in the course of conversation with the latter she gave the author "very special charge to impress it on her devotees not to be too much smitten with the love of new names, and great collections;" and expressed her satisfaction at seeing the orchards of some of her liege subjects teeming with the abundance of the few sorts of real golden merit, rather than whole acres of new varieties that have no other merit than that of novelty. Could this ruddy beauty, *Pomona* (whose breath is said to fill the air with the odour of ripe Apricots), have paid a visit to Mr. Francis R. Dancer's prolific orchards at Chiswick, during the end of August (where she would be certain to receive a warm and intelligent welcome), she would have noted that her advice is followed by fruit cultivators in the Old as well as in the New World. Mr. Dancer is pre-eminently a cultivator of Plums for market, and in what he terms a plentiful season—when Nature is kindly all round, and one and all of the sorts he cultivates furnish him with a good crop—he will market from 2000 to 2500 bushels. This season his orchards yielded considerably less than this quantity, but hundreds of rich purple, red, and golden Plums found their way from Chiswick to Birmingham, Manchester, Liverpool, Glasgow, and other great centres of population. The fruit is gathered some three days before it is fully ripe, and in the course of transit the ripening process is consummated, and rich luscious Plums reward the enterprise of the consignees.

Mr. Dancer confines himself to a dozen sorts or so of Plums, and a few of these, such as *Mitchelson's*, *Prince of Wales*, *Sandall's*, the *Victoria*, *Gisborne's*, and the *Pershire* are the staple varieties. Alphabetically arranged the list will read as follows:—

Autumn Compote, a valuable culinary Plum, ripe in the end of September, the fruit very large and of a bright red colour. This variety is much esteemed for preserving purposes. *Belle de Septembre* is a very fine late Plum, ripe in the month of October, the fruit large and of a violet-red colour. This is a valuable Plum for culinary and preserving purposes, and though not a reliable cropper is a good market sort, and always commands a good price, because obtainable so late in the season. *Kirke's Plum* is a useful market variety, though not grown so largely as other sorts. It is a dark purple-skinned Plum, having a dense bright bloom, which is not easily rubbed off, and is therefore well adapted for packing for market. It ranks as a delicious dessert fruit. The tree is hardy, a vigorous grower, and an abundant bearer, and does well as a standard in the open air or against a wall. There is something like a romance attaching to the history of this Plum; the *Fruit Manual* states that it was first introduced by Joseph Kirke, a nurseryman at Brompton, who stated he first saw it "on a fruit stall near the Royal Exchange, and that he afterwards found the trees producing the fruit were in Norfolk, where he obtained grafts and propagated it. But its true origin was in the grounds of Mr. Poupart, a market gardener at Brompton, on the spot occupied by the lower end of Queen's Gate, and where it sprang up as a sucker from a tree which had been planted to screen a building. It was given to Mr. Kirke to be propagated, and he sold it under the name it now bears." *Mitchelson's* is a very free-bearing Plum, producing its fruit in clusters, and yielding large crops. This is in all respects an excellent preserving Plum, with a rich black skin when fully ripe, and of medium size. It is ready for use about the beginning of September, and from large trees Mr. Dancer gathers heavy crops. This variety takes its name from having been raised by a Mr. Mitchelson, a market gardener at Kingston-on-Thames. *Pond's Seedling* is not a leading market Plum, but it is a useful one. It is of large size and of a fine dark red colour, a valuable culinary Plum, ripe in the early part of September. *Poupart's Plum* is one confined mainly to the market gardens round London—a *Blue Gage Plum*, in fact, that succeeds the *Victoria*, not large, but an abundant bearer and hardy. The fruit has a pleasant flavour, and it is an excellent preserving sort. *Prince of Wales* is a medium-sized, bright purple Plum, coming into bearing the second week in September, and one much esteemed for all culinary purposes. This free-bearing Plum is quite a speciality with Mr. F. Dancer, but the trees are uncertain as to their duration, as apparently young and vigorous trees will die suddenly; indeed, trees of all ages go off in this way. In consequence, the culture of this Plum is becoming somewhat circumscribed, but its susceptibility to decay notwithstanding, it will always prove a remunerative sort when grown in quantity, repaying the outlay of the grower ere the trees succumb to that action of Nature which results in death. It is worthy of note that the roots will throw up strong suckers, out of which new trees can soon be formed. *Sandall's* is one of the most valuable of market Plums, because so late, and being in addition a good bearer and every way useful for culinary purposes, and hanging for a long time after ripe without cracking, there can be no doubt on this point. It ripens at the end of September and early in October, and, coming into the market when Plums are scarce, gets a good price. It crops well on large trees; it has a dark violet skin and a thick bloom, and looks well. Of its origin we seem to know little or nothing, but it is a variety much grown about Fulham and Chiswick. The *Victoria* is the market Plum *par excellence*. It is everybody's Plum, and should be in every garden, large or small, as it bears so freely on comparatively young trees, and is altogether the most reliable Plum in our gardens. It is large, handsome, sweet, and juicy, and worthy a place on the dessert-table, while for all culinary purposes it has scarcely an equal. Dr. Hogg states that it is a *Sussex Plum*, and was discovered in a garden at Alderton in that county. It became known as *Sharp's Emperor*, and was ultimately sold by a nurseryman named Denyer at Brixton, near London, at a high price, as a new variety, under the name of *Denyer's Victoria*, in the year 1844.

The yellow Plums grown for market are much less numerous than the purple and red ones. *Gisborne's* is a leading variety, a greenish-yellow in appearance, and being an early and abundant bearer, and ripe in the early part of August, it is a valuable market

variety: it lays but little claim to quality in point of flavour, but is very useful notwithstanding. The Pershore is the yellow Plum mostly relied upon by the market growers. It is like a small white Magnum Bonum, pleasant to the taste, and yields an excellent crop about the end of August. It probably takes its name from having originated in the Pershore district, where market gardening is largely carried on, and it is much grown in the vale of Evesham—also a leading market garden district for the Birmingham markets. It is a variety that bears well every year, yielding large and remunerative crops; it will do well on its own roots, and constantly renews itself from suckers. The yellow Magnum Bonum is also grown, but nothing to the extent of the former. It is a first-rate culinary Plum, doing well as a standard, and bearing good crops: the fruit is marketed in the early part of September.

We sometimes hear a good deal in favour of growing late fruits instead of early varieties. Mr. Dancer does both, and has a succession of Plums, in a favourable season, from August till October. He grows them well, and can find a ready sale for his fruit; and if at one time Plums prove a drug in the market and prices rule low, at others they are in brisk demand, and a substantial result is obtained. The immense quantity of Plums required for preserving purposes ensures the consumption of large crops, and during 1880 growers had little cause for complaint in regard to the prices paid for good fruit.

One peculiarity about Mr. Dancer's Plum orchards is the crowded state of the trees. Trees of mature age appear to overshadow those of lesser proportions, and to all appearance shut out from them the glorious sun and the beneficent light of heaven. But the Victoria, the Pershore, and other Plums grow and bear freely in the shade, as can be seen year after year; and who knows but that when keen April and May frosts swoop down on vegetation like birds of prey, blighting the fair promise of purple and golden fruit hidden within the blossom—who knows but that this crowded state is a protective force of which we can hardly estimate the value, and good crops are saved thereby. And then beneath the crowded Plum, Apple and Pear trees are seen growing other crops—Potatoes, Gooseberries, Currants, Borecole, Sprouting Broccoli, Brussels Sprouts, French Beans, Roses, Parsley, and other useful market subjects. It is in this way intelligence and perseverance wrest the fruits of the earth from jealous Nature, and make her the slave of man. It is said to be a characteristic of a Canadian forest that it is all bright throughout, as if the sun shone quite through the leaves overhead, and the tops of the trees were transparent. In these crowded market orchards at Chiswick the light and life of sun and air finds their way through the canopy of branches overhead, which, affording protection in spring, do not weaken and starve in summer.

In a very remarkable manner our English Plum orchards contrast with those of the United States of America. There the fruit that most completely baffles general cultivation is stated to be the Plum. It is a tree that grows and blossoms well enough in all parts of the country, but almost everywhere it has for its companion the curculio, the most destructive and least vulnerable of all enemies to fruit. America has her compensation in her prolific Peach orchards, while we English have to witness the sure decline of the Peach crop as an open-air fruit in this country.

Nature is impartial in the bestowal of her benefits, and it is not her will that one community or nation should have a monopoly of them.

"In the plan divine
All for good combine;

and whosoever the creature man be placed on the wide earth he will know that no merely selfish considerations mar the grand harmony of purpose inscribed on all objects, animate and inanimate. *R. D.*

ROSA RUGOSA.—This grand Rose, which we figured some time ago (p. 565, vol. x.), from a specimen gathered in Mr. Ware's nursery, is represented by two or three varieties, and it was hoped that from the seeds of the white form the white variety might be perpetuated. Unluckily this has not proved to be the case. Just now its handsome globose berries are very striking, as also are the curiously elongated narrow fruits of *R. pyrenaica*.

COLONIAL NOTES.

COLONIAL BOTANIC GARDENS.—The following suggestions for the guidance of the superintendents have been issued:—

I. The superintendents' time should be occupied by the duties of the gardens in the interests of the colony and mother country.

These duties include not merely the keep and cultivation of the plants, but correspondence with other gardens in the colony and elsewhere, and activity in procuring, by means of travellers, visitors, ships' officers, &c., all plants that it may be desirable to introduce, whether for use or ornament, and botanical information generally.

II. The gardens should be both useful and attractive to the general public, and should contain:—*a.* A conspicuously ticketed collection of the plants, shrubs, and trees of the colony. *b.* A collection, also well ticketed, of all such useful plants as can be cultivated in the colony. *c.* A collection of useful and ornamental plants for distribution, exchange, &c.

III. The superintendent should keep a catalogue of all the plants cultivated and that have been cultivated in the garden; a monthly journal of operations, which may be consulted by persons desirous of forming gardens, and a brief meteorological abstract of the mean maximum and mean minimum temperature of the month, with its humidity, clearness, or cloudiness, amount of rain, &c. He should annually prepare a report on the progress and condition of the garden, of its receipts and expenditure, donations, donors' names, and those of the more important plants distributed from it; this report should be printed by the Government.

It is also desirable that the superintendent should keep an arranged herbarium of the flowering plants and Ferns of the colony; and a public museum containing named specimens of the colonial woods, and other useful vegetable products should be attached to every garden.

IV. A library of botanical books of reference should be attached to the garden and catalogued in duplicate, and no book should be lent out of the library on any pretext whatever. Of this catalogue one copy should be kept in the library, and the other should be deposited in some Government office, and these should be annually compared. The fact and date of comparison should be stated in the annual report, and all losses and additions recorded.

V. No superintendent or other officer of the garden should be permitted to sell any plants or garden produce without the written orders of the Government, nor should they be permitted for their own personal emolument to sell or trade in plants of any kind, indigenous or cultivated, nor to take apprentice or other fees.

VI. The superintendent should not be permitted to cultivate vegetables for the table of any public officer or private individual but his own, or that of other persons employed in the garden; and in all such cases the value of this perquisite should be calculated as part of the salary or wages of the individual who enjoys it. He should not cultivate for his own table rare or expensive fruits, such as take much care or time, or offer temptation for pilfering.

With regard to supplying occasionally or periodically the table of the Governor with vegetables, fruit, flowers, &c., this as a duty imposed on the superintendent is in every respect objectionable; but, on the other hand, a superintendent must be ineligible or inefficient who has not a sufficient supply of flowers to send frequently to the Governor's house, if not far distant, or who does not use every effort to gratify those institutions or persons, public or private, who actively promote the interests of the gardens. Under no circumstances are fees for such objects to be accepted.

VII. A sufficient stock of all useful and ornamental plants should be kept for interchange with other gardens in the colony and elsewhere; and, further, the superintendent may often be required to cultivate a large stock of certain plants for distribution in the colony or elsewhere. In the case of interchange, a sufficient return in kind or otherwise should be required, at the discretion of the superintendent; but no general distribution should ever take place except under the orders of Government, which should further decide under which of the following conditions the stock should be distributed:—*a.* By sale by auction or otherwise. *b.* Gratis, under guarantee that the recipient of the plants will devote a certain amount of land, time, and labour to their cultivation. *c.* Gratis to Government establishments or to colonists or others who have benefited the gardens directly or indirectly.

Specific information regarding any of the above points may be had by application to the director of the Royal Gardens, Kew, who will be glad to recommend the books most suited to each colonial garden, and the best and least expensive way of procuring them. He will also give assistance towards naming dried specimens of the plants of the colony for the

superintendent, provided the latter keeps up a herbarium and a proper correspondence in plants, &c., with the Royal gardens. *Yos. D. Hooker, Director, Royal Gardens, Kew.*

CATERPILLARS AND SLUGS.

In your last number the excellent figure and description of the Cabbage moth will have told many of the enemy to whom to ascribe their losses, and possibly, though late in the season, a few suggestions may still be of service as to means of prevention.

The commonly advised remedy of hand-picking is difficult of application to the hearted Cabbage, but on spreading plants, such as Brussels Sprouts, a great deal may be done in this way in a short space of time. Whether it would be remunerative in field cultivation is open to doubt, but in a common sized kitchen garden it is well worth while.

If the caterpillars are known to be at work, but not to be seen by day, it is almost certain they will be to be found underground near the stem of the plant—probably about 2 inches below the surface. It is very desirable to search them out (which is best done by turning the earth over with a sharp stick or an old knife) and to destroy them. If left alone each caterpillar will certainly come up as before, and will continue to do harm till it is killed or turns to the pupa.

Taking means of prevention of these caterpillars and of slugs together, it will be found that a great deal of good may be done by the use of gaslime. Common quicklime, as we know, slakes quickly, and those are fortunate who find it a thorough remedy; but the peculiarities of the gaslime make it a persistent annoyance for some weeks. At first, as well known, it destroys all it touches, whether plant or insect, but during this summer I have found it a sure protection, sprinkled in very narrow lines about as wide as the smallest finger, round the plants, or round groups or small beds of plants that it was wished to isolate. It was placed so that it should be certain not to touch the stems; and in this way, and also very lightly sprinkled on the earth of a good-sized Cabbage-bed, I found it act perfectly well as a preservative from attack, and the plants were uninjured, and continue in excellent health.

This application was made with gaslime quite fresh from the works, and in the case of the sprinkling was just enough to show on the ground, perhaps about half a handful of the gaslime to a square yard—certainly not more. At present I find the application of the gaslime, in its altered condition from the gradual atmospheric action as it lay in the heap exposed to air and rain, is very serviceable in much larger quantities. I have tried it on a bed of about 500 Cabbages on which a severe attack was beginning. The material was thrown at once, plentifully, between the rows, and also in lines across the bed, so as to stop either caterpillars or slugs straying, and the result is so satisfactory that since its application I have only lost one plant, and the rest are thriving.

As a manure this is excellent on much of our villa garden soil, as the calcareous constituents are just suited to counteract the growth of club, and when duly exposed the other constituents also have their uses; at first, of course, it is impossible to be too careful in use of the material, which would destroy all it touched. For those inclined to experiment it may be suggested that the application of warm soap-suds was formerly said to be useful, and to make the grubs come straight up out of the ground; this, however, I cannot say from my own experience. *O.*

JAMS AND SWEETS.

THE *Maidstone Telegraph* has recently published a series of papers on the "Industries of Maidstone," one of which was devoted to the manufacture of jams and sweets. From this we learn that the well-known fruit-preserving factory of Mr. E. Steer annually turns out from 1500 to 1600 tons of jam in at least half-a-million jars of from 2 lb. to 14 lb. capacity. Fruit growing is a good old Kentish pursuit, but the orchards of "The Garden of England" are not solely depended upon for the boiling-pans in Pudding Lane. America contributes Apples, pressed into casks by hydraulic power in such vast quantities that the cask, when unpacked, is almost as inexhaustible in its productiveness as the conjuror's hat. Germany and Belgium send Plums, France yields Apricots, and

Holland consigns Currants and Gooseberries; but large quantities of home-grown fruit also find their way to the pans.

The fruit is first boiled in water. Over the 20 bushels of fruit which each of the large steam-pans contains, six or eight pailfuls of water are thrown. Some housewives hold that fruit gathered wet is unfit for preserving—here the fruit is drenched in water as a preliminary essential. The action of the steam circling around and beneath the jacketed cylinder, aided by persistent stirring, speedily reduces the fruit to a pulp, in which form it is passed through fine copper sieves, the strigs, cores, and other refuse being thus removed. The proper proportion of sugar is infused, and the compound is now passed on to a second service of still larger steam-pans, thirteen in number, where it is rapidly boiled into jam. The time taken to boil $1\frac{1}{2}$ cwt. in one pan is twenty minutes; and here, again, housewives may accept a hint. Instead of the embryo jam being allowed to simmer for a couple of hours, and the sugar passed through the successive stages of treacle, candy, and bulls'-eyes, and possibly back to treacle, the operation should be conducted as quickly as practicable, and the virtue of the sugar carefully preserved. After all, the processes of the kitchen and the factory are not wonderfully dissimilar. Mentally enlarge the preserving pan to the dimensions of a vat, and the wooden spoon to an Ash stirrer 3 feet long; substitute for the flushed and heated cook a long row of men in paper caps and aprons, and for the scorching fire the hidden but effective steam, and you have the thing before you.

From the boiling pans the jam is taken to the packing room, over the way, where it is made up into jars, tins, and glasses of varied shapes and sizes. The jars are received by the barge-load, and we found them in the warehouses in countless rows and piles. Tins have taken their place to some extent of late, especially in the smaller sizes; and how those 2 lb. tins can be supplied at 10s. 6d. per dozen must rank as one of the marvels of the age. But when a tin half as large again is sold filled with jam for 10s., it is clear that there cannot be any great margin left for the case. Then there is the workman's 3 lb. can with handle and lid complete for 1s. 2d. When the jam is consumed, the can, instead of being thrown aside like the old gallipot, bears the artisan's tea to the factory. In like manner those well-filled tumblers may graduate for useful service at the dinner table, while the lids, as letter-weights or pin trays, are not to be surpassed for the money.

The labelling, covering, tying, and other necessary finishing touches are applied in the large room where the jars and tins are filled, and the place bears a lively and busy aspect. With 2000 gross of tins and as many jars to pack, in the twelve months, there is little time for standing still, and during the fruit season the strain is especially severe. The number of hands employed ranges from forty to sixty, and the weekly wages from £80 to £100. Recent contracts of 40, 50, 80, and 140 tons respectively, may be quoted as an illustration of the resources of the establishment. The 80 tons were ordered to be supplied in 2 lb. tins, 56,000 in number, and this was accomplished in less than five weeks. The bulk of the jam manufactured finds its way into the mining districts, and large quantities are sold to Maidstone wholesale houses.

THE PRESERVATION OF TOMATOS.

THE following description of the process of canning Tomatos occurs in a letter from Mr. Sharples, of Boston, Mass., published in the October number of *the Analyst*, and reproduced in the *Pharmaceutical Journal*—

"The Tomatos are raised in the surrounding country here—chiefly in Arlington and Belmont, which lie about six or seven miles north-west of Boston. The kind preferred at present are known as the Boston Market. These are a smooth, compact Tomato, weighing from 150 to 200 grams; they are very solid, being well filled with meat and very few seeds. These are brought in daily and sold to the factories. At the factory they are emptied a bushel at a time into a wire basket, and then scalded by dipping into a tank of boiling water. They are then removed to a large table, when they are sorted into firsts and seconds only, the ripest being picked as firsts. They are then measured out into pails holding about a peck each, and passed on to the skimmers, who carefully skin and core them. They are then ready for packing. The cans are

filled by hand, the Tomatos being packed as closely as possible into the can. It is found at this stage of the operation that the juice is present in excess and a considerable portion of it is thrown away. No water is ever used, as the Tomatos furnish more than enough.* After the cans are filled to within an eighth of an inch of the top, the lid is placed upon them and soldered fast. A small hole is then punched in it, and the cans are placed in a hot bath until steam issues from the hole; they are then removed from the bath and allowed to cool slightly and sealed; they are then returned to another bath in which they are boiled from thirty to forty-five minutes; from this bath they are removed to a cooling room. Next morning, when cooled, they are stacked. At the end of the packing season the cans are examined, and those which have spoiled are rejected. The condition of a can can almost always be told from an examination of the outside. A can in good order has the ends concave. If, on the other hand, the ends are convex, it is almost certain that the can is spoiled."

GALLS ON EUCALYPTUS.

THE Australian Eucalypti appear to be peculiarly liable to the attacks of gall-producing insects, and to the assumption by the galls of extraordinary forms. The accompanying figure (fig. 98, p. 529), represents galls on a species of Eucalyptus forwarded (as were the galls figured at p. 405) by Baron Ferdinand von Mueller. The figure represents the galls of about their natural size. At first sight each gall reminds one of a distorted fruit or capsule, but Dr. Masters is of opinion [from their position] that they are not modified buds either of leaf or flower. On the twig before me the galls are placed unilaterally, with the exception of the lowest of the series. Each gall (dried) is somewhat olivaceous in colour (as in the leaves). Each measures about 10 lines in length, and



FIG. 97.—LARVA FROM THE GALL FIGURED ON P. 529.

about 5 in diameter. Each has four strong angular keels externally, which are continued into extraordinary processes about $2\frac{1}{2}$ inches long, and slightly curved at the tips; occasionally one of these processes is absorbed or abbreviated, and in one instance a tendency to furcate is shown. They are extremely hard, and the walls are quite a line in thickness, and when cut a very strong odour, like that of intensified Black Currant, is very evident. The artist who drew the specimen pronounced the odour to be that of Black Currant *plus* Tom-cat.

Fortunately in this instance it is possible to fix with certainty the order to which the gall-maker belongs. Baron von Mueller extracted larvæ from some similar galls, and forwarded them in fluid. They are lepidopterous. A well-grown larva is about an inch in length, pinky-whitish in colour, somewhat semi-transparent, and without markings, save that there are black dots on the spiracular region, independent of the black spiracles themselves; the head is pale, castaneous. There (fig. 97) are eight ventral (in addition to the anal) prolegs.

Judging from the general aspect of the larvæ I am inclined to refer them to the Pyralidæ, but their exact position must remain doubtful. In those galls opened by me I find the interior entirely occupied by what appears to be an imperfectly developed chrysalis of the moth, covered with a whitish powdery substance, and greatly distended. Each chrysalis is crammed with the fully developed pupæ of a hymenopterous parasite of the family Chalcididæ. In no case is there any orifice through which a moth could have escaped, but in the middle of the apex, between the four horns, there is a very small opening, scarcely sufficient to admit a small pin, which I take to be natural, and serving to supply air, which it would be impossible to obtain through the thick, hard walls of the galls, and not made by the parasites, though it might afterwards be enlarged to admit of the escape of either moth or parasite. The tail-end of the chrysalis is extremely pointed, and placed toward this minute orifice.

* A perfectly ripe Tomato, skinned and cored, weighed 127.5 grams. On drying it left a residue weighing only 7 grams, or 5.49 per cent. of the original weight. (A gram = 15 grains.)

Altogether this is one of the most extraordinary galls that has ever come under my notice. R. McLachlan, F.R.S.

Notices of Books.

La Phytographie; ou l'art de décrire les végétaux considérés sous différents points de vue. Par Alph. de Candolle. Paris: Masson. (Descriptive Botany, &c.)

If there is one department of botany which to the beginner is more irksome than another, it is the description of plants. If there is one portion of the science more distasteful than another to the superficial reader it is its terminology. If there is one section of botanical lore more exposed to the shafts of ridicule from the careless or the ignorant than another it is its nomenclature. Let the general reader or the lover of flowers who is as yet unwarmed by the sacred fire of science take up, say, a British Flora or a garden catalogue, we all know the result—insufferable distaste, leading to speedy rejection, or ridicule more or less sarcastic in tone, according to the nature of the individual.

With this everyday experience staring us in the face it may seem strange indeed that we should deliberately commend as pleasant reading a work expressly devoted to the ordinarily distasteful or ridiculous-compelling subjects we have mentioned. Nevertheless, we are perfectly in earnest in calling M. de Candolle's latest work a thoroughly readable book, and one, moreover, that a botanist will enjoy and profit by.

It goes without saying, indeed, that this volume would, under any circumstances, have peculiar interest for the working botanist. The exceptional position and opportunities of the author, his family traditions, his own life-long work—all these are so well known, even to a tyro in botanical study, that his book was sure of a respectful reception and a careful appreciation at the hands of botanists; but it is a pleasant surprise to find that it is of such a nature, and that it is so put together, that it may be recommended for attentive perusal to the intelligent reader desirous of getting a general view, unencumbered by details, of the nature and objects of descriptive botany, and the means and methods adopted in its study. Such a person will assuredly rise from the perusal of the book with a greater respect for the labours of the conscientious botanist, and a due appreciation of the shallow ridicule it is so easy to direct upon the language of science. The reader is at the very first made to feel and appreciate what modern descriptive botany really implies. He will see that it is no mere stringing together of barbarous words into dull or irksome phraseology. These are but as the index and concise reference to a series of details relating to the whole life of the plant, from the germ, visible only to the patient and practised microscopic observer, to the ripe fruit and seeds which any one can see without trouble. These details have reference, not only to the form, structure, and position of the plant, or its parts, but to their uses, actions and interactions, their effect upon the organism itself, their relation to all other creatures. Nothing is too great, nothing too insignificant, provided it be relevant, to the systematic naturalist (for, of course, what applies to one branch of natural history does so to all the rest). With such immensity of scope, with such infinitude of detail, with such complexity of interaction knowledge would be almost impossible, certainly fruitless, if some system of observing, comparing and classifying were not adopted. And it is in their treatment of a vast mass of varied detail by comparative observation, judicial discrimination and methodical arrangement that the naturalist's powers and competence are tested. He must know how to observe the myriad facts and phenomena with which he is brought into contact every moment of his life, he must be able to compare and weigh them in order to ascertain their true significance, he must group plants according to their lineage and natural affinities, putting those of like ancestry together, but separating those derived from different stocks. Where direct evidence fails, as it so very often does fail, he must avail himself of the best evidence that is forthcoming, he must consider what is most probable out of a series of possibilities; and, lastly, he must, for his own convenience, for future reference, and for the use of his fellows, put on record his observations and infer-

ences in the manner most likely to be truly representative of the things themselves, and most likely to be useful to his fellow labourers and to those that have to come after. Little does the superficial reader—less still the thoughtless jester—realise the immensity of the naturalist's work, and the ingenuity with which he comprises within a few well arranged concise sentences, barbarously worded though they may be, a very epitome of knowledge which it would require a volume for an unpractised hand to deal with, even could he succeed in making himself intelligible.

sentences, nay, often in as many words, a description which at once conveys to the initiated an idea of the plant, of its structure, history, and relationships. Of course there are bad and good descriptions as there are incompetent and careless botanists or accurate and painstaking ones. But admitting this, and admitting all that can be said about the barbarous terminology and the horrible nomenclature, the fact remains that it is impracticable to convey any but the most indistinct, most unsatisfactory notion of a plant by means of ordinary, everyday language.

the purpose indicated is by no means lessened by that circumstance.

For descriptive purposes, and for works intended to be consulted and referred to rather than read—consulted, too, by students of all nations for centuries to come—M. de Candolle prefers the Latin language—not the Latin of Cicero, or Tacitus, but the Latin of Linnæus. There is no room in botanical Latin or elegancies of style, inversions of sentences, or niceties of meaning; descriptive Latin must be concise, unequivocal, straightforward. There is no botanist

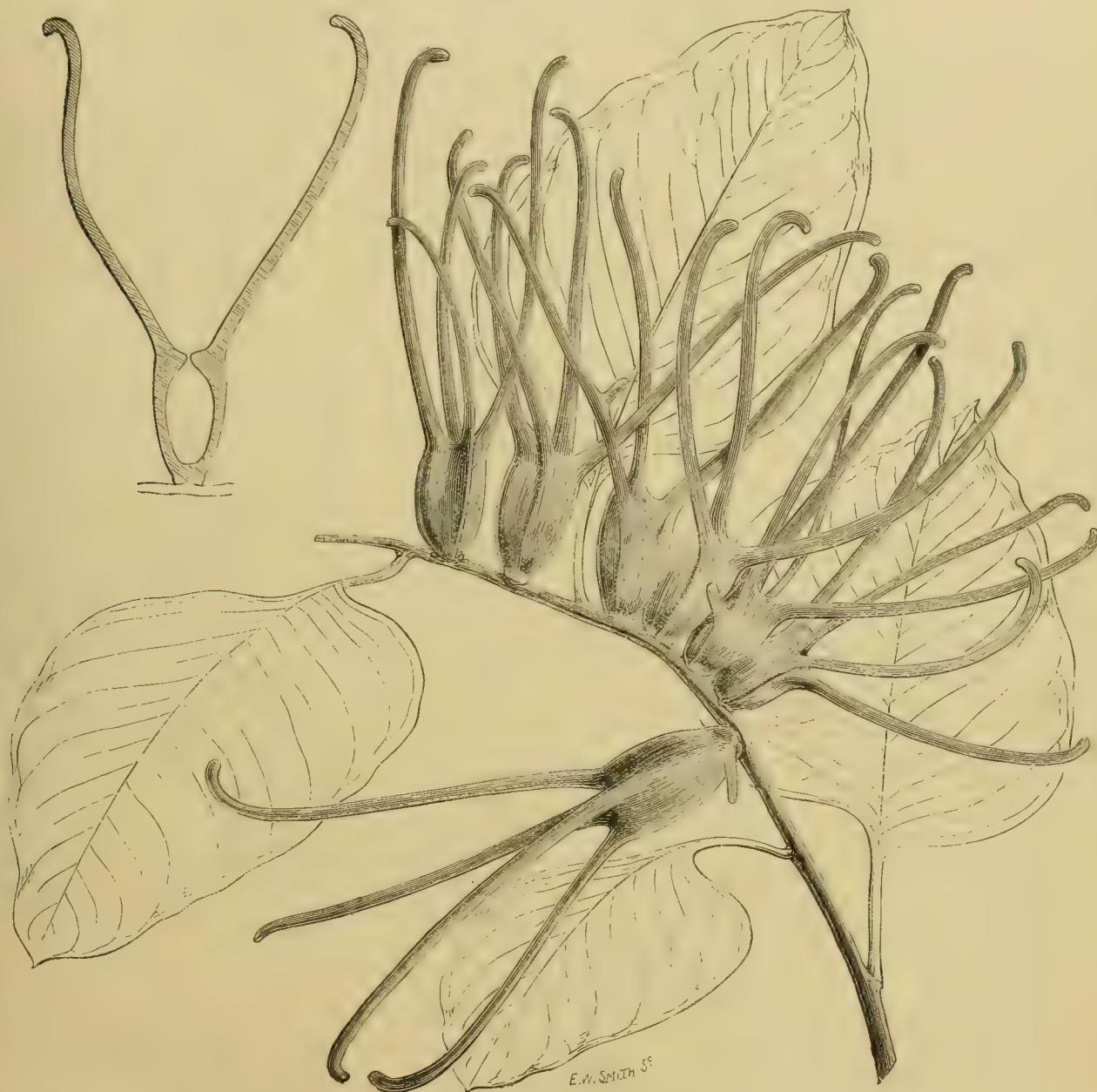


FIG. 98.—GALL ON EUCALYPTUS. (SEE P. 528.)

The thing is easily tested. Let a person of good education, but without botanical training, attempt to describe the commonest flower either in writing or by word of mouth. How verbose he becomes, and yet, in spite of his profuse speech, he has not words to describe what he sees; how vague and indefinite his expressions—how wanting in precision—how rarely does he succeed in giving his hearer anything but the faintest resemblance of what he wants to convey. Accuracy, proportion, relation—all these, which are so essential to the would-be describer, are wanting in the case we are supposing.

Now let the reader turn to any well-ordered text-book or Flora, and he will find in a dozen

To be of any real use for scientific purposes, the descriptions must be drawn up with scientific method and scientific accuracy. What that method is, how best to ensure that accuracy, and in what manner best to register and classify the results of such accurate observations and comparisons—these form the subject of discussion in M. de Candolle's pages. In the course of the discussion a general glance at all the departments of modern botany, of their progress and evolution, is of necessity afforded; and though it be but a glance, it is just what the general reader, desirous of knowing something of the present state of botanical science, requires. Of course the work was not compiled with any such object, but its value for

that has ever drawn up a description in Latin and in English—no botanist, even, who has to read a description—but will share M. de Candolle's preference for Latin as the vehicle for scientific descriptions. By its aid and the use of the appropriate terminology, accuracy, clearness, and brevity are secured to a degree far beyond what is possible by the use of any modern language. For detailed discussion and comment the case is somewhat different, and the use of the vernacular becomes almost unavoidable, though where it is not so M. de Candolle slyly avows his preference for Latin, on the ground of the consequent brevity entailed on the author!

Another point raised by M. de Candolle, and we

think with justice, is the necessity of general conformity, so far as that is possible, throughout all branches of the science. Physiological text-books and works devoted to the study of Cryptogams, for instance, compare very badly in point of order, method, and clearness with those devoted to the higher groups of plants. Of course this is due in a measure to the less complete state of our knowledge in these departments. But even making allowance for the complexity and uncertainty attaching to the subjects we have named, it must be admitted that writers in these departments have greatly added to the confusion which exists by not following as nearly as may be the rules and practice of systematic botanists. Compare, for instance, Sachs with Lindley, De Candolle, or Gray. Look at the verbose and involved statements which are supposed to do duty for definitions in the case of Cryptogams in some of our most recent and highly praised text-books. Consider, again, the diversity of meanings attached to the word "spore." German writers are the greatest sinners in these respects. Their long-winded diffuse paragraphs contrast most unfavourably with the neatness and logical precision of the French, for instance. Again, in their attempts to popularise and make things pleasant, these playful writers dispense with the barbarous Latin or Greek terms and we have *zusammengewachsen* for connate, *spaltöffnungen* for stomata, *staubbeutel* for anther, *winkel* and *schraubel*, *fachel* and *sichel* for various forms of cymes—words which no naturalist but a German can at first understand, and which are not likely to pass into use in any other than a German-speaking country.

We have said above that M. de Candolle in the preparation of his book addressed himself to botanical students more especially, but it was impossible he should overlook the value of scientific method in general education. His remarks in the preface are so much to the point that we may appropriately translate them in this place.

"What advantage is it," he says, "to the crowd of young men who are destined to become lawyers, magistrates, priests, merchants, operatives, to know how to dissect, or how to look for the thousandth part of a millimetre under the microscope. In after life, when they may require anatomical dissections or microscopical research, they will be compelled to avail themselves of the labours of experts. But, on the other hand, whatever may be their career they will need to use their eyes and to describe what they see. The study of languages and of mathematics injures their faculty of observation. For its development they must have recourse to natural history, and the best method of observation is to describe, because description necessitates passing in review, in regular order, the varied and complex creatures which constitute the objects of zoological or botanical research. To describe well it is necessary to classify and name according to rules, based on logical reflection. I consider it, then, very useful to a man to have learnt once in his life what constitutes a natural group, how naturalists have named and classified thousands of such groups, and with what precision they know how to specify their distinguishing characteristics. Principles are less easily forgotten than names, and they may often be applied to other matters. Men of position have told me that in consequence of having studied our methods of classification, nomenclature, and description they have become more capable of drawing up administrative documents, financial statements, judicial reports, or even simple narratives of travels."

In all this every one who has had the least experience will coincide, and they will be disposed to think that such advantages are not too dearly purchased by the necessity of learning and using a confessedly barbarous terminology. They will see that in spite of the obvious objections, in spite of the ridicule of the thoughtless and half-educated, men of the greatest ability from the beginning of scientific activity till now have uniformly made use of it, and do still daily use it, and that it is only those who either do not want to use it or are not capable of doing so that rise an outcry. Directly such persons become students in reality they recognise the value of what before they had laughed at, and they end by agreeing with Whewell, that so far from being a subject for ridicule, botanical terminology, with all its faults, is a matter whereon botanists may, on the whole, very justly pride themselves.

UNSEASONABLE FLOWERING.—The *Annandale Observer* of the 15th inst. states that an Elder tree behind the Bank of Scotland, Annan, is now in blossom for a second time this year. So also is a Pear tree in the Post-office garden, and an Apple tree at Langshaw.

Natural History.

MICE.—Both the long-tailed field-mouse, with large ears, and the brown field-mouse, with short ears and tail, are equally mischievous. The world has known few greater destructionists, in their peculiar line, as pilferers of Peas and Beans, Nuts, and useful seeds of every possible kind. Virgil might be quoted in regard to their thefts, and their well-stored granary, filled for winter use, in whatever country or locality they may be found.

Many years ago the new plantations of the Forest of Dean, and in the New Forest, were almost destroyed by field-mice. They not only consumed, or garnered, hundreds of bushels of acorns which had been newly sown as Oak-seed, but they gnawed and fatally injured the young Oaks and Chestnuts. Even five-year-old trees of these kinds had their roots eaten through just beneath the surface of the ground by the burrowing mice, and thousands of Hollies, 5 feet or 6 feet high, were killed in consequence of the mice having barked them close to the ground. Immediately upon the Government receiving a report of the attacks of the mice, war was declared against them, and very active measures were resorted to. The losses of the invaders were enormous. It was estimated that in the course of a single campaign 200,000 were slain by traps, cats, poison, and other means, besides thousands of unhappy fugitives whose provisions failed them during the winter, and who fell upon and ate each other for want of other food.

Some years since the writer suffered seriously in his garden from these destructive pests. The whole of his early Pea and Bean crops, and part of his full crop of these useful vegetables, were sown in vain. It was his first year's experience in that particular garden, whose grassy margins, wide surrounding hedges, and abundance of covert, had, during several years' neglect, encouraged a numerous colony of field-mice. Traps and poisons were first tried, with the result of a number of unsightly swollen bellies and flattened bodies of mice lying on the paths and borders, or beneath the bricks of the "dead fall" traps. But the supply of mice was continually fed by the adjoining woods and hedges, particularly by a dry warm Holly hedge running the whole length of the garden; so that it became absolutely necessary to resort to some more wholesale method of slaughter. The same effective mouse-trap was accordingly employed as that which had been adopted in the Forest of Dean. Holes were dug in the mouse-runs, each 18 inches deep by 2 feet long, and 1 foot wide, and wider at bottom than at top, to prevent the escape of the mice. A wholesale destruction followed. The holes were dug in the most likely highways to and from the hiding-places of the mice.

There are no quadrupeds of their class so mischievous as the mice which are here noticed, one of which—the short-eared brown field-mouse, is not a mouse, but a vole, distantly related to the water-rat, and still more so to the beaver. Even the vulgar mouse of ricks and granaries is less mischievous, and far less so to gardeners, than the long-tailed, large-eared, and short-tailed short-eared field-mice, which are here held up to reprobation. They prevail in both hemispheres—in Europe, Asia, and America; and in all these countries there is no mammal so numerous, and so prone to petty thieving, and to the commission of damage which may seem small in particular instances, but which proves to be enormous in the aggregate. Clean farming, and neat gardening, are alike inimical to these pests, which are, however, too ubiquitous and migratory to be speedily cleared, so as to become in all countries quite extinct. Taking the two together, they are nearly as ubiquitous as man himself. But, wide as they range, they have their respective zones. Under favourable circumstances the mouse and vole live together, as various plants may do, though at certain points they diverge. The Spruce Fir, for example, stretches in a broad belt across the northern part of Europe, and the Silver Fir occupies a more southern belt. In like manner the vole is found in the colder parts of the three continents which stretch into the Polar regions; it does not follow the true mouse into the warm districts. They intermingle in intermediate climates, but the tendency of the one is northwards, that of the other southwards. There are voles in Greenland, and there are true mice in the tropics, but not *vice versa*. There are no voles in South America, South Africa, or Australia. They are water-loving animals, and cannot endure drought, or the filling up of ditches, or

destruction of wastes, or presence of windhovers, sparrowhawks, and owls. Those persons who would preserve their mice should be careful to kill down both barn-owls and wood-owls, especially the former; on the other hand, persons who would destroy their mice should preserve the owls, which are more destructive "mousers" even than cats. E.

BIRDS AND FRUIT.—More than thirty years since my gardener informed me that we should not have any Apples, because the wretched tomtits were destroying the buds. On close examination I found the birds had only molested one tree; hence, after all, we had a very good crop on the others. About fifteen years since I had a complaint against bullfinches, as pecking away the buds on the Gooseberry bushes. When the worthy gardener, who had been nearly sixty years on the premises, wished to kill the bullfinches I would not consent. Our Gooseberry bushes have not been molested a second time.

A relation has recently received a barrel of beautiful looking Apples from America, nearly the whole of which have a maggot inside, which doubtless arises from insect eggs being deposited in the fruit-buds and there matured, there being too few small birds to inspect the buds. *Henry Willis, Old Windsor.*

Garden Operations.

KITCHEN GARDEN.

The ground that will be falling vacant in this department from the removal of the general crops of Beet, Carrots and Potatoes, of exhausted crops of Peas, French Beans, Scarlet Runners, and of early plots of Cauliflowers and Broccoli, with that from whence salading subjects have lately been removed, will comprise a considerable area available now for such important cultural operations as digging and trenching. These are matters which, when systematically and regularly carried out, form the basis for other operations being expeditiously performed, and lay the foundation of subsequent success. In the performance of digging and trenching the nature and depth of the soil must of necessity guide the mode of operations. Where the soil is naturally fertile and rich it should be moved and intermixed to a depth of 3 feet. Where a less quantity exists, or its character is not congenial to vegetation, a less depth must suffice, but here the bottom of the trench should be well broken up, and if some material of a contrary nature can be spared to incorporate with it, it will tend greatly to ameliorate its condition, so that in course of time and by degrees, it can be brought up to the surface, where it will become pulverised, and fitted to be incorporated with the rest. At this season the newly trenched ground should be left in a porous state and its surface as rough as possible, so that climatal action may operate more effectually upon it. Double digging or semi-trenching is another most commendable practice in connection with the preparation of the soil. At many places this mode of tillage has entirely superseded the old method of digging or forking over the soil simply one spit in depth. If we exempt crops, as beds of seeds, whose existence in one spot is of but limited duration, and such subjects as Broccoli, when planted in rich soil, we may fairly assume we have included the chief of those plants for which it may not be necessary. For others, however, we are not satisfied in the ordinary way unless by this operation the soil has been moved to a depth of at least 18 or 20 inches. The application and distribution of manure requires considerable forethought in order to dispose of it in a judicious way. Some subjects, as Asparagus, Globe Artichokes, &c., which will have to remain in the same place several years, need annual supplies of it; and in such cases it must necessarily be applied on the surface, whilst in the case of preparation for summer crops of vegetables it should be applied at once and be well incorporated with the soil as the work of digging or trenching proceeds. Another invaluable agent as a fertiliser, and one which in my opinion equals much of the manure that is used, and should be utilised where it is needed at this season, is the refuse compost. All these matters are so immediately connected with the fundamental principles of good cultivation, that they demand every attention and the exercise of every effort to accomplish them in a satisfactory manner, as expeditiously as time and circumstances will permit.

Ordinary requirements in this department will at this season include very frequent attention to the recently planted crops of Lettuce and Endive, to Cabbage plants, also to Cauliflowers which are under handglasses and in other places. If Scarlet Runners or French Beans are required for seed, and these are not already gathered, they should be secured at once, lest the germ of vitality in them be destroyed or impaired by frosts. In order to keep up a neat and tidy

appearance keep the surface of the ground free from weeds, and remove all spent and exhausted subjects as speedily as possible. Rhubarb plantations can be cleared of all refuse, and those which have been left for forcing purposes should be marked off from the rest. Seakale will soon be in a condition to be divested of the leaves, after which the surface-soil should be cleaned, and a coat of 2 or 3 inches of good manure be applied. Already the trees have commenced to shed their leaves; at the earliest period a heap of these should be collected together where the forcing of Seakale, &c., is about to be carried on. Preparations for this work should forthwith be made, so that an early batch of roots can be got in.

FORCING DEPARTMENT.—Towards the end of the current month a few roots of an early kind of Rhubarb should be introduced into the Mushroom-house or some other suitable and similar place, where a temperature of from 50° to 60° is maintained. In planting the roots use soil of a rich description in order to encourage the rootlets to take hold of it freely and promote an early growth. As light and sunshine decrease, additional care and attention will be required to be given to the training and encouragement of growth in Tomatos, French Beans, &c. Strive to keep the surface-roots of such plants in an active state by means of surface-dressing of a light rich compost, and supply manurial agents in a weak and tepid state occasionally. The syringing of these plants will now become a daily matter to be attended to, and it should be regulated according to the requirements and conditions of the moisture which abounds in the house.

FRAME DEPARTMENT.—Continue, as before advised, to freely ventilate by fully exposing the subjects located here to every influence that will tend to harden and prepare them for more severe conditions, but at the same time be wary of the early frosts, as these are generally most mischievous at early dates. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—Although the wood appears quite ripe and the blossom-buds are prominent and abundant, the trees, owing to the mildness of the season, are holding their foliage longer than usual, but the time has now arrived for getting all lifting and replanting in all the houses finished; and as this process has the effect of cutting off the supplies, an occasional brush with a light birch broom will soon set them quite clear and fit for the final thinning. The pruning of Peach trees within the last few years has undergone a great change, and, judging from results, the extension system of training as compared with the old method of paralysing the trees by cutting three-fourths of the best wood away annually, has many points in its favour. Years ago every shoot was shortened back to from 12 to 18 inches in length, but now we frequently hear of young growths being left three times that length and ripening off a good fruit to every foot of wood laid in. In our own practice healthy young trees have made growths 5 feet in length, and ripened five Peaches on a shoot, the fruit nearest, and within 2 inches of the extreme point, being as good as the one at the base. If we take a well-balanced tree of one year's training and allow every shoot to extend, the first season gives a breadth of at least 6 feet, and instead of having a few gross, unripened pieces of wood to cut away in the autumn, all the shoots grow into fruit-bearing wood, well studded with triple buds, and capable of giving a good crop of fruit, all danger from canker or gumming is avoided, and last, but not least, a large trellis may be filled in about three years. Upon this principle pruning is reduced to a minimum, and disbudding becomes the most important point in the after management of the trees. A Peach to every square foot of trellis covered with foliage is a good average crop, and quite as much as can be secured for a number of years in succession. To obtain this number not more than two shoots to every foot need be laid in, and as these will give an abundance to select from, anything approaching crowding, while increasing the labour, will greatly reduce the quality of the wood from which the succeeding crop is to be gathered. Indeed, one of the most important points in extension training is thorough maturation and exposure of the wood to the influence of sun and air.

Early houses from which the lights have been removed, either for painting or for the benefit of the internal borders and trees, may remain uncovered until we have a change to colder weather, as trees from which fruit was gathered last May have had a long period of rest, and excitement now, followed by a check in November, may cause them to cast their buds when they begin to swell. Where the roofs are fixed (a bad arrangement for early Peach houses) the doors and ventilators may be kept constantly open, to induce complete rest, and the trees may be untied and allowed to drop from the trellis. *W. Coleman.*

ORCHARD HOUSE.

If it is intended to purchase trees to replace others that are worn out, now is a good time

to do so. The principal nurserymen grow trees in pots for their customers, and I would very strongly advise purchasing those that are but one year from the maidens. It may not always be convenient for amateurs to purchase maiden trees, but an orchard-house can be furnished much cheaper that way, although for those newly taking up this mode of culture a season is lost. I find Peach and Nectarine trees wear out much more rapidly than any other varieties of stone-fruit. When the trees become bare of bearing wood near the base, or are in any other way rendered unsightly, the best plan is to throw them away and fill up their places with young trees. If those one year from the bud are procured they should be ordered at once, and be potted as soon as they come home. The smallest trees may be potted into 9-inch pots, and the largest into the 11-inch size. It will be necessary to cut back the old main roots rather closely in order to get them into the pots. See that they are well drained, and some good fibrous turf placed over the drainage, then work the potting material well in amongst the roots, ramming it in firmly with a wooden rammer. A fourth part of rotten stable manure added to good fibrous clayey loam will furnish the best material to pot in. A word as to ripening the wood. It is certain that if this has not already been done, it cannot be done now. I was reading the other day in *Rivers' Orchard House*, under the October calendar, the following:—"On no account remove Peach, Nectarine, and Apricot trees to the open air in autumn to harden their shoots, as some gardeners say, as if a moist cool climate would ripen the shoots better than the warm dry air of the house." We are further told that the trees should remain in the house all the year round, except such as are placed out-of-doors to ripen their fruit. Now, I hold that the wood is as much ripened as ever it will be by the second week in October, and at that time our trees are taken out-of-doors and plunged in cocoa-nut fibre refuse. I have never used any other plunging material but this; it is loose and non-conducting, and has always kept the roots in a healthy growing condition up to the time they are taken into the house again. I see some one recommending, in a contemporary, the use of ashes in which to plunge the trees; it would be useful to know whether the writer had tried it and found that it answered. I certainly should be afraid to use such heavy plunging material. I have not found the trees receive any injury from being plunged out-of-doors, but as such good growers as Mr. Rivers, of Sawbridgeworth, and the late Mr. J. R. Pearson, of Chilwell, disapproved of it, there must be a good deal to be said on the other side. Probably climate, soil, and situation must be taken into account. I have seen the trees standing out-of-doors in the Lea Bridge Road Nurseries up to the end of February, and after this the fruit set freely, and fine crops were produced. Ours are all out-of-doors now, and the house is filled with Chrysanthemums. *J. Douglas.*

ORANGE HOUSE.

If the fruit on the Tangierine variety is ripe, and it is not required for use at present, the best plan is to remove the trees into ainery where there are Grapes hanging; the temperature suitable to keep the Grapes well will also answer for the Oranges. I do not find the fruit of the Tangierine so liable to burst as that of the St. Michael's and Maltese Blood. We had some trees of these on which a considerable portion of the fruit cracked one season, but this might have been avoided by restricting the supply of water to the roots. It is not necessary to repeat what has been written in previous numbers. See that the temperature even in cold nights does not fall below 65°, and on mild evenings 70°. It seems that only this high temperature with other suitable treatment at this season will give us superior fruit to any that can be imported. *J. Douglas, Ilford.*

PLANT HOUSES.

ORCHIDS.—At this particular time of the year there is nothing with regard to the management of these plants more important than the keeping of a sharp look-out for sudden falls in the temperature of the external air, combined of course with the careful regulation of the heating apparatus, so that all evil effects to the inmates of the Orchid-houses may be avoided. It is a common occurrence during October for moderate sharp frosts to make a very sudden appearance, and consequently without the slightest warning. When such frosts come—and they generally do during the small hours of the morning—the temperature of the various departments will be sure to fall a few or more degrees below what is considered their proper standard, unless of course those in charge the previous evening were weatherwise enough to foresee what was coming. On those mornings when the temperatures are down, no watering nor filling of evaporating troughs nor damping down should be proceeded with till the proper temperature has been obtained. The drier the house under such circum-

stances the better, as the plants are far less likely to be injured.

During the present month, following closely as it does upon the heat of summer, I consider it much the safest plan in every department to err a trifle on the hot side with the night temperatures, as one sudden fall of several degrees might do more harm than all the cold of winter. Supposing even the cool-house has been through the night a few degrees hot there is not the slightest fear of the plants being injured, provided the ventilators on all suitable occasions are freely used. On the other hand, I should expect to see a decided check in many of the plants if the temperature fell for any length of time below 50°. In the East Indian-house one and all of the varieties of *Phalenopsis* are very easily permanently injured by an over low temperature of but short duration. *Epidendrum bicornutum*, which will now be in the midst of growth, is still more easily injured, as I know from sad experience. See that none of these plants are too near the roof-glass, as that is a frequent cause of their being chilled. The foliage of such *Calanthes* as *Veitchii*, *Turneri*, *nivalis*, and the varieties of *vestita* frequently prematurely fail from cold, instead of holding on till Nature calls them away. A temperature anything below 65° is unsuitable for these until their spikes have expanded several blooms, when a few degrees less is proper. Whenever the foliage of these plants gets blackened some distance from their points, a check either from fumigation or cold may be suspected.

Plants of *Bollea coelestis*, *B. Patinii*, *Pescatorea Roezlii*, *P. Klabochiana*, *P. cerina*, and *P. Dayana*, will now be fast growing away, and will require a few degrees more heat than is maintained in the intermediate-house. The cool end of the East Indian-house will suit them best through the winter, as neither of the plants named above seem to care for a temperature lower than 60°, nor, on the other hand, will they grow thoroughly well if subjected to a temperature many degrees higher than 60°. Keep them well to the glass in a saturated atmosphere, and never allow them to get dry at the roots. In spite of all this dampness, a small species of red-spider will oftentimes attack the underside of the foliage, and if not cleared off by the sponge will soon change their green hue to a sickly yellow. These plants, one and all, strongly object to tobacco-smoke, and as they are rarely attacked by thrips or aphides, they should be covered up or removed, whenever the East Indian, or whatever house they may be in, is fumigated. Plants of such *Dendrobiums* as *D. densiflorum*, *D. Griffithianum*, *D. thyrsiflorum*, *D. Schröderi*, and *D. Farmeri*, that have finished up their growths should now be removed from their growing quarters to a more cool and airy atmosphere. If any of these have started again into growth, still keep them in a light position in the East Indian-house until it is completed; for as this section of *Dendrobiums* grow very rapidly there will be ample time to get these late growths ripened. Plants of *Grammatophyllum Ellisii* which have made up their growth in the hottest portion of the East Indian-house should now be removed to the coolest end. Through the winter months only give these just enough water at the roots to prevent shrivelling.

That little known Orchid, *Galeandra Devonianum*, will now start into growth, and will require abundance of heat and moisture from now until the flowers fade. As these are produced on the point of the made up young growth, this period, when moisture and heat is necessary, will extend over several months. This Orchid is well worth a little extra care and trouble. Strong plants of *Cymbidium Lowii* that have made their growth, and are not showing flower should be kept for some weeks on the dry side, otherwise they will start away into growth again, and miss flowering. Those showing spikes must receive every encouragement. In either case keep the plants on the lightest side of either the Cattleya or *Dendrobium* house, with their foliage almost touching the roof-glass. Keeping *C. Lowii* and also *C. Hookeri* pot-bound helps greatly towards flowering them. *J. C. Spyers, Burford Lodge, Dorking.*

HARDY ASTERS are not yet over, in spite of the rain. The best now in flower is *A. Amellus*, of moderate height, with large sessile obovate oblong-stem leaves, and terminal clusters of large flower-heads 1½ inch in diameter, with lilac rays and a yellow centre. The flower-heads are surrounded at the base by an involucre like the cup of an acorn, consisting of oblong leafy scales closely packed. *Aster longifolius*, with upper leaves about ½—¾ inch long, glabrous, narrow, oblanceolate, and with small lilac flower-heads, surrounded by linear bracts, is also a very good kind. Cuttings of these two, potted into small pots, have flowered well when only a few inches high. If only, when in this state, they could be kept from flowering now, and introduced into the greenhouse some weeks hence, what a boon they would be! Why not try?

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Oct 25	Sale of Dutch Bulbs, at Stevens' Rooms; and at the Auction Mart, by Protheroe & Morris.
TUESDAY,	Oct 26	Sale of Bulbs, Roses, &c., at the City Auction Rooms, by Protheroe & Morris.
		Sale of Camellias and Azaleas from Ghent, Dutch Bulbs, &c., at Stevens' Rooms.
WEDNESDAY,	Oct. 27	Sales of Nursery and Farming Stock at Ley Farm, Leamington, by Protheroe & Morris.
		Sale of Established and Imported Orchids, at Stevens' Rooms.
THURSDAY,	Oct. 28	Sale of Nursery Stock at Paul's Nursery, Loughton, by Protheroe & Morris.
		Sale at Loughton continued.
FRIDAY,	Oct. 29	Sale of Orchids, Camellias, and Bulbs at the Auction Mart, by Protheroe & Morris.
SATURDAY,	Oct. 30	Sale of Dutch Bulbs, Plants, &c., at Stevens' Rooms.

WE have pretty nearly forgotten the wretchedness of 1879. The present year up to the autumn was not much better save by contrast, but then we had a burst of glorious harvest weather which set us all in good spirits and induced us to form glowing anticipations for the future. We shall see. Meanwhile, before the recollection of 1879 fades entirely and becomes the sole reminiscence of the oldest inhabitant, it would be well to count our losses and record our good fortune. So exceptional a winter as that of 1879-80, we are not likely to have again for some time; at least, we hope not. It was the culmination of a bad series, and it can hardly be exceeded by any that are to come. This being so, it is a matter of very great interest to note what we have lost and what has unexpectedly survived. The Scientific Committee of the Royal Horticultural Society has drawn up a circular, which may be had on application to the Secretary of the Society at South Kensington, and in which it is requested that information of the kind mentioned may be given. It is to be hoped that many of our readers will state their experience. A single fact, well authenticated, may be very important. When a sufficient body of evidence, taken from a sufficiently varied area, has been accumulated it will be the duty of the Committee to digest that evidence, and make it public for the general benefit. Circumstances are never quite alike, but for all that we shall gain by such a statement a very good general idea of what may be safely planted in certain situations, and what may be only put out at considerable risk. We would suggest that not only the rarer trees and shrubs should be mentioned, but also the sorts of Roses, of fruits, and of vegetables, that were destroyed by the frost.

Two things are, we think, beyond dispute—one, that our losses have been vastly smaller than those experienced by our friends in Northern France, Belgium and Germany; and the other, that our disasters, now that we have had time to look round and to watch the effects of a season's growth, are not so serious as it was feared they would be. Whether this impression be correct or no, the evidence sent in to the Scientific Committee will, we hope, suffice to establish. Meantime it is quite certain that we shall feel as much interest in the list of "unexpected survivals," as in the catalogue of killed and wounded. In our own experience many things given over for dead at the close of the winter showed signs of life as summer came on, such as *Escallonia macrantha* and *rubra*, *Colletia cruciata*, *Edwardsia microphylla*, *Japan Euonymus*, &c. In Mr. WARE's nursery at Tottenham, not particularly well situated one would think, *Melianthus major* with its singular and effective foliage was not killed outright, but has, as we saw a few days since, sent up its handsome foliage as usual. In the same nursery we noted the following as either unhurt or as having recovered from what injury may have been done:—*Dasylirois Bigelowii*; *Eulalia japonica*, the green variety, as well as the striped and barred forms; *Bambusa nana*, *B.*

Metake, *B. aurea*, *B. Simoni*; *Tuberoses*, now in flower in the open border; *Harrison's Musk*, *Conoclinium celeste*, *Aponogeton distachyon*, *Erythrina herbacea*, *Disa grandiflora*, *Cedronella cana*. We might enumerate many more, but these few will suffice to show that the record of survivals is likely to be even more interesting, certainly more encouraging, than that of the deaths.

— THE FIRST TASTE OF WINTER.—On Wednesday morning snow fell in London for some hours; and our correspondent, Mr. SPYERS, writing from Burford Lodge, Dorking, at 9 o'clock A.M. of the same day, says, "Snow has been falling for several hours, and is still falling. Unless it soon ceases, or gives way to rain, I am afraid both trees and shrubs will suffer much from broken-down branches. The deciduous trees around here have, as yet, lost but few leaves: covered with snow, they present an unusual appearance."—Mr. MUNDELL, writing from Moor Park Gardens, Rickmansworth, Herts, on the same day, states that some of the fine old Oak trees at that place have been very much disfigured by the loss of branches, caused by the heavy fall of snow that morning, accelerated by the heavy yield of acorns, and the still abundant foliage. Huge branches fell from 6 o'clock A.M. till 10 in quick succession, with a loud crash that could be heard for a long distance.—From Eridge Castle, Kent, Mr. RUST writes:—"This neighbourhood was visited this morning by a snow-storm which for the time of year is quite unprecedented. A good deal of rain fell in the early part of the night, but at 3 A.M. it commenced to snow, and has kept on ever since, and is now (at 12 noon) 3 inches deep. The melancholy part of it is that many of the forest trees are in full foliage, more especially the Oaks, and the weight on the boughs is something incredible. The result is that great limbs are torn from the trees like matchwood, and magnificent specimens which have braved centuries are completely wrecked. A fine Tulip-tree walk, quite the pride of the place, has also suffered severely. In the woods around the Castle the scene baffles description, the falling branches rendering it quite unsafe to walk, and the crash occasionally I could liken only to a burst of artillery. Such a thing and scene has never been witnessed by the oldest inhabitant."

— POPULAR NAMES.—How convenient these are—so much nicer than those unpronounceable barbarisms made use of by botanists! See in the *Times* how the Duke and Duchess planted the "Normandy Pine" in Epping Forest the other day, and the Lord Mayor and other ladies and gentlemen did the same. Just to please those incorrigible pedants, the botanists, the Latin name is given too—Ah! yes—*Picea Normaniana*. All right, no doubt, except for the facts that there is no such tree as the Normandy Pine, and no such tree as *Picea Normaniana* either in Normandy or elsewhere. *Picea* is, of course, an excusable misprint for *Picea*, and *Normaniana* should read *Nordmanniana*. The tree so named has just as much to do with Normandy as Macedonia with Monmouth. *NORDMANN*, who discovered the tree in question in the Caucasus, was a native of Finland, and became in due time Professor of Botany and Director of the Botanic Garden at Odessa, but afterwards returned to his native country and died Professor of Natural History at Helsingfors in 1866. *Picea* or *Abies Nordmanniana* is a grand tree to plant as a memorial tree, as it is so handsome and so hardy; but let us recollect that it is a memorial tree, and that the man who introduced such a tree to our plantations is worthy of remembrance, and deserves a better fate than to have his name so twisted out of shape as to become unrecognisable and misleading. *Nordmann's Silver Fir*, if you like, but *Normandy Pine*—no!

— THE ROYAL GARDENS, KEW.—It is encouraging to witness the manifold evidences of progress and activity in this unrivalled establishment. Additions are being made to two of the museums, which will result in the gain of considerably more space. A handsome building is in course of erection by the side of the Richmond Road, opposite the Temperate-house, to contain the beautiful drawings made by Miss NORTH in the course of her extended travels. In the Arboretum the labours of many years, at first making no show, are now begin-

ning to tell, and the wealth of fine subjects for ornamental or for practical purposes must be a surprise to landscape gardeners and planters not previously aware of the riches of our great national collection in these particulars.

— BOTANICAL MUSEUMS.—M. BOMMER, Curator of the Museum of the Brussels Botanic Garden and Professor of Botany in the University of that city, has lately published his remarks on the arrangement and preservation of vegetable products. M. BOMMER treats the question entirely from a practical point of view, discussing the best form of case, bottles, labels, &c., and advocating for practical commercial purposes the arrangement according to the nature of the product, rather than a strictly botanical classification. The paper was read before the recent Botanical Congress at Brussels.

— SINGLE DAHLIAS.—Amongst the single Dahlias of the coccinea type which have blossomed this year in the Chelsea Botanic Gardens are a few very interesting novelties. One named *AMARANTH* is quite a new colour in this race so far as we are aware, and is both dwarf and free-flowering; the florets are of a bright amaranth, becoming deep golden-yellow towards the base, this colour forming a distinct ring around the brighter yellow disk. Another called *MULBERRY* is also we believe a novelty, the colour of the plant in this case being a deep velvety-maroon, purple at the back, the latter colour imparting in some lights a good deal of the hue of the fruit of the Mulberry. A very rich and brilliant crimson-scarlet of the same habit, with broad and overlapping florets, has been called *MORNING STAR*. Of the last year's seedlings, distributed by Mr. CANNELL, that called *YELLOW DWARF*, the only one planted out at Chelsea this year, has fully maintained its character as a decorative plant, a dense bush, 3 feet high, having had on it some two or three days since no fewer than fifty of its bright yellow attractive blossoms.

— CHRISTMAS CARDS.—Just now at the Dudley Gallery, Piccadilly, is an extensive exhibition of prettinesses and conceits, intended as designs for Christmas cards. Very few show anything more than a certain facility of execution, still fewer any real knowledge of the natural objects they depict. It is interesting to note that some of the fair artists (we presume most of the competitors are ladies) have found out that there are more things worth painting than Roses, Apple blossom, and birds'-nests. We are specially glad to see the Japan *Anemone* has taken the taste of the artists, but we are puzzled at the preference shown for the Sunflower. One artist has found out that the flowers of the *Sycamore* are beautiful, and has painted them well; and another has actually had the temerity to paint the *Macartney Rose*. We thank him or her for breaking away from the conventional Rose.

— HARDY CARPET-BEDDING.—The most fastidious critic could surely say nothing in derogation of this style of flower gardening, which is now being gradually introduced, and is generally, if not universally, received with favour. It is certainly an improvement on the system which gave us blazing beds in summer and bare beds in winter, to have the surface of the ground covered with a close, even carpet of some dense dwarf-growing plant, and over this surface to dot in symmetrically, at widish intervals, plants of distinct and effective character. The effect, when the contrasts are judiciously arranged, is very pleasing. The saving in plants, too, is very considerable. We lately noticed at the nursery of Mr. CANNELL, of Swanley, some beds being thus dressed up for the winter, and we then noted the following as being good and appropriate subjects for carpeting the surface, the dot plants admitting, of course, of a much wider range of selection:—*Lobelia repens*, said to be hardy, was very dense, with minute round leaves, of a light green. *Herniaria glabra*, near enough for comparison, was also very dense and even, but quite a dark full tint of green. *Veronica repens*, equally good in habit, was a light green. *Antennaria dioica* was a silvery-grey. *Sedum glaucum* was a greyish-green, very compact. *Sedum Lydium* was very close-growing, but a little taller, showing a close surface of starry points of a bright yellowish green. *Sedum acre aureum* with its golden tipped shoots, also showed itself to be

a fine and effective plant for working into arrangements of this kind, which may either comprise separate beds, each of one ground colour, or beds displaying a ground design of distinct compartments.

— **TREE CUTTING IN JERSEY.**—At the annual dinner of the Jersey Agricultural Society, held on the 14th inst., General NICHOLSON, Lieutenant-Governor of Jersey, in proposing success to the Society, called attention to the prevalent practice lately adopted by owners of land of cutting down trees on their grounds, in some few instances to obtain more land for cultivation, but in most cases merely for pecuniary purposes. He pointed out the danger arising from this practice, which was already beginning to bear its natural fruit. If this practice were much longer con-

very small, delicate, and polished like those of the Laurel. The flowers are small and white, or greenish-yellow. The Mahogany lumbermen, says *Colonies and India*, having selected a tree, surround it with a platform about 12 feet above the ground, and cut above the platform. Some 12 or 15 feet of the largest part of the trunk are thus lost; yet a single log not unfrequently weighs from 6 or 7 to 15 tons, and sometimes measures as much as 17 feet in length and 4½ to 5½ feet in diameter, one tree furnishing two, three or four such logs. Some trees have yielded 12,000 superficial feet, and at average prices have sold for 15,000 dollars.

— **THE OAKS.**—The collection of Oaks in the Arboretum at Kew is now becoming a feature of great importance. Some of the trees have been removed

would find it worth his while to make a voyage of discovery to this little-visited portion of the grounds. Of course he must not expect to see large trees. His successors may find them in due time, if in the meantime the smoke and smuts of evil-smelling Brentford have not destroyed them.

— **QUERCUS ALNIFOLIA.**—Under this name has recently been introduced an Oak of great beauty adapted for the south-western districts; or, better still, for many of our colonies. It is a native of the mountains of Cyprus at an elevation of 3000 feet, and has small ovate-oblong leaves, deep green above, and thickly clothed beneath with dense golden down. The acorns are long, obovate, and inserted in a cup like that of the Turkey Oak. The Oak in question is

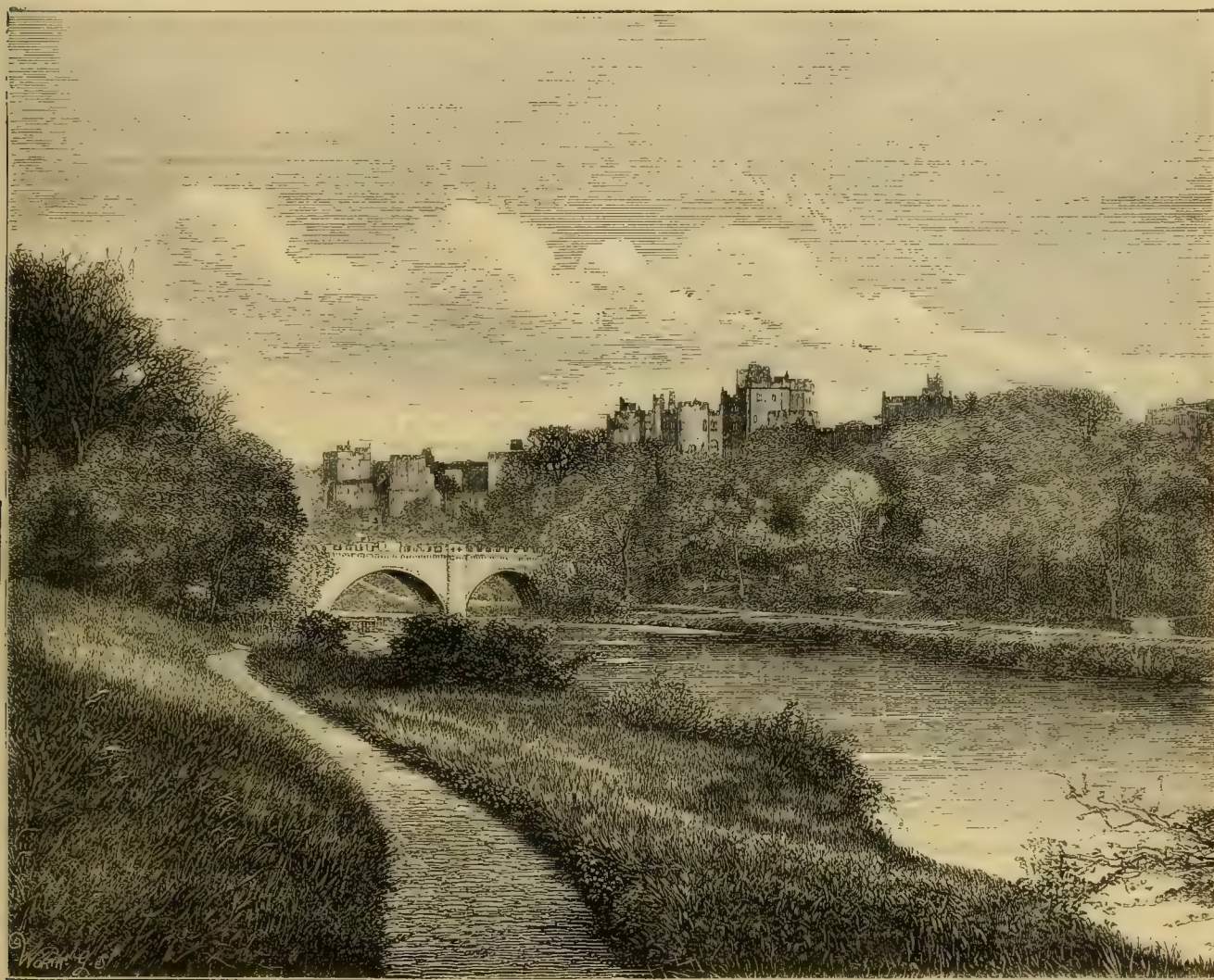


FIG. 99.—ALNWICK CASTLE, NORTHUMBERLAND. (SEE P. 523.)

tinued the result would be a complete revolution in the climatic influences which the island now enjoyed, and would prove very disastrous to agriculture, in so affecting the soil that they would reap the consequences in greatly diminished crops of vastly inferior quality. He hoped the Society would adopt means to enlighten farmers on this subject, and thus prevent the serious consequences which must otherwise ensue from their present misguided action.

— **THE MAHOGANY TREE.**—Full grown, the Mahogany tree is one of the monarchs of the forests of tropical America. Its vast trunk and massive arms, rising to a lofty height and spreading gracefully over immense spaces, covered with beautiful foliage, bright, glossy, light and airy, clinging so long to the spray as to make it almost an evergreen—present a rare combination of loveliness and grandeur. The leaves are

from their nursery beds and are planted permanently near the end of the great Sion Vista, between it and the river. The astonishing variety in form and colour of foliage must be seen to be appreciated. The American Oaks, such as *Q. coccinea*, *rubra*, *nigra*, *palustris*, will shortly be in the full glow of their autumnal tints. Then there are the many forms of the *Cerris* section—noble trees with elegant foliage; the pyramidal Oak, like a Lombardy Poplar; the cut-leaved Oak, *Q. Robur laciniata*, with leaves gashed and cut like those of a Fern, and now turning a rich golden colour; *Q. pannonica*, with leaves felted on the under surface; *Q. conferta*, one of the handsomest of the deciduous Oaks; endless forms of evergreen Oaks (*Q. Ilex*), and the noble Japanese forms, of which *Q. glabra* and *Q. cuspidata* are among the best. It would be a long catalogue that would include all the varieties to be seen here, but any one engaged in planting

figured in KOTSCHY's splendid work, *The Oaks of Europe*, t. 6, and in JAUBERT and SPACH's *Illustrations*, t. 56—in the latter case under the name of *Q. Cypria*.

— **WINTER BRASSICA.**—A market grower in a large way of business remarked the other day that the Messrs. VEITCH, in introducing the Autumn Giant Cauliflower, had seriously injured his trade. This Cauliflower, he explained, is now grown so largely, and in such a season as this holds on for such a long time, that whilst consumers can get it no other green stuff will sell. Probably this was only partially true, because immense quantities of green stuff—Cabbages, Savoy, Drumheads and Brussels—are constantly being taken into the market, and must sell somehow, although it is certain that the price is not a good one, and indeed barely remunerative. The

obvious answer to the remark quoted above is that our local market growers should plant less of the Cabbage tribe, and more of the Cauliflower. We do not find those who have done this grumbling, but rather congratulating themselves upon their foresight in largely growing a crop that this year is doing so well. The Cauliflower, however, will not last for ever; it will be exhausted presently, and then the Cabbage tribe may have its day. Under the influence of a singularly favourable season the growth of all kinds of winter greens has been rapid, and large breadths of Savoys, Cabbages, and Drumheads are practically six weeks too soon. They must be marketed or spoil, therefore they are rushed into the market when it is full of Cauliflowers, and the result is a glut. Growers may, in accordance with the experience of average seasons, plant in that light, but an exceptional season sets all their calculations awry. It is this year a fine season for the Cauliflower growers, and no doubt these will smile even if some of their brethren have reason to grumble.

— **KAEMPFER'S PLANTS.**—At the British Museum the other day—that is, in the New British Museum at South Kensington—we had an opportunity of seeing the herbarium made by ENGELBERT KAEMPFER in Japan in the last years of the seventeenth century, hard upon two hundred years ago. It was interesting to see among them the *Camellia*, the *Aucuba*, the *Sciadopitys*, the *Maples*, the *Weigelas*, the *Retinosporas*, the *Azaleas*, and a number of plants now familiar in our gardens. Some of these were figured and many described in KAEMPFER'S *Amanitates*, published in 1712. Others were published by Sir JOSEPH BANKS, in 1791, in his "*Icones Selecte Plantarum quas in Japonia collegit et delineavit Engelbertus Kaempfer.*"

— **DISEASED STRUCTURE IN PLANTS.**—We are pleased to see that so eminent a pathologist as Sir JAMES PAGET has made this the subject of an address to the British Medical Association at Cambridge, pointing out how much the physician has to learn from the botanist and the gardener in this particular, and this at a time when it is seriously proposed to expunge botany from the medical curriculum. We shall revert to the subject on a future occasion.

— **THE NATIONAL ROSE SOCIETY.**—At a meeting of the General Committee of the National Rose Society, held on Tuesday, the 12th, at the rooms of the Horticultural Club, some matters of importance were decided. The metropolitan show will probably be held at the Crystal Palace on Saturday, July 2; and considerable alterations have been made in the schedule, so as to give better opportunities for small growers to compete. The provincial show will be held at Sheffield on Thursday, July 14. An offer made by Manchester, to incorporate an autumn show of Roses with its International Fruit and Flower Show in September next, was accepted.

— **A NEW K.C.M.G.**—Sir DANIEL COOPER has just received the honour of K.C.M.G. for his colonial services, "and more particularly for the services rendered in connection with the Sydney Exhibition." Sir DANIEL COOPER was born at Bolton, Lancashire, on July 1, 1821. When very young he sailed for New South Wales, and was educated there till he was fourteen, and then returned to England and finished his education by a course of four years at University College, London. Mr. COOPER'S health at this period of his life was very uncertain, and after starting in business in Europe he sailed again for New South Wales, when he was at once connected with one of the most extensive mercantile houses in Australia. In 1847 Mr. COOPER was appointed a director, and in 1855 the President, of the Bank of New South Wales. In 1849 he was elected a member of the Legislative Council of the colony, which was at that time the only legislative body, and again in 1853. Two years afterwards the Act was passed which gave the colony a constitution modelled on the English Parliament. In 1856, at the first election under the new constitution, Mr. COOPER was again returned, and was chosen first Speaker of the Assembly. In 1857 he was knighted. He resigned his office as Speaker owing to ill-health in 1860, and immediately afterwards, on the resignation of the Forster Government, he was invited to form a Ministry, but was for the same cause compelled to decline. Returning to England in 1861, he busied himself in looking

after the interests of the colonial wool growers in this country. Sir DANIEL received a baronetcy in 1863. He has ever since his return to England taken an active part in every movement tending to promote the welfare of the colonies. To horticulturists he is best known as an ardent lover of gardening, while his services as treasurer to the International Horticultural Exhibition in 1866 contributed very materially to the success of that unrivalled exhibition.

— **AUTUMN COMPOSITES.**—There is no lack of these in autumn; but, if choice has to be made, we should vote for *Silphium laciniatum* as the tallest and noblest, *Helianthus orgyalis* as the most remarkable with its linear arching leaves. These two want space, and are tall growers. Smaller in size are *Harpalum rigidum* and *Helianthus multiflorus*, of which latter there are two double forms, one with ligulate the other with central quilled florets. Of white kinds there is nothing to beat *Pyrethrum uliginosum*, which we are happy to see increasing in public favour. It may be seen in one of the gardens on the Embankment.

— **THE HEREFORDSHIRE "POMONA."**—The third part of this beautiful publication has recently been issued, and is fully equal in the beauty of its plates and the interest of its text to those that have gone before. It is not easy find fault with so excellent a publication, and if we hint at a defect it is in no carping spirit, but merely with a view of pointing out that the coarsely executed woodcuts are not by any means equal in degree of excellence to the other portions of the book. A cross section of the fruit should also be shown as well as a figure of the pips. The part opens with an historical and literary notice of the Crab, by Mr. EDWIN LEES. This is followed by a similar disquisition on the orchard and its products, cider and perry. In the course of this article the writer remarks that "the fruit districts of England in all ordinary seasons should afford the chief supply to the English markets," and so keep out American supplies. We do not think our American friends have the slightest cause for fear on this head, and if they will but pack their fruit properly they will continue to command a market here, to the advantage of the consumer generally, if not to the Herefordshire farmers. A better prospect opens out to them in the manufacture of cider and perry, to the improvement and development of which they may well turn their best attention. Incidentally the large quantities of potash and of phosphoric acid that Apples and Pears contain are mentioned, and two inferences are drawn—one that Apples and Pears are good for sedentary men, who work with their brains rather than with their muscles; the other that a capital fertiliser for orchards may be composed as follows:—Bone-dust, 1 part; pure dissolved bone, 1 part; kainit, 2 parts; charcoal dust or fine coal dust, 20 parts. The enumeration of the varieties figured we shall include in our list of Plant Portraits. No pomologist can afford to dispense with this beautiful publication.

— **PLANT AUCTIONS.**—Demand is the pivot on which supply is almost invariably hinged. No sooner does a demand for any obtainable commodity fairly set in than the supply is all but sure to be forthcoming. This is equally true as regards things that are wanted to gratify luxury or fancy as it is with regard to the ordinary requirements of everyday life. The cultivation of plants, especially such as come within the wide section that require to be grown under glass, has kept on increasing, and now the trade has reached a proportion which at one time could not have been dreamt of. The business of the old nursery establishments has kept continuously outgrowing their limits, and new ones by hundreds, taking the kingdom collectively, have sprung up in addition. With such a state of matters it is only in the nature of things that we find the disposal of plants by auction to be equally on the increase. There cannot be many acquainted with what has been going on in the gardening world within the last quarter of a century who are not familiar with the name of "STEVENS," or forgetful of the sensation caused amongst plant growers by the dispersion under his hammer now and then of a great collection, such as that of LODDIGES of Hackney, or others that had acquired a world-wide celebrity. Since then more than a few famous collections have changed hands at the noted King Street Rooms, where it is now a daily occurrence for hundreds of lots to pass through the auctioneer's hands, consisting of the various hardy as well as tender plants that go

to furnish an English garden at the present day. Amongst them there is a large contingent of the newest and rarest of recently discovered novelties, especially Orchids, which find ready purchasers. Here, as composed and orderly as the audience at a sale of adownsons, may be seen side by side noblemen, amateurs, and the leading nurserymen, with frequently a sprinkling of ladies, who form collections or deal in these plants, scanning and discussing the merits of the lots for disposal, which, with a few words from Mr. STEVENS, at no higher a pitch than that of an ordinary conversation, are speedily knocked down, and as speedily and safely packed for transmission by the indefatigable "CHARLES" and his well-trained assistants. To meet the greatly increased business the Rooms have recently been much extended by the purchase of the houses at the back, extending to Hart Street, which have been completely demolished, and their place occupied by roomy commodious buildings adapted to the present requirements. There is a spacious entrance in Hart Street, that will admit, if need be, of several vans loaded with plants being stood within the building out of the reach of frost, with a convenient raised stage round for unloading. Adjoining the principal room another has been added nearly equal in size and in like manner fitted up with stages that will hold an immense quantity of plants. The large room has been re-fitted, and had a new glass roof put to it, which at all times admits plenty of light, so that everything to be sold can be properly seen. Another important matter, alike for the well-being of tender plants in winter, and for the comfort of purchasers, is, that the room has been furnished with several rows of hot-water pipes all round, so that the temperature can be kept up to anything required. The whole of the premises extending from King Street to Hart Street, some 200 feet, is cellared underneath, affording storage space for almost an unlimited quantity of produce consigned for sale, such as bulbs and plants of all descriptions, which the ever-increasing demand brings forth. Truly, a wonderful place to the horticulturist is "STEVENS' Rooms."

— **XERANTHEMUMS.**—These represent a group of plants which the gardener finds most useful for cutting from during the summer. The purple, white, and yellow varieties have been denizens of our gardens for years past, and they deserve a high place among the old-fashioned things gardeners should not willingly let die. The three varieties named, all of which grow about 2 feet or so in height, represent the oldest types, and these have been supplemented by improvements representing larger, fuller, and more richly coloured flowers. The Continental seedsmen have produced a new striped form, in which the purple and white colours appear in stripes, but it is not so well fixed in its character as one could wish. In addition there are Tom Thumb types, in which the growth is considerably dwarfed. All the Xeranthemums come under the denomination of hardy annuals, and do well sown in the open ground, growing quickly and flowering freely, and lasting in bloom a long time. Their usefulness as everlasting is also great, and when the flowers are bleached and dyed on the Continent or at home they are of a rich crimson, a deep bright purple, and pale violet hues; while the white is much purer through the bleaching process, and the yellow is effective also. They are extremely pretty, and can be used in many ways for house and table decoration during winter.

— **COLCHICUMS.**—Let any one who wants to brighten up his garden in the autumn make a note of the Colchicums. A little border in Mr. WARE'S nursery is just now very striking. The handsome single form is *C. speciosum*; the admixture of lilac shading off into gold is unusual, and very beautiful, however contrary it may run to the affected aestheticism of the day. The double white variety is likewise particularly effective.

— **DOUBLE FLOWERS.**—In a short communication to the Académie des Sciences on the 4th inst., M. HECKEL attributes the formation of double flowers (from the replacement of stamens by petals) to long-continued self-fertilisation, and he proves his statement by adducing the results of some experiments made by him on *Convolvulus arvensis*, wherein he effected self-fertilisation for three generations, and in the third succeeded in producing double flowers.

It would follow that cross-fertilised flowers, or flowers fertilised by insect agency—all those, in fact, which are brightly coloured, sweet-scented, or honey-producing—ought not to become double, but they certainly do. We need not go further than the Rose and the Tuberosa for illustrations. Nevertheless, M. HECKEL's observation is a very important one, and one which we shall discuss more at length on another occasion.

— *EPILOBUM SERICEUM*.—This is a very pretty Willow herb, 2—3 feet high, with slender rod-like branches clothed, like the small lanceolate leaves, with white silky hairs. The flowers are borne in spikes at the end of the branches; each is about 1 inch in diameter, with four rounded rose-pink petals. It was still in bloom at Mr. WARE's nursery a few days since.

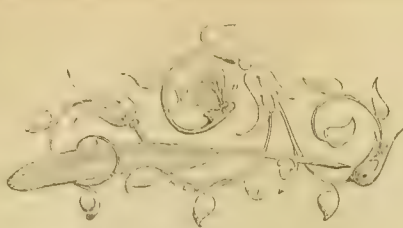
— *HYPERICUM PATULUM* is one of the best of the shrubby Hypericums, with glabrous oblong acute rather distant leaves, and terminal cymes of yellow flowers each about 1½ inch in diameter, with five unequal rounded sepals, and as many cup-shaped yellow petals twice the size of the calyx.

— *SCOLYMUS GRANDIFLORA*.—This is one of those remarkable plants that people with no appreciation to speak of, pass over as only a Thistle, forgetful that Thistles, as a race, furnish some of the noblest hardy flowers in existence. The present is a tall-growing upright species, with deeply lacinated leaves, with the teeth spine-tipped, and with leafy wings to the stem, also lobed and spined. The flower-heads are nearly sessile, 2 inches across, supported on each side by a broad leafy bract, spiny as usual, and surrounded by an involucre of closely packed oblong lanceolate leafy scales. The florets themselves are bright yellow, narrow, and strap-like. The plant is altogether very striking, and in Mr. WARE's nursery it looks as though it would bear even more knocking about than it has already this October.

— *ACONITUM AUTUMNALE*.—This is a grand variety, flowering in late autumn. It greatly resembles *A. japonicum*, but has paler flowers. They are noble plants these Aconites, but their virulently poisonous properties should never be lost sight of.

— THE WEATHER.—General remarks on the weather during the week ending October 18, issued by the Meteorological Office, London:—The weather has been very fine and dry in the south-western parts of the kingdom, and dry, though not nearly so bright, in all other parts of the country. Rather thick fog prevailed at times in the south-east of England and the southern part of Scotland. The temperature was slightly above the mean in "Scotland, E.," but below it in all other districts; in the "Midland Counties" the deficit was as much as 5°. The lowest reading recorded occurred at Markree Castle on the 12th, when the thermometer fell to 29°, but in most other places the lowest readings were registered on the 15th, and slight frost was experienced over the central and eastern parts of England. The rainfall was much less than the mean in all districts, and in "England, S.W." there was no rain at all. Bright sunshine was more prevalent at the south-western stations and over central and eastern England than it was during last week, but elsewhere the number of hours recorded shows a decrease. The percentage of total possible duration was greatest (45) in "England, S.W.," and least (6) in "Ireland, N." The wind during the first two days was light from the north-eastward over England and Ireland, and from the westward in Scotland, but by the 14th it had shifted to N.N.W. on nearly all our coasts, but still blew from the north-east or eastward in the south-west. On the 15th, 16th, and 17th very light and variable airs were experienced in all places, and at the close of the period a moderate or fresh westerly breeze prevailed in all parts of the country.

— GARDENING APPOINTMENTS.—Mr. WILLIAM CHALLIS, formerly Gardener to the late Sir RICHARD SUTTON, at Barton Court, Berkshire, has been appointed Gardener to Lord STANLEY OF ALDERLEY, at Alderley Park, Chelford, Cheshire.—Mr. SANDFORD, late Gardener to C. N. P. PHIPPS, Esq., Chalcot, Westbury, Wilts, has been appointed Gardener to Colonel C. L. WRIGHT, Watcomb Park, Torquay.—Mr. H. LYNCH, late Foreman to Mr. WILSON, Arundel Castle, has been appointed Gardener to Lord BEAUMONT, Carlton Towers, Selby, Yorkshire.



Home Correspondence.

Liquid Manure.—I can fully endorse what Mr. Rust has written concerning the good effects of house sewage upon all kinds of plants. I have used it here for more than five years on all kinds of fruit trees and Vines, Peaches, Strawberry plants in pots and in the open ground, Pine-apples, Melons, Cucumbers, French Beans in pots, Chrysanthemums, Roses, Camellias, hardy Azaleas, Rhododendrons, and all kinds of vegetables. All our drains from the house and stables are carried into a large well, over which is fixed a large force-pump. We have 2-inch cast-iron pipes laid all over the gardens, with stand-pipes 2 feet high on which to screw the hose. We can water six vineries, Peach-houses, and a long orchard-house 300 feet long, without making that unpleasant stinking mess inevitable where water-carts are used. We discontinued that system last year, and under this new arrangement two men and a boy can water a great number of houses and plants in half a day, more than they could in two days on the watcart system. I think if Mr. Rust could see this arrangement he would send both his water-carts to the farm. It would give me great pleasure to show it to him or any other gentleman who may favour me with a visit. *William Smythe, The Gardens, Basing Park, Alton, Hants.*

Doyenné Boussoch Pear.—I read your notice of the Doyenné Boussoch Pear, and endorse your views as to its being a very desirable kind to cultivate. We have two trees of it on a south, the other on an east wall, which invariably yield us an abundant crop, always fine in quality. Growing in different aspects the fruits give us a succession through October to the third week in November. The soil here is a very light sandy loam, with red sand and gravel for subsoil. *D. C. Powell, Powderham Castle, Devon.*

Lilium auratum at Fortbreda, Belfast.—Some bulbs of this Lily were planted at this place, the seat of T. D. Crawford, Esq., in the spring of 1877, in beds with Roses. From that time up to the present they have received no protection further than that afforded them by the mulching of the beds in winter. This season, one stalk, measuring 4 feet 9 inches in height, which grew with a flat stem, measuring 6 inches in breadth across the top, bore the enormous number of 242 blooms. Another, 3 inches shorter, bore forty-six blooms. The greatest height attained by any of the plants was 7 feet. One stalk still in flower (October 7) is 6 feet high, and has fifty-nine blooms; also a clump of six stalks gives 166 blooms; another clump of four stems has seventy-five. These are only a few of the most noteworthy, the entire collection being quite remarkable for the number of blooms produced taking into consideration this northern climate. *Samuel McVivie.*

An Old Purple Potato.—Your paper of the 9th inst. contains a notice of the American Purple Kidney—"a double purple-skinned tuber, having white flesh without any discoloration." So far back as 1836—1840 I was at school at Welling in Kent, and there we had in use a dark purple-skinned and purple-fleshed Potato. It was extensively grown there by our master for school use, and when once eaten was preferred by us boys to the ordinary white Potatoes. It was said to have been brought from South America. The Potato when cut was dark all through, though not so dark towards the centre. It was a roundish, rather roughish-skinned Potato, and very mealy. I have never been able to hear of them elsewhere. *J. A. C.*

The Inlaying or Heeling-over of Broccoli.—This used to be all but universal, but a succession of mild winters caused the practice to be given up. However, the last two winters have killed so many Broccoli that not a few have recalled the merits of the system of inlaying, and resolved to return to it. It lessens the size of Broccoli, but almost always insures their safety. The evil and the good alike result from the severe check that arises from this practice of inlaying. A good many of the roots are destroyed, and the plants are drained of most of their superfluous juices; this enables them the better to resist frost, and so escape destruction in winter. It is useful, however, not to carry the destruction of the roots too far. Hence the practice of heeling-over Broccoli needs considerable care and caution. There is no better method

than the removal of a spadeful or two of soil from the end of the row on the north side of the plants if possible, laying it up as a pillow for the stem. Next thrust in the spade up to the handle about 1 foot in front of the plant, then turn the spade towards the plant at the same time pulling the top. The plant will then be almost prostrate; remove another spadeful of soil nearly up to the next plant in the row, and place the earth so moved on the stem of the semi-prostrate Broccoli: and so on in succession till all are inlaid. Every plant will thus be afforded a compound protection—earth on its stem, and the stem, leaves and head of each plant protecting the one in advance of itself in the row. Inlaid and protected thus no ordinary frost can injure the plants. It is a great point to protect the stems of Broccoli, for perhaps more of them are injured through the stem than through their crown. During the past severe winter far more Broccoli were destroyed through stem freezing than by their crown destruction, in fact it was no uncommon thing to find the crowns sound, while the stems were so severely frozen as to be unable to support them. Inlaying ensures the absolute safety of the stems. The crowns are also safe while they remain prostrate; this, however, they do not always do; if laid too early in the ground often raising themselves again to a semi-upright position. In making this effort they become almost more tender than they were before, and are apt to be bit by the frost. After all, the best remedy is late inlaying, from the middle to the end of October being perhaps the best time. A slight protection of Fern fronds, Asparagus tops, or strawy litter is also easily applied to and is of great service for inlaid Broccoli. But this is seldom needed if the operation is not carried out too soon. As the recent floods have made Broccoli far more succulent than usual, it is hoped that no one will neglect the precaution of inlaying it at once. *D. T. Fish.*

Pears.—The Pears which have been unusually fine in quality this year, and of which we have had about one-third of a crop, are Williams' Bon Chrétien, Louise Bonne of Jersey, Marie Louise, Doyenné Boussoch, Napoleon, Passe Colmar, Vicar of Winkfield, Catillac, and Uvedale St. Germans. Of the latter kind many weigh 1 lb. each. *D. C. Powell.*

Veronica spicata var. corymbosa.—Amongst the many forms, mostly, I believe, hybrid, of garden herbaceous Veronicas which I have this year collected from different gardens, two or three bore the name of corymbosa. One of these, obtained, I think, from Mr. Ware, is especially desirable, from its unlimited capacity of flowering. It seems to be a variety of *V. spicata*, and has now been in full flower on my rockery for three months. The base of the plant is not more than 2 inches in diameter, and from this rise fifteen flower-stalks, each of them divided, like the one I enclose, into a dozen or more branches, these branches again producing lateral spikes. My fear is that it will flower itself to death. *C. Wolley Dod, Edge Hall, Malpas, Oct. 16.*

Root-Pruning.—I protest against the advice given by "A. D." at p. 505, who appears not yet to have learned that judicious root-pruning is attended with good results. His very words are contradictory to his theory. He says not all the root-pruned trees in the kingdom can show better than his. I take for granted that his trees do not want root-pruning by the very fact that they are in a fruitful condition, whereas if they did not ripening season, however favourable, would induce them to give satisfaction. "A. D." seems to overlook the tendency fruit trees have of making gross, sappy wood, which only produces wood-buds in the place of fruit-buds. Now, I ask him, will the best of seasons change his wood-buds into fruit-buds? If so, root-pruning is no longer necessary; if not, what course is to be taken under such circumstances but to lift entirely or root-prune? "A. D." says a good crop of fruit is the best root-pruner, but may I not add that a good crop of fruit is often the result of judicious root-pruning? *E. Morgan, The Butts, Harrow-on-the-Hill.*

— The article from the pen of Mr. D. T. Fish, which appeared in the same issue of the *Gardeners' Chronicle* as "A. D.'s" protest against my advice on root-pruning, is so much in support of what I wrote relative to that operation as to render any further remarks from me almost unnecessary. I would, however, point out to "A. D." that fruit trees are not grown for the sake of making timber, or it would appear strange, as he says it is, to treat them different to the Oak or any others, in mentioning which "A. D." has cut the ground from under himself, for, as is well known to any practical man, they do not come to a fruit or seed-bearing stage till they get old and cease to make vigorous growth. Who, I would ask, has ever seen a crop of Chestnuts, Acorns, Beech-mast, Walnuts, &c., from trees in the full flush of youth? And why are they barren? Simply, as I contend, because they make too much wood, which root-pruning, if judiciously carried out,

at once checks by cutting off the gross feeders, and thus causing the formation of blossom-buds. To thin or prune the top of a tree to induce these and make it fertile is useless, unless done in the summer by way of stopping, as the more you cut the more the evil is aggravated, for where one strong shoot is taken out five or six others start away at the base. Of course, if a tree could have plenty of room to spread and extend, it would, in the way of the Oak and others, become fruitful some day; but then, against this, gardens are limited in extent, and we do not plant Apples and Pears for posterity. If trees have the fruit-spurs on them they do not require any interference below, but if they fail from excess of vigour to produce these, then I say the corrective is to root-prune, and no time should be lost in doing it. The late Mr. Rivers knew as much about fruit trees as most men, and he was an advocate of the system, and if any one wants proof of its utility let them go to Mr. Dancer's and other market gardens round Fulham, where they will see what constant digging does in filling the ground full of fresh fibres. These are what are wanted, not great roots that run far and wide, sending up crude sap, resulting in the formation of coarse leaves and woody growth that never can ripen. *J. S.*

Figs.—I don't know whether it is usual or not, but I weighed many of the Brunswick Figs, and found that it only took four to weigh 1 lb. They were the finest I ever saw, and I must say that I never knew such a good season for outdoor Figs as the past has been. *D. C. Powell, Powderham Castle, Devon.*

Wintering Strawberries in Pots.—My system is much the same as that of Mr. Hinds (p. 503), with the exception that, to avoid so many cracked pots and otherwise to protect those valuable roots which Mr. Hinds and other practitioners impress upon us to fill the former with, I protect them with leaves. Having plenty of these at hand about the right time for storing up the plants for winter, we stand the pots on a coal-ash bottom, and as each row is placed in position they are packed closely with a good layer of leaves between them. I need not say—it is already known—in what a nice condition we always find the roots, and which are always moving. This plunging, when thoroughly done, allows of the leaves completely covering the rims of the pots. As I have no doubt Mr. Hinds is aware, we cannot all afford even to lose a score of 32-pots, but some will say a score of pots or a score of plants is nothing. I have seen a score of plants, however, every one of which had $\frac{1}{2}$ lb. of bright fruit on them, and I have seen four score of plants, and good plants too, with not a dish on them. These were wintered on the system which Mr. Hinds would wish his readers to avoid. We often read of so many thousands at So-and-so's place, and I am aware that a great number are wanted, but I question if every plant is made to do its duty. I have what is called in the language of nurserymen a cradle for wintering my earliest batch: this is a single board, about 1 foot wide, or to make it deeper is easily done with more boards, a row of slight posts up the centre, and an apex piece along the top, with a few strips or small rafters, also a piece or so horizontal, according to the length of the roof, which supports mats, or other covers at command; and an extra cover or so of mats do away with the necessity of putting anything directly on the crowns of the plants. This I never use unless the weather is severe or wet. Next to this I like shallow pits, but still use the plunging. In my opinion shelves or dry warm houses are the very worst places for wintering Strawberries on. *W. R. B. M., Oct. 15.*

—I can fully endorse all that Mr. Hinds has said respecting this subject at p. 503. We, like Mr. Hinds, winter our plants in their natural quarters—out-of-doors. Our *modus operandi* is as follows:—A few short piles about 15 or 18 inches long, are driven into the ground (a gravelled space set apart for this and other purposes), to which the necessary number of boards or slabs, 9 inches wide, to make a kind of shallow frame are nailed, the size being, of course, in proportion to the number of plants to be wintered. A little sifted coal-ashes are then spread over the gravel and the pots plunged to the rims closely together in the same material; and in the event of severe weather, like that experienced during the two preceding winters, they are slightly covered with some dry Bracken. This, however, has been removed on every favourable opportunity, and *vice versa*. And, notwithstanding the fact that the whole, ashes, pots, and soil, had been one frozen mass for weeks at a time, we have found very few pots broken—not a score out of over 2000—by the action of the frost. From this position the plants are taken as required to the potting-shed, where the bad leaves are removed, a little of the surface-soil is also removed, and replaced with some more of a suitable and nutritious nature; they are then stood on a bed of fresh leaves near the glass in a pit from which frost can be excluded, where they are gradually brought on preparatory to being taken to the position in which they are to fruit. The dry-

ing-off of Strawberry plants during the winter cannot be too strongly condemned, inasmuch as it (the drying-off system) is so thoroughly antagonistic to the condition under which the plant lives and flourishes in its natural state—in fact, it may be said to be an all-the-year-round moisture-loving plant. *H. W. W.*

Dandelion Leaves for Horses.—Birds of the air and beasts of the field and forest know by instinct what to choose as food, and never make a mistake; but the moment we take them under our protection and confine them as domestic animals or cage birds, then they require our special protection and kind consideration in food, physic and protection, and this brings me to the subject of Dandelion leaves for horses—our garden horses, which trudge all the summer backwards and forwards over our lawns, cart out manure, bring home our peat and loam, make the walks look bright with new gravel, cheerfully bounding off to the railway station, and a score of other things—doing the work of a dozen men. Many persons who know that the Dandelion is useful in medicine for man, are not aware that it has a very beneficial effect on the health of our horses, the black becoming sleek and shining like a mole, and the brown dappled like a deer. Therefore, to gardeners especially, I would say, when you dig up wild Dandelions in the garden in spring, or the roots of the cultivated variety in autumn for winter salad, remember the noble steed tied up by the head in the stable, and let him have the tops, and he will soon repay you by extra condition and energy. *J. Rust, Eridge Castle.*

Rendle's Acme System of Glazing.—Mr. W. E. Rendle has recently introduced another system of glazing which he calls his "New Patent Acme," and which he claims to be an improvement on his other methods, for the reasons (1) that the lap is greater, on account of the clip securing the glass being narrower; (2) the channels of the vertical bars are square instead of round, thus fitting into the other bar with exactness, and making a better support for



FIG. 100 - ACME GLAZING.

the glass; (3) the purlins can be made $1\frac{1}{2}$ inch wide instead of 2 inches, thus giving increased light and adding to the appearance; and (4) that the wood can be dispensed with if desired, as shown at K (fig. 100), making a roof indestructible both inside and out. In the illustration which Mr. Rendle has placed at our service the horizontal bar is shown at C, the vertical bar at E, the glass at G, a wood purlin showing the patent bar fixed at J, and the channelled iron purlin, dispensing with wood, at K.

Pruning or Spurring.—Although in your report of the recent meeting at South Kensington "spurring" and "pruning" are classed as the same thing, yet I think a very considerable distinction must be made between non-spurring and non-pruning. Spurring is a system of pruning, but it differs very materially from pruning; that consists simply of thinning, and it is in that sense that I wish to mark the distinction. If I had exhibited branches of Pears as evidence of the value of non-pruning I might have been classed as an advocate for the let-alone style of fruit-culture, but what I wished to show was that trees which have the branches simply thinned produce great crops, and probably much better than are seen on trees that have from year to year all the summer growth cut away from the branches until in the winter they resemble a series of pollarded stumps. The market growers about here simply thin, and as a rule get good crops of fruit. With hard-spurred trees the rule, as far as I have seen, is good crops of summer shoots. *A. D.*

Raspberries in October.—In reply to your correspondent, Mr. Orpet (p. 506), I beg to say that it is not by any means unusual to gather Raspberries throughout the month of October during favourable autumn weather. Since the beginning of the present month we have picked, up to this date (19th), fourteen good dishes of fine large fruit, the varieties being Belle de Fontenay and Merveille des Quatre Saisons Rouge. Of course your correspondent must be aware that from September to November is the proper time for these varieties (autumn-bearing varieties) to bear fruit, and that, unlike the summer-bearing varieties, they bear on the wood of the current year's growth;

and considering the fact that these varieties come into fruit at a time when dessert fruits in variety are somewhat scarce, the wonder is that they are not better known and more extensively cultivated in gardens. They pay well for good treatment—deep trenching, with a liberal supply of well-rotted manure, and planted in rows 4 feet apart and 6 inches in the rows. *H. W. W.*

Celery Rotting.—I am sorry to say my earliest batch of Celery corresponds in every respect with that of Mr. E. Morgan. To all outward appearance it could not look healthier, the foliage being remarkably fine and still quite green; but on digging it I find more than half of it quite unfit for use in any way. The later batch is at present sound. *R. Lye, Brooklands, Charnminster, Dorchester.*

Notes from the Pine-apple Nurseries.—Among Orchids in flower in these nurseries is a fine variety of *Oncidium unicorn* with sulphur-yellow flowers and reddish-brown spots. *Pilumna nobilis*, one plant with seven flowers, is a charming Orchid for a cool house: several other plants of this are showing flower. *Catasetum tabulare*, var. *brachyglossum*, is a singularly curious variety, having three spikes of flowers; two new varieties of *Miltonia* are both distinct and good, the one having white petals with pure white labellum, and a distinct bright crimson blotch in the centre; the other with white petals, banded and veined with rose, labellum bluish rose, with crimson blotch and veins. *Oncidium unguiculatum*, yellow, with light chestnut-brown spots; *O. tigrinum*, *O. pratense*, of which the many varieties vary in colour from bright shining chestnut to dull chocolate, seem well adapted for cold houses. *Anæctochilus Hendersoni* is a new variety of the dark-leaved section, having a distinct silver band in the centre and silver veins: this is a most pleasing variety and quite an acquisition. *Pourretia flexilis* is the best of greenhouse Bromeliads, with blue flowers and yellow anthers; this in general habit of growth strongly resembles the Utah Aloe, "*Agave utahensis*." *Begonia geranioides* is of neat compact habit, and one mass of its pure white blossom which, together with its profuse blooming qualities should render it a most desirable and highly decorative winter blooming plant. *J.*

Peach Sea Eagle.—As a really first-rate late Peach I can highly recommend this variety, as it is a strong grower and free bearer, producing fine and handsome fruit of an exquisite flavour. I do not know from what source it originated, but it appears to be one of those good things which have quietly crept into commerce without much trumpeting, and as such I commend it to the notice of those who are unacquainted with it. Two years ago we received a young tree from the nursery as a substitute for Salway, but it comes into use about a fortnight or three weeks earlier than that sort. Altogether I regard it as a most useful October Peach. *J. H., Heytesbury.*

The Acorn Crop.—In your paper of the 9th inst., p. 466, we read—"It is a curious fact that, whilst last year should have proved so very unfavourable to the production this season of hardy edible fruits, yet there should be found a marvellous crop of Acorns almost everywhere." Being desirous of sowing a few in our nursery, we asked a highly respectable seed firm in London to procure some for us, but they write us this morning that they find on inquiry that the crop is a failure, and they cannot get them. We would feel greatly obliged by your correspondent letting us know where this "marvellous crop" is to be found. *Ormiston & Renwick, Melrose.* [The marvellous crop is to be found all over the South of England, and we believe also throughout the Midland Counties. There has not been such a crop for years. See the note on the trees at Moor Park at p. 532. Eds.]

Dahlia Walter H. Williams.—Kindly allow me to endorse "Visitor's" remarks (p. 504) respecting the above-named Dahlia, which is one of the best, if not the very best scarlet in cultivation, also to supplement them by a few remarks of my own. On reading your correspondent's note in the *Gardeners' Chronicle* on Saturday morning last I decided upon an immediate pilgrimage to the Castle Street Nurseries, so that I, too, might have an opportunity, though somewhat late in the season, of seeing the subject of this communication, of which I had previously heard much from local and other growers who had been, as was their wont annually, to see the far and justly famed Dahlias of the Messrs. Keynes & Co. By way of giving your readers—Dahlia growers in particular—some idea of what this Dahlia is, I need only state that it is of the Charles Backhouse type—that hitherto best of all scarlets—but is a considerable improvement upon that variety, being a better scarlet, and a finer formed and larger bloom, in addition to which the plant is constitutionally strong, a profuse flowerer, and the colour

and general appearance of the blooms being so thoroughly distinct from the numerous varieties by which they are surrounded as to specially attract the attention of the florist on his entering the Dahlia-ground. Amongst many other new and excellent varieties which are to be sent out next year with Walter H. Williams for the first time are the following varieties: *Sels*: Lady Wimborne, a beautiful rose-colour, and a very distinct variety; James Vick, a fine purple variety, of good size and form; Mrs. Dodds, a beautiful blush, and of fine form; the Hon. Mrs. Percy Wyndham, yellow ground, deeply edged with rose-purple. *Fancies*: James O'Brien, yellow, with crimson and reddish-rose stripes; Professor Fawcett, dark lilac, striped with chocolate; Lady Antrobus, red, distinctly tipped with pure white. *H. H. H.*

The Celery Maggot.—Mr. Morgan's note on rot in Celery reminds me to ask whether my experience of the comparative absence of the Celery maggot is general. I don't think I have heard any complaint respecting it this season. If this is the case it would be interesting to learn from entomologists the reason, if they are able to give it. Did the wet summer of 1879 affect the flies and maggots, or the winter prove severe enough to destroy the chrysalis forms in the soil? *A. D.*

Cabbage Broccoli.—In your report of the late committee meeting of the Royal Horticultural Society it is stated that I exhibited samples of my strain of Cabbage Broccoli Improved. I staged Cabbage Broccoli, but certainly did not designate it as being "improved," and shall be glad if you will kindly correct the mistake. I do not consider it improved, and if I did should be shy of using the word, as it has been abused too much for it to have any value in the estimation of gardeners. I once mentioned, in my correspondence with Mr. Gilbert, that I should call mine "improved," and advised him to sell his old thing at once. That is how improved came to be mentioned in connection with my strain, but whether Mr. Gilbert thought I was in earnest or not it is hard to say. *W. Iggulden, The Gardens, Orsett Hall, Romford.* [We copied the words "Cabbage Broccoli Improved" from the exhibition card placed with Mr. Iggulden's specimens, and he can scarcely so soon have forgotten the "chaff" which was bandied about the room with reference to the word "improved." *EDS.*]

Mammoth Gourds.—I have grown ten this year, the total weight of which collectively is 1100 lb., the largest being 145 lb. It is not every year that we can get them to this size. Last year I could not get one more than 60 lb., though they were grown on the same ground and with the same treatment. *James Clarke, Gr., Eyfield House, Andover, Hants.*

—I obtained a Certificate of Merit for Gourds some years since at St. James' Hall, and my Mammoth Gourd weighed 1 cwt. 1 qt. 14 lb., or say 154 lb., and the late Dr. Lindley kindly explained to me the edible and poisonous kinds. A friend of mine—Mr. McGill, of New Malden—grew one against me; his weighed 151 lb.: rather a sharp match. The sorts I should recommend to grow are the Mammoth Gourd, White Vegetable Marrow, Green Vegetable Marrow, Custard and Artichoke Marrow, Boston Marrow. These are the best and most suitable for table or culinary purposes. *J. M., Bagshot, Surrey.*

AGRICULTURAL CHEMISTRY.

(Concluded from p. 462.)

THE most striking points brought out by the foregoing illustrations are the following:—

First. Without nitrogenous manure, the graminaceous crops annually yielded, for many years in succession, much more nitrogen over a given area than is accounted for by the amount of combined nitrogen annually coming down in the measured aqueous deposits from the atmosphere.

Second. The root crops yielded more nitrogen than the cereal crop, and the leguminous crops very much more still.

Third. In all cases—whether of cereal crops, root crops, leguminous crops, or a rotation of crops—the decline in the annual yield of nitrogen, when none was supplied, was very great.

How are these results to be explained? Whence comes the nitrogen? and especially whence comes the much larger amount taken up by the plants of the leguminous and some other families, than by the Gramineæ? And, lastly, what is the significance of the great decline in the yield of nitrogen in all the crops when none is supplied in the manure?

Many explanations have been offered. It has been assumed that the combined nitrogen annually coming

down from the atmosphere is very much larger than we have estimated it, and that it is sufficient for all the requirements of annual growth. It has been supposed that "broad-leaved plants" have the power of taking up nitrogen in some form from the atmosphere, in a degree, or in a manner, not possessed by the narrow-leaved Gramineæ. It has been argued that, in the last stages of the decomposition of organic matter in the soil, hydrogen is evolved, and that this nascent hydrogen combines with the free nitrogen of the atmosphere, and so forms ammonia. It has been suggested that ozone may be evolved in the oxidation of organic matter in the soil, and that, uniting with free nitrogen, nitric acid would be produced. Lastly, it has by some been concluded that plants assimilate the free nitrogen of the atmosphere, and that some descriptions are able to do this in a greater degree than others.

We have discussed these various points on more than one occasion, and we have given our reasons for concluding that none of the explanations enumerated can be taken as accounting for the facts of growth.

Confining attention here to the question of the assimilation of free nitrogen by plants, it is obvious that, if this were established, most of our difficulties would vanish. This question has been the subject of a great deal of experimental enquiry, from the time that Boussingault entered upon it, about the year 1837, nearly up to the present time. About twenty years ago it was elaborately investigated at Rothamsted. In publishing the results of that enquiry, those of others relating to it were fully discussed; and although the recorded evidence is admittedly very conflicting, we then came to the conclusion, and still adhere to it, that the balance of the direct experimental evidence on the point is decidedly against the supposition of the assimilation of free nitrogen by plants. Indeed the strongest argument we know of in its favour is that some such explanation is wanted. Not only is the balance of direct experimental evidence against the assumption that plants assimilate free or uncombined nitrogen, but it seems to us that the balance of existing indirect evidence is also in favour of another explanation of our difficulties.

I have asked what is the significance of the gradual decline of produce of all the different crops when continuously grown without nitrogenous manure? It cannot be that, in growing the same crop year after year on the same land there is any residue left in the soil that is injurious to the subsequent growth of the same description of crop; for (excepting the Beans) more of each description of crop has been grown year after year on the same land than the average yield of the country at large under ordinary rotation, and ordinary treatment—provided only, that suitable soil conditions were supplied. Nor can the diminishing produce, and the diminishing yield of nitrogen, be accounted for on the supposition that there was a deficient supply of available mineral constituents in the soil. For it has been shown that the cereals yielded little more, and declined nearly as much as without manure, when a complex mineral manure was used, such as was proved to be adequate when available nitrogen was also supplied. So far as the root crops are concerned, the yield of nitrogen, though it declined very much, was greater at first, and on the average, than in the case of the cereals. As to the Leguminosæ, which require so much nitrogen, from somewhere, it is to be observed that on ordinary arable land the yield has not been maintained under any conditions of manuring; and the decline was nearly as marked with mineral manures as without any manure. Compared with the growth of the Leguminosæ on arable land, the remarkable result with the garden Clover would seem clearly to indicate that the question was one of soil, and not of atmospheric supply. And the fact that all the other crops will yield full agricultural results even on ordinary arable land, when proper manures are applied, is surely very strong evidence that it is with them, too, a question of soil, and not of atmospheric supply.

But we have other evidence leading to the same conclusion. Unfortunately we have not reliable samples of the soil of the different experimental fields taken at the commencement of each series of experiments, and subsequently at stated intervals. We have nevertheless, in some cases, evidence sufficient to show whether or not the nitrogen of the soil has suffered diminution by the continuous growth of the crop without nitrogenous manure.

Thus, we have determined the nitrogen in the soil

of the continuously unmanured Wheat plot at several successive periods, and the results prove that a gradual reduction in the nitrogen of the soil is going on; and, so far as we are able to form a judgment on the point, the diminution is approximately equal to the nitrogen taken out in crops; and the amount estimated to be received in the annual rainfall is approximately balanced by the amount lost by the land as nitrates in the drainage water.

In the case of the continuous root-crop soil, on which the decline in the yield of nitrogen in the crop was so marked, the percentage of nitrogen, after the experiment had been continued for twenty-seven years, was found to be lower where no nitrogen had been applied than in any other arable land on the farm which has been examined.

In the case of the experiments on the mixed herbage of grass-land, the soil of the plot which, under the influence of a mixed mineral manure, including potash, had yielded such a large amount of leguminous herbage and such a large amount of nitrogen, showed, after twenty years, a considerably lower percentage of nitrogen than that of any other plot in the series.

Lastly, determinations of nitrogen in the garden soil which has yielded so much nitrogen in Clover, made in samples collected in the fourth and the twenty-sixth years of the twenty-seven of the experiments, show a very large diminution in the percentage of nitrogen. The diminution, to the depth of 9 inches only, represents approximately three-fourths as much as the amount estimated to be taken out in the Clover during the intervening period; and the indication is, that there has been a considerable reduction in the lower depths also. It is to be supposed, however, that there would be loss in other ways than by the crop alone.

I would ask, Have we not in these facts—that full amounts of the different crops can be grown, provided proper soil conditions are supplied; that, without nitrogenous manure the yield of nitrogen in the crop rapidly declines; and that, coincidentally with this, there is a decline in the percentage of nitrogen in the soil—have we not in these facts cumulative evidence pointing to the soil, rather than to the atmosphere, as the source of the nitrogen of our crops?

In reference to this point, I may mention that the ordinary arable soil at Rothamsted may be estimated to contain about 3000 lb. of nitrogen per acre in the first 9 inches of depth, about 1700 lb. in the second 9 inches, and about 1500 lb. in the third 9 inches—or a total of about 6200 lb. per acre to the depth of 27 inches.

In this connection it is of interest to state that a sample of Oxford clay, obtained in the sub-Wealden exploration boring, at a depth of between 500 and 600 feet (and which was kindly given to me by the President of the Association, Professor Ramsay, some years ago), showed on analysis at Rothamsted, approximately the same percentage of nitrogen as the subsoil at Rothamsted taken to the depth of about 4 feet only.

Lastly, in a letter received from Boussingault some years ago, referring to the sources whence the nitrogen of vegetation is derived, he says:—

"From the atmosphere, because it furnishes ammonia in the form of carbonate, nitrates, or nitrites, and various kinds of dust. Theodore de Saussure was the first to demonstrate the presence of ammonia in the air, and consequently in meteoric waters. Liebig exaggerated the influence of this ammonia on vegetation, since he went so far as to deny the utility of the nitrogen which forms a part of farmyard manure. This influence is nevertheless real, and comprised within limits which have quite recently been indicated in the remarkable investigations of M. Schloësing.

"From the soil, which, besides furnishing the crops with mineral alkaline substances, provides them with nitrogen, by ammonia, and by nitrates, which are formed in the soil at the expense of the nitrogenous matters contained in diluvium, which is the basis of vegetable earth; compounds in which nitrogen exists in stable combination, only becoming fertilising by the effect of time. If we take into account their immensity, the deposits of the last geological periods must be considered as an inexhaustible reserve of fertilising agents. Forests, prairies, and some vineyards have really no other manures than what are furnished by the atmosphere and by the soil. Since the basis of all cultivated land contains materials capable of giving rise to nitrogenous combinations, and to mineral substances, assimilable by plants, it is not necessary to

suppose that in a system of cultivation the excess of nitrogen found in the crops is derived from the free nitrogen of the atmosphere. As for the absorption of the gaseous nitrogen of the air by vegetable earth, I am not acquainted with a single irreproachable observation that establishes it; not only does the earth not absorb gaseous nitrogen, but it gives it off, as you have observed in conjunction with Mr. Lawes, as Reiset has shown in the case of dung, as M. Schlösing and I have proved in our researches on nitrification.

"If there is one fact perfectly demonstrated in physiology, it is this of the non-assimilation of free nitrogen by plants; and I may add by plants of an inferior order, such as Mycodermis and Mushrooms." (Translation.)

If, then, our soils are subject to a continual loss of nitrogen by drainage, probably in many cases more than they receive of combined nitrogen from the atmosphere—if the nitrogen of our crops is derived mainly from the soil, and not from the atmosphere—and if, when due return is not made from without, we are drawing upon what may be termed the store of nitrogen of the soil itself—is there not, in the case of many soils at any rate, as much danger of the exhaustion of their available nitrogen as there has been supposed to be of the exhaustion of their available mineral constituents?

I had hoped to say something more about soils, to advance our knowledge, respecting which an immense amount of investigation has been devoted of late years, but in regard to which we have yet very much more to learn. I must, however, now turn to other matters.

THE CULTURE OF OSIERS.

"THE shoots of the yellow Willow (*Salix vitellina*) are more slender than those of the Osier, and being very tough, are especially well adapted for the purpose of the basket-maker; and there are other varieties which have thrown the common Osier a good deal out of general cultivation, some of them possessing considerable merit, the best variety of the *Salix viminalis*, or common Osier, being known by various names, as Snake Osier, Brindled Osier, Blotched Osier, and Speckled Osier, which are indeed all the same thing; but the appearance of Osiers varies very much according to the ground in which they are grown, being sometimes of a green, and at others of a yellowish-brown colour. The Velvet-topped and Apple-tree Osier follow next in order of appreciation, while the Long-skin closely resembles the ordinary Osier in appearance, but is of smaller growth, firmer and tougher, its wood being also heavier.

"The varieties grown on the banks of the Thames are mostly of a red colour, but it has been observed that the action of light has a great effect upon the colour of Osiers; in some seasons they are of a yellowish-brown, which may be regarded as their ordinary colour, and in others of a dull green; in fine sunny clear seasons they become of a bright red colour, in cloudy ones they turn a dull mahogany shade. Those called Rods and Willows by the London basket-makers comprise several varieties, which have got to be commonly cultivated, and comprise the kinds called the Skit Willow, the Godstone, or Hornrod, of which there are a couple of varieties; the Wire Hornrod, which takes its name from, and is esteemed for, its toughness; and the Water Hornrod, which is of very inferior quality, as is also the Yellow or Dutch Willow, which not only grows rough and twiggy—an objectionable habit for the basket-maker—but is of so soft a substance as not to bear soaking so well as the other kinds. We will afterwards speak of other varieties in detail; but in laying down an Osier bed it is necessary to choose the most profitable and useful varieties that can be obtained, as some kinds are comparatively worthless for manufacturing purposes, though all are extremely valuable in giving consistency to banks and embankments that are in danger of being washed away.

"*Laying Down an Osier Plantation.*—The best situation for an Osier bed is upon land that is subject to tidal overflow, and therefore not fitted for the growth of any other crop, and it should first be trenched about 15 or 16 inches deep. Sets are then cut of the kind it is desired to propagate, the sets being about 15 inches long, which are planted at various distances, according to the quality of the soil. Where the soil is light, and the supply of moisture imperfect, and likely to be interrupted, and the shoots of the plant are likely in consequence to be fewer and shorter, it is usual to place them in rows about 1½ foot apart, standing about 15 inches from each other in the rows, the sets being inserted in the ground about half their length in such soils and situations, the lighter kinds that are used for making small baskets answering best. If they were not planted

so thickly as this, instead of drawing one another up straight and slender, they would be apt to grow branchy and crooked, and thick and chubby next the stools.

"In stronger and richer soils the rows should stand 2 feet apart, and the plants 1½ foot asunder in the rows, for the strong plants will attain a height of 10 or 12, or even 13 feet; and if the same plan of closer planting were followed with these, there would not be sufficient space for all the shoots to ripen which the stool would throw out; and while a few of the leading ones would draw one another up very tall, they would obscure the action of the light upon the others, and being unable to ripen their wood, it would become soft and pithy, and unfit for the purpose for which it was designed, if grown for sale for basket-making.

"The sets are cut from the lower part of the shoots, and, in the case of the larger sorts of Osiers, are generally about the thickness of the little finger, and they strike more strongly than sets taken from the top end, which, although they will grow readily enough, will always throw out comparatively small shoots.

"Osiers grow to the greatest perfection on strong, rich and loamy soils, and they succeed very well on marshy land which consists of a mixture of peat. On the banks of the Thames in Berkshire, where the soil is light, and consists of a good portion of sand, the French, Goldstone, and a variety which is locally known by the sobriquet of Black Jack, do very well, the most luxuriant growths being upon soils that are situated on the banks of rivers of an alluvial nature, that are flooded by every tide—this being the case on the banks of the Severn, which is celebrated for its unusually high tides.

"Some of the largest and best Osiers are grown on the banks of the Thames and Kennet, in Berkshire and Oxfordshire, none perhaps exceeding those in size and bulk of crop that are grown near London, between Chelsea and Richmond, on the banks of the Thames. The soil is naturally rich in that area, and the lands are generally overflowed at high water, and the sediment which is left behind is equivalent to constant manuring, as from the traffic on the river about these parts the water is kept in a continuous turbid condition, and a top-dressing of rich mud is left behind upon each occasion.

"*The London Clay.*—The different qualities of the soil on the banks of the Thames are made clearly apparent by the varied growth of the Osier beds, Willows and Rods of excellent quality being grown as high up the river as Kingston and Ditton; but above, at Staines, Shepperton, Chertsey, Windsor, and Maidenhead, the soil changes, and the crops, though of considerable bulk, are far inferior in quality to those grown lower down, and can only be used for making the coarser kinds of hampers that are used for packing-baskets; but where the subsoil of blue London clay crops up, when the roots of the Osiers come in contact with it they invariably die off.

Osiers, to be most profitably grown, require a strong staple, with a compact subsoil that will retain the moisture which is necessary to the plants during the period of their growth, but they will not succeed upon strong clayey land that in summer time becomes hard, dry, and full of cracks, through which the moisture evaporates.

"*Varieties of Soil.*—Certain kinds of Osiers will, however, grow and do very well upon light lands, if the subsoil is moist with springs, as is often the case, for which such kinds as the Spaniard, the French, and the new kind are the best adapted; but the crop will always be found to be smaller, shorter, and less bulky than when grown in strong loam, the best situations for Osier beds being in low situations, when the water drained from the higher lands keeps them constantly supplied with moisture, although they may be grown on elevations where the land is springy, as well as on slopes, yet not so successfully.

"*Duration of Osier Plantations.*—Upon land best suited for their growth and development Osier beds will last for a very long time, with a little occasional mending where the standing crop has become defective. Seventy or eighty years is no uncommon period for a good Osier bed to last; but where they are grown upon the lighter soils, or in those situations that are only imperfectly supplied with moisture, their duration will only be for fifteen or twenty years, and to cause them to yield the most profit they will then need to be thrown up and laid down afresh. But by the banks of rivers, in those situations where there is an abundant supply of moisture, their duration is considerably greater.

"*Mending Osier Plantations.*—A few of the stools in an Osier plantation die off every year, and in some seasons this happens to a considerable extent, but they can be mended very easily, the chief casualties occurring when the winters, having been very mild, are succeeded by severe weather in March and April. In these unfavourable seasons it is by no means uncommon for two-thirds of the crop to die off, and stout shoots are found to make no effort to push out in the spring, this kind of weather being very fatal to Osier plants.

"When mending has to be performed, the largest and smoothest rods are chosen of the kind required, and their butt ends are cut in a slanting direction, and they are

inserted into the ground to the depth of 9 inches or so, by the side of the dead stools, the rod being inserted whole, and not cut into the form of a set, as in the case of making a fresh plantation. The object of doing this is to prevent their being smothered by the older stools, which would happen if they were cut; but being left of their full height they enjoy the benefit of light and sun for a great portion of the summer, before the others can grow high enough to interfere with them, but after two years they are cut back to the height of the other stools.

"*Cutting Osiers.*—Osiers for basket-making are cut every year, and a clear profit of £20 per acre is estimated to be obtained from good Osier beds. The proper time for cutting is between the fall of the leaf and the rising of the sap in spring. If the crop is cut late in the spring, it tends to weaken its future production; and although Osiers are sometimes cut before and after the period named, it is well to avoid this in general practice. Those who make a business of growing Osiers for basket-making sort them, after they are cut, according to their different sorts and sizes, separating the long and thick from the short and small ones, and the rough from the smooth Osiers. The stock that is intended for the manufacture of brown baskets is then dried and stacked, care being taken in drying them not to lay them too closely together, or they will heat, like a hay crop that has been insufficiently made, and they will then be useless for the purpose of basket-making, as the heated parts decay and become rotten, and the same consequence will arise if, after the Osiers have been dried and stacked, rain penetrates the stack, which it is therefore highly necessary to exclude.

"*The Preparation of Rods for White Baskets.*—Osiers that are intended to be made use of in the manufacture of white baskets need to have the bark stripped from off them. In order to effect this, after they have been properly sorted they are placed in wide and shallow trenches in an upright position, with their butt-ends resting in water, which should not be less than 4 inches deep. A rivulet with a gravelly bottom, where such is to be found, answers the same purpose equally well, and they are placed in an upright position, and secured there by posts and rails.

"When the sap rises in the spring they will begin to bud and blossom, much in the same way as if planted in the ground, and will be in full leaf about the beginning or the second week in May, at the same time throwing out rootlets about 1 inch in length. When these results take place the sap is then sufficiently raised to admit of the bark being removed, and this is effected by drawing the rod briskly through an instrument called a 'break,' which, pressing the bark, causes it to burst and separate from the rod.

"*Couching.*—When, however, the weather is unseasonably cold, which will sometimes happen to be the case, a difficulty is experienced in stripping off the bark thoroughly, a thin underlayer remaining attached to the rod, which is caused by the cold checking the flow of sap, so that the bark cannot be taken cleanly away. To remedy this recourse is had to a method called 'couching,' which is occasionally obliged to be resorted to, for otherwise the rods will present a brown and discoloured appearance, which will very much reduce their commercial value. This process consists of laying down the rods in a sheltered position that is well watered, and covering them over thickly with straw, or any other covering that will thoroughly exclude the external air. In a fortnight's time they will shoot in the same way that Barley does under the process of malting, and will 'spire,' as it is technically called, all over, when the bark will be found to separate freely. After this has been done they must be placed in an upright position against some railings, where the air can pass thoroughly through them, and be carefully dried; after which they must be stacked away in some building where they will be perfectly dry, and to which no moisture can have access. If they are stored away in a damp condition, or any water gets to them afterwards, they will become damaged.

"*Varieties of Osiers.*—The leading varieties of Osiers not before fully mentioned may be briefly enumerated as follows:—

"*The Spaniard, or Spaniard Rod.*—There are several varieties of this kind, some of a very excellent and useful quality, while others are of a very inferior description. The black-budded is a useful variety, that is made use of for finishing the rims and handles, and also the bottoms of certain kinds of baskets, while the Grey Spaniard is used for coarse brown packing-baskets, and is considered a tolerably good variety for such purposes, as well as the Brown Spaniard; but the Horse Spaniard is of very inferior quality.

"*The New Kind (Salix Forbyana).*—The new kind somewhat resembles the Spaniard in its characteristic of strength, being equally strong, while it is more pliable and easier to work.

"*The Gelster.*—The Gelster is also very similar to the Spaniard in its main qualities, and is of more tapering form, but the butt-end grows very thick.

"*The Green-leaved Osier.*—The Green-leaved Osier, or Ornard (*Salix rubra*), is considered an excellent and

tough variety when the bark is left on, and is thought the best kind to make use of in the manufacture of carboy baskets used by drysalsters.

"*The Broken Rod, Brozenard, or Silver Osier (Salix Hoffmanniana)*.—This is a somewhat short species of Osier, but of a firm quality, and good for certain purposes, as for eel weels, or baskets, and is silvery on the under side of the leaf.

"*The French, French Rod, or Real French*.—This variety is a good deal grown for small fancy basket-work, and in France is much used by wine-coopers for twigs for binding on the numerous wooden hoops that are placed round French wine casks. It is grown to a somewhat large extent in France, and derives its name from the fact of being almost universally used in that country.

"*The Hollander*.—The Hollander, which takes its name from having been brought originally from the Dutch coast, where it may be seen growing in large quantities, very much resembles the new kind in quality, though it differs from it in appearance.

"*The Bitter Ornard (Salix purpurea)*.—This variety assumes a slender form, and is tough, and well adapted, like all the other Ornards, to grow in wet land that is commonly covered with water. The Blunt-leaved Ornard (*Salix Lambertiana*) is an inferior variety, as well as the Rose Ornard (*Salix Helix*), and the Bastard French: these are all of a poor kind, and fit only for making the commonest hampers and fish baskets, being brittle, which causes them to break in the working, the snapped ends projecting outwards and inwards in an unsatisfactory manner.

"*The Stone Osier*.—The Stone Osier is another variety well adapted for fine basket-making, and is a good deal grown along the banks of the Kennet, where it is considered to be a very good soil.

"In France, where the niceties of Osier growing are more attended to than in England, on account of a greater demand for the small fancy baskets that are sold in large quantities; they have a system in some parts of the country, where very fine, slender Osier shoots are required, of cutting rods up into short pieces, and then laying them in drills a short distance apart from each other, the result being that the roots strike from several points of the buried surface, producing a number of slender shoots, an upright shoot springing from almost every eye. In England bulk and quantity are more generally aimed at, and a coarser trade in basket-making is followed to a greater extent.

"Osier growing is well worthy the attention of those who have land adjoining streams that is either periodically flooded, or too wet a description to produce ordinary agricultural crops. Many such waste tracts are to be seen in different parts of the country, where nothing will grow save sub-aquatic plants that are of little or no value, that might be profitably appropriated to the production of Osiers." From "*English Trees and Tree Planting*," by William Ablett.

Reports of Societies.

The Woolhope Fungus Foray.—The fungus hunters and fungus-eaters have for many years past held high festival in the old city of Hereford during the first week of October. It has become at length an established custom for all who are specially interested in Mushrooms and Toadstools to gather together in the West and compare notes, as well as, in combination, to scour the woods and fields within the domain of the Woolhope Club. The deeds of this Club in fungus-hunting are celebrated throughout Europe, and wherever a few enthusiasts are gathered together with such intent the Woolhope foray is recognised as an institution. This is due mainly to the earnest and hearty manner in which the work is accomplished. It is undertaken as a work and a duty, as well as a pleasure, and there can be no doubt of the fact that the Hereford mycologists enter thoroughly into the spirit of their fungus-hunting during the short period that it lasts. As a consequence every year some new facts are determined, some new species discovered, and the fungus flora extended. The only serious drawback is the unsettled weather which often prevails at this period of the year. And this season the traditions of the Club have been realised as fully as ever in daily drizzles, sometimes merging into a regular downpour.

Monday, October 4, was signalled by the arrival one after another of the Hereford visitors, until, as the appointed time for the evening meeting drew near, many had settled down in their quarters, and the rain commenced that steady precipitation which by daybreak the next morning had been registered as nearly 2 inches of rainfall. Some of the expected did not reach their destination until the following day, the muster including Messrs. Acton, Broome, Bucknell, Carrington, Cooke, Cornu, Howse, Perceval, Phillips, Plowright and Vize. The opening prospect was by no means cheering, although the barometer was much more depressed than the spirits of the fungus eaters who gazed at the dull starless sky, and revived each other's reminiscences of past forays when a dull beginning had a bright ending; and hopes for the morrow, which were never realised, accompanied the wearied travellers to their rest.

The morning of Tuesday, October 5, had been set apart for an excursion to Downton, but the rain had not

ceased when the time for the departure of the train for Ludlow drew near, and the telegraph was put in requisition to signify to the Ludlow friends that the excursionists had resolved to postpone their visit until the morrow, in the hope that the elements would prove more favourable to the enterprise after another twenty-four hours.

By this time it was evident that some of the most constant and persistent of the regular visitors would not be able to attend. Personal sickness in one or two instances was the undoubted cause, in others domestic affliction, and in two or three the heavy hand of time had pressed hard in the past year, and veterans of many years' experience were compelled to confess themselves no longer able to bear the fatigue and exertion of the Woolhope week. Expressions of sympathy with the absentees were heard all round, and these fraternal solicitations for a time imparted a serious and thoughtful expression to countenances already somewhat depressed by the atmospheric conditions. The party adjourned to the Free Library, where some objects of interest had already arrived, and the morning was devoted to their examination. Mr. Renny had sent from Switzerland living fungi unknown in this country, such as *Lactarius lignyotus*, *Polyporus ovinus*, *Hydnum geogenum*, and several others. Mr. Plowright had brought from King's Lynn his splendid Geaster coliformis, which had not been found in this country for half a century until he obtained it this year (see *Gardeners' Chronicle*, p. 439) [but see Mr. Curry's letter at p. 506]. Mr. Bucknell brought from the neighbourhood of Bristol some sixteen rare and interesting fungi, amongst which one which appeared to be the variety *lilacinus* of *Agaricus* (*Lepiota*) *seminudus*, regarded by some as a distinct species. Mr. Howse exhibited *Hydnum scrobiculatum* and *Polyporus cuticularis*. Mr. English sent from Epping *Telephora multizonata*, and Dr. Cooke brought from the same locality *Agaricus ericeus* and *Agaricus udus*, the latter being new to the British flora. Rev. J. Stevenson also sent *Torrubia capitata* from Scotland, and a box of specimens of the interesting Geaster fornicatus was sent from Worcester. The examination of these gave employment throughout the morning, and as the rain had ceased by noon, a small party resolved upon a trip to Dinedor, and about eight, with baskets and umbrellas, started at half-past one for the old camp, and thus commenced the excursions of the week.

It is needless to say that the ground was saturated, that the few fungi which were to be seen were almost unrecognisable. Here and there the cap of an *Agaric* had fallen from its stem, and lay upon the ground like a dirty pat of butter, only to be taken up with a spoon. Only the firmest and least absorbent species could submit to be touched, but of these a sufficiency were collected to redeem the excursion from failure; and despite the most unfavourable circumstances, no one returned without something, amongst which was Geaster rufescens, some species of *Lactarius*, and a few of the ordinary fungi which find a place on the tables at Hereford from year to year. One of the most interesting species found on this occasion was an old log covered with a white *Corticium*, as if with a crust. This was *Corticium lactescens*, which when cut or broken exuded a white milk, in the same manner as some species of *Lactarius*. As far as we are aware, this is the only milky species of *Corticium* known. Some kinds of *Sterium*, when wounded, turn reddish in colour, as if bleeding, and at the same time a thin serum flows from the wound, but in *Corticium lactescens* the juice is decidedly milky, like that of the Spurge, and somewhat acid. The whole fungus becomes dark, horny, and cracked all over in drying, and then bears no resemblance to the living plant.

As one result of the experience of this week it may be noted here that the number of species seen was very small, and of these the individuals were by no means numerous. Certain of the commonest species were entirely absent; only one small cluster of *Agaricus melleus* was seen during the week, and this species is generally so common as to be voted a nuisance. *Agaricus fascicularis* and *Agaricus sublateritius*, almost equally common at other times, were amongst the rarest this season. Very few Hygrophori could be seen. *Lactarius* and *Russula* were the most plentiful. Scarcely a *Cortinari* could be found, but *Polypori*, and especially the large and ligneous species, were more abundant than usual, even in the best of years, *Polyporus fraxineus* in one instance extending for some yards, and of *Polyporus spumeus*, the largest and finest specimens ever seen by the oldest Woolhopean. If we add to this the almost total absence of *Coprinus* we realise the principal features which characterised the mycologic flora of 1880 in the neighbourhood of Hereford.

Returning from this digression to our mycologists, we find them on Tuesday evening assembled at the residence of Dr. Bull, to recount the adventures of the day and lay plans for the morrow, which the slightly rising barometer encouraged them in this instance to decide in favour of Ludlow and Downton. These evening *réunions* are habitually maintained through the week, but on the present occasion they were utilised more than heretofore for the communication of papers and discussion on fungological topics, varied agreeably by one or two other subjects of general or special interest. Without detailing too minutely the operations of every evening we may record that the Rev. J. E. Vize read a paper on *Spirulina*, correcting an error into which he had fallen last year. This was supplemented by some remarks on *Spirogyra nitida*, another freshwater Alga. Mr. C. B. Plowright described some observations which he had made on the dispersion of the sporidia in *Morchella*. Mons. Cornu gave a most interesting general account of the *Phylloxera* of the Vine, its habits, destructive character, and the means adopted to check its ravages. Dr. Cooke exhibited and commented on some curious abnormal forms of ligneous fungi. One of these was a tropical

Lenzites, which had grown in the usual manner and developed its hymenium on the under surface. When the tree on which it grew was thrown down the surfaces were reversed and the upper surface became the under, upon which a new hymenium was developed, so that the entire external surface was covered with the organs of reproduction. It was remarkable further that although the first or normal hymenium had the characters of a *Lenzites*, the abnormal hymenium resembled that of a *Dædalca*. Another specimen exhibited was that of *Polyporus lucidus*, a common fungus all the world over. This specimen had also become inverted, but instead of forming a new hymenium on the under surface the true hymenium was obliterated, except a small space which might be covered with the thumb, by the growth of an external cuticle similar to that covering the upper surface. Another specimen of an exotic *Polyporus* was notable for the growth of young *Polypori* in a parasitic manner on both surfaces of the parent.

Wednesday morning was by no means promising, but soon after 9 o'clock the majority of the mycologists were on their way to the railway station, and thence by train to Ludlow, the ride from Ludlow being undertaken in open carriages. Until the luncheon hour (half-past 1) there was no rain, and the woods were explored, despite the soft and juicy soil, with an ardour worthy of the Woolhopeans. With unabated zeal the luncheon baskets were emptied of their contents. All those who have made this excursion on previous occasions, know better than we can inform them what excellent cheer is so freely and liberally provided, and who are the entertainers, nor need we say why a wag should have called the luncheon "going into quarantine." These are mysteries known only to the initiated. No sooner had the party left the *salle à manger* than the rain commenced its pranks again, at first lightly, afterwards in a deluge almost worthy of the ever-to-be-remembered Whitfield day, when, some years ago, a Woolhope excursion to Whitfield was deluged by such a downpour as is rarely experienced. The appearance of the entire party as they drove into Ludlow after an 8 miles ride through incessant rain might have afforded some amusement to the inhabitants, had any been visible, but the streets were deserted, and the good people were too polite to gaze at us from the windows.

New, rare, and remarkable fungi were absent from the baskets, which nevertheless were by no means empty, for there was one *Strobilomyces*, some fine specimens of *Agaricus radicosus*, besides several species of *Lactarius* and *Russula*. It became manifest that the year was altogether an exceptional one, and as one of the best localities in the programme exhibited such a dearth of fungi, all hope of providing extra tables was abandoned in favour of a resolve to do all that could be done under the circumstances, to maintain the reputation of the Club.

The morning of the "foray" day was as gloomy as any of its predecessors, and although Thursday was fixed for an excursion to Holm Lacey, only a very few had the courage to brave the drizzling rain in search of some fungi to be cooked for dinner. As fortune favours the brave, so on this occasion sufficient was collected of that excellent, but generally despised, *Toadstool*, the *Coprinus comatus*, and another fungus allied to the Mushroom, *Agaricus hæmorrhoidalis*, to supply the tables at the "Green Dragon" in the afternoon. It is unnecessary to say that as the trains ran up and down at intervals during the day, all the excursionists took an early opportunity of returning as soon as they discovered the conditions under which their explorations would have to be conducted, or had collected what was requisite for the table. There really seemed to be some truth in the ditty which one of the party was humming to himself:—

"Oh, ever thus from morning hour,
When with the Woolhope Club I've strayed,
I've seen the rain a deluge pour,
The fungi sodden and decayed.
I never knew a foray yet
That did not all my hopes betray—
I always am so drenching wet
Upon a Woolhope day."

After a brief meeting for the dispatch of business, the election of President and the appointment of Thursday, October 6, 1881, for the next foray, the Club adjourned to the hotel for dinner. About sixty-five persons sat down, with the President at the head of the table, supported on one side by the High Sheriff of the county, and on the other by the Mayor of the city. The preliminaries of eating and drinking being disposed of, Dr. Bull addressed the company in his usual vivacious and happy manner. This was followed by a welcome for the visitors, and replies thereto in acknowledgment, when two papers were read in accordance with the programme, viz., one by Dr. Cooke, entitled "Mushroom Sauce," which dealt with many things in general, and nothing in particular; and one by Dr. Bull, on the "Sclerotium Disease of Potatoes." The character of the former may be guessed from the following paragraph:—"When sane men are found scampering over miles of country, like escaped lunatics, for the avowed purpose of collecting, smelling, and even tasting, the filthiest and slimiest of Toadstools that ever flourished on a dunghill; bringing into this respectable city whole basketfuls of the most disgusting stench that ever assailed the nose of a sanitary inspector, this monomania must be attributed to 'Mushroom Sauce.'" In the latter paper Dr. Bull summarised the Potato diseases with especial reference to the new form of disease found in Ireland, and attributed to a small *Sclerotium* in the haulms.*

At 8 o'clock in the evening a *soirée* was held at the residence of Thomas Cam, Esq., when the following communications were made:—"On the Species of Hypo-

* See *Gardeners' Chronicle*, p. 264.

myces found in Britain," by C. B. Plowright, followed by some supplementary observations by M. Cornu; and on "The Luminescence of Fungi," by Wm. Phillips, F.L.S., followed by a short discussion, and the exhibition in a dark room of a specimen of luminous wood, traversed by the mycelium of a fungus. In the course of discussion it was mentioned as a curious fact that all the species of luminous Agarics known are white spored, and belong to the same sub-genus, that of *Plowright*.

The programme for Friday was an excursion to Moccas Park in open carriages, which the weather permitted to be carried out, but, in revenge, a pelting shower accompanied the excursionists back to town in the evening, so that there might not be a single day during the week without some small contribution to the rainfall of the year. At Moccas the party was conducted over the most interesting gardens by Sir George Cornwall, and afterwards to the Moccas Oak and other remarkable trees in the park. This is considered one of the best hunting-grounds for fungi in the neighbourhood of Hereford, but on the present occasion these were conspicuous for their absence; not a single cluster of *Agaricus melleus* or a specimen of *Panus stypticus* could be found, but the larger *Polypori* were abundant. A large Ash which had been blown down had its stump completely surrounded by large specimens of *Polyporus fraxineus*. In other parts of the park *Polyporus fomentarius* was found and sliced up into sections, in order to exhibit the substance which, when duly prepared, is called "Amadou," or "German tinder." *Trametes mollis*, *Polyporus fragilis*, *Grandinia granulosa*, clusters of *Peziza aurantia*, from 6 to 8 inches in circumference; the *Nectria aurea* of Greville, the *Sclerotium* of *Eleocharis*, which, when matured, produces the *Claviceps nigricans*, were amongst the spoils of the day. Compared with its predecessors, this locality will be entitled still to maintain its pre-eminence; and, had the conditions been more favourable for perambulation, good baskets might undoubtedly have been filled, but the exhibition day was past, enthusiasm had cooled, and with wishes for "better luck next year," the return journey was undertaken.

Saturday at the hour of noon a railway train started for Chester *en route* for Coed Coch, bearing a compartment filled, beyond the boundary of comfort, with such of the fungus hunters as had been invited to try a few days in North Wales (the result was chronicled last week); others had already gone southward to their homes. There was no rain, the barometer was rising, there was blue in the sky, and joy in the hearts of the travellers whichever way their engine was turned. A screech and a snort, and then the train moved slowly onward, and swept the railway travellers towards their destination and the Woolhope Foray of 1880 into the past. M. C. C.

Scottish Horticultural Association: Oct. 5.—

The ordinary monthly meeting was held in 5, St. Andrew Square, Edinburgh, the President, Mr. M. Dunn, Dalkeith Park Gardens, in the chair. Mr. Charles Buchanan, Penicuik House Gardens, read a paper on the Pine-apple. He stated that a special glass structure was required for the proper cultivation of this fruit, it being subdivided into three divisions, the first of which to contain the young crowns, the second the succession plants, and the third the fruiting plants. Hot-water pipes were most suited for Pine-houses, as it was most essential that the grower should at all times command a good supply of heat. The most convenient shaped houses for Pine cultivation were half-span roofed. A good loamy soil, a good temperature and careful potting were most important points in Pine growing. The material best adapted for plunging was bark in a decomposed state. Oak leaves were sometimes brought into requisition, but care was needed not to use them before they were thoroughly decomposed. Pine plants did not require so long a time to produce fruit as was generally supposed, for by carefully attending to what he had stated fruit could easily be obtained when the plants were eighteen months old. They should always be kept in a growing state, say a temperature of from 70° to 85° in summer, and not less than 65° in winter. When the weather is cold very little air is needed, and watering should be done in the afternoon during the summer months, and in winter this work is best done in the forenoon. Mr. Buchanan preferred rain-water to any other, and said that liquid manure should only be applied after the fruit has set; syringing when carefully performed is also a great benefit to the plants. The cost of producing this fruit in the manner described is not nearly so expensive as was generally supposed, in fact they could be produced as cheap as Grapes. The kinds to grow were the Queen for summer use and the Jamaica for winter cultivation. He hoped that more Pine growing would be carried on in the country than what was found at present.

Mr. James Whitton, Coltness Gardens, sent a paper on "Fruits grown in the neighbourhood of Wishaw." He commenced by saying that selection ought to be the aim of every one in growing fruit. This was somewhat very often disregarded, and fruit growers often found that they had arrived at collection instead of the former requisite. Though most gardeners are alive to the necessity of a selection, how few are privileged to exercise it! When entering on their duties in a situation they may find on the place a collection of trees which has perhaps been there for ten, twenty, or thirty years, and have seldom fruited—in all likelihood they are unnamed; and unless he be wonderfully well versed in pomology he cannot determine the varieties until he sees them fruit, or should he try some mode of treatment to induce fruitfulness that itself takes a few years to accomplish, with the result of perhaps finding two-thirds of the collection unsuitable for the locality. If he proposes to re-

place them with young trees of more suitable varieties he may not be allowed to do so, some employers preferring the furnished appearance of their place, though the trees are barren, to the nakedness caused by the removal of the old trees. Such being the case, the first selection ought to be carefully attended to, so that disappointment may be reduced to a minimum. The object of the paper was to show what varieties have proved themselves suitable in the locality referred to, which was about 460 feet above sea level, with a stiff adhesive clay. The following Apples succeed grown as standards, viz., Stirling Castle, Lord Suffield, Keswick Codlin, Hawthornden, Ecklinville, Irish Peach, Tower of Glamis, Court of Wick, Paradise Pippin and Aitkins Seedling. The following are grown on walls in addition to the above:—Cellini, Blenheim Orange, King of Pippins, and Non-such. Pears grown on walls are Crawford's Early, Hesse, Jargonelle, Brown Beurré, Marie Louise, and Moorfool Egg. Plums are also grown on walls, the sorts being Orleans, Victoria, Nectarine, Jefferson's and Coe's Golden Drop, Magnum Bonum and Green Gage are also grown, but do not succeed so well as the others. The Morello was the only Cherry which did well. Mayduke is the only sweet Cherry now planted, and that very sparingly. Peaches, Nectarines, and Apricots are only grown under glass. Small fruits are grown much more extensively, they giving more satisfaction good heavy crops being the rule every season, with the exception of the Black Currant, which was sometimes subject to a disease locally known as the "knot" or "bud." Branches so attacked were placed on the table for the inspection of members. The opinion expressed regarding this disease was that it was caused by climatic influences. Samples of Apples grown by Mr. Whitton were laid on the table.

Messrs. Thos. Imrie & Sons, Ayr, received a Certificate for a new seedling Coleus, named "Imrie's Lady Alice." Mr. Wm. Priest, Newbattle Abbey Gardens, exhibited a fine plant of *Vanda cœrulea*, it having a spike with nineteen flowers upon it. Mr. Wm. Begg, Wardie Lodge, showed *Smilax maculata* in flower. Mr. M. Dunn, Dalkeith Park Gardens, exhibited a collection of seven sorts of Onion of great size. Some fine samples of Warner's King Apple, from Rossdhu Gardens, were exhibited. Mr. Robt. Mochrie, Northfield House, exhibited Dahlia blooms from plants which had grown in the open ground for thirteen years without being removed. Mr. Geo. Robertson, Mordington Gardens, exhibited a fine collection of herbaceous flowers; Dicksons & Co. exhibited *Fuchsia Dominiana*; Ireland & Thomson exhibited a new Cucumber; Mr. Robertson Munro exhibited a collection of single Dahlias and autumn flowering *Chrysanthemums*; Mr. John Wilson, Botanic Gardens, exhibited a seedling Date Palm, which had been found growing in an open field!

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, OCT. 20, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC REDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.		RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Barometric Pressure at 28 inches.	Highest.	Lowest.	Range.	Mean for Day.	Dew Point.	Degree of Humidity.	Average Direction.	Force.	
Oct. 11	30.22	29.57	53.1	39.0	14.1	45.7	—	4.7	38.6	77	N.E. 0.00
12	30.07	29.38	51.7	32.3	19.4	41.5	—	8.7	40.2	66	E.S.E. 0.00
13	29.91	29.21	52.0	41.2	10.8	47.0	—	3.0	45.5	95	N.E. 0.00
14	29.94	29.23	54.0	47.5	6.5	50.6	—	0.8	45.9	84	S.W. 0.00
15	29.86	29.16	58.2	43.4	14.8	50.0	—	0.3	44.8	83	S.S.W. 0.00
16	29.83	29.13	49.0	40.2	8.8	44.0	—	5.5	39.2	83	E.S.E. 0.03
17	29.41	29.30	38.0	29.4	8.6	33.4	—	15.0	32.3	95	N.W. 0.84
Mean	29.89	29.19	50.9	39.0	11.9	44.6	—	5.3	40.9	88	Variable. 0.87

- Oct. 14.—A fine day, generally cloudy. Cold. Haze at night.
 15.—Fine morning, dull till evening, then fine, cloudless at night. Cold day. Fog in morning.
 16.—A very dull cold day. Misty. Overcast. Fog in morning.
 17.—Overcast and dull throughout. Cold, foggy, and misty. Calm.
 18.—A fine bright day. Cool. Beautifully clear at night. Cold.
 19.—A dull day. Cold, especially at night. Frequent thin rain. Little sleet at times in evening.
 20.—Overcast and very dull till evening, then somewhat fine. Bitterly cold. Heavy rain and snow in early morning. Snow fell till 1 P.M., the flakes at times being very large.

LONDON: Barometer.—During the week ending Saturday, October 16, in the vicinity of the metropolis the reading of the barometer at the level of the sea increased from 29.71 inches at the beginning of the week to 30.28 inches by the morning of the 11th, decreased to 30.09 inches by the afternoon of the 12th,

increased to 30.42 inches by the morning of the 14th, decreased to 30.06 inches by the afternoon of the 16th, and was 30.08 inches at the end of the week. The mean reading for the week at sea level was 30.21 inches, being 0.58 inch above that of the preceding week, and 0.34 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 53½° on the 11th to 51½° on the 15th; the mean for the week was 54°. The lowest temperatures of the air observed by night varied from 31½° on the 15th to 48° on the 10th; the mean value for the week was 41°. The mean daily range of temperature in the week was 13°, the greatest range in the day being 20½° on the 15th, and the least, 4½° on the 10th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—10th, 50°·4; 11th, 49°·8; 12th, 47°·2; 13th, 49°; 14th, 45°·7; 15th, 41°·5; 16th, 47°; 17th, 47°; 18th, 47°·2; 19th, 47°·5; 20th, 47°·5; 21st, 47°·5; 22nd, 47°·5; 23rd, 47°·5; 24th, 47°·5; 25th, 47°·5; 26th, 47°·5; 27th, 47°·5; 28th, 47°·5; 29th, 47°·5; 30th, 47°·5; 31st, 47°·5.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 121° on the 11th, 109½° on the 12th, and 103° on the 13th; on the 10th and 16th the readings did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 29½° on the 15th, 32½° on the 12th, and between 34° and 37° on the other days of the week except the 10th, when the lowest reading was 48°; the mean of the seven lowest readings was 35½°.

Wind.—The direction of the wind was N.E., and its strength at the beginning of the week was strong, but gentle afterwards.

The weather during the week was fine and bright (except on the 10th and 16th) and cold.

Fog prevailed on the 15th and 16th.

Rain fell on the first three days of the week; the amount measured was 1.36 inch, 1.28 inch of which fell on the 10th inst.

ENGLAND: Temperature.—During the week ending Saturday, October 16, the highest temperatures of the air observed by day were above 60° at Truro, Cambridge, and Sunderland, and below 56° at Wolverhampton and Liverpool; the mean value from all stations was 58½°. The lowest temperatures of the air observed by night were below 33° at Truro, London (Blackheath), Cambridge, and Wolverhampton, and above 45° at Norwich and Sunderland; the general mean from all places was 37½°. The extreme range of temperature in the week was above 30° at Truro and Cambridge, and below 16° at Brighton, Norwich, Liverpool, and Sunderland; the mean range of temperature from all stations was 20½°.

The mean of the seven high day temperatures was above 56° at Truro, Plymouth, and Cambridge, and below 53° at Wolverhampton and Liverpool; the mean from all places was 55°. The mean of the seven low night temperatures was below 42° at Bristol, Blackheath, Cambridge, Wolverhampton, Nottingham, and Hull, and above 47° at Norwich and Sunderland; the mean from all stations was 43½°. The mean daily range of temperature in the week was above 16° at Truro and Cambridge, and below 9° at Norwich, Liverpool, and Sunderland; the mean daily range from all places was 11½°.

The mean temperature of the air for the week from all stations was 48½°, being 2½° lower than the value for the corresponding week in 1879. The mean temperature was above 50° at Truro, Plymouth, Norwich, and Sunderland, and below 45° at Wolverhampton.

Rain.—Very little rain fell during the week, except at Blackheath (London), where 1.36 inch was measured (1.28 inch of which fell on the 10th inst.); at Norwich the amount was less than half an inch; at most other places the falls were about one-tenth of an inch. At Wolverhampton and Liverpool no rain was measured; the average fall over the country was two-tenths of an inch. The weather during the week was generally fine, cold, and bright, but cloudy and misty at times.

Fog was prevalent at some places on the 15th and 16th.

SCOTLAND: Temperature.—During the week ending Saturday, October 16, the highest temperatures of the air observed by day varied from 59° at Dundee to 56½° at Edinburgh; the mean from all places was 58°. The lowest temperatures of the air observed by night varied from 25° at Paisley, 27° at Perth, 28½° at Glasgow, to 34½° at Greenock; the mean from all stations was 30½°. The mean range of temperature from all places was 27½°.

The mean temperature of the air for the week from all stations was 46½°, being 2° higher than the value for the corresponding week in 1879. The mean temperature was above 47° at Edinburgh, Dundee, and Leith, and below 44° at Paisley.

Rain.—Very little rain fell during the week. At Perth the amount was 0.07 inch; at Edinburgh, 0.06 inch; at Aberdeen, 0.03 inch; and at Leith, 0.01

inch. At Glasgow, Dundee, Greenock and Paisley no rain was measured; the average fall over the country was 0.02 inch.

DUBLIN.—The highest temperature of the air was 56°, the lowest 34°, the extreme range 22°, the mean 47½°, and no rain was measured.

JAMES GLAISHER, F.R.S.

Variorum.

HABITS OF THE COCKROACH.—Wherever it came from, the cockroach is a true Anglo-Saxon in its capacity for colonisation. In Britain it has established itself all over the length and breadth of the land, but is chiefly, if not altogether, confined to houses, inhabiting kitchens, sculleries, bakehouses, and such-like places, where plenty of food can be obtained. Nothing that is eatable (and many things that are not usually considered edible) comes amiss to this voracious animal, than whom it would be difficult to find a more omnivorous creature. In addition to almost every article of human food, such apparently unpalatable objects as woollen garments, the greasy rags used in cleaning steam-engines and other machinery, shoes and other articles of leather, and even books and paper, enter into its bill of fare. In warehouses, and on board ships, the ravages it commits are great; whole barrels and sacks of flour, corn, Rice, and other articles of a like nature, being sometimes consumed by it. Amongst other things, Cinnamon is said to possess great attractions for the cockroach palate, and there is a scandal to the effect that those whose business it is to reduce the Cinnamon sticks to powder are not very careful to separate the spice from the insects—which sometimes constitute nearly half the contents of the bags—but tumble them altogether into the mill. Though to its other crimes the cockroach does not apparently add that of cannibalism, the cast skins and the interior of the egg-capsules are said to be eaten by them, and other insects are occasionally devoured. Amongst the latter is said to be the common bed-bug, which, if true, is a point in favour of the cockroach. In habits *B. orientalis* is strictly nocturnal. During the day it hides in crevices in the floor, behind the wainscot, or in any other dark hole, where it lurks till the darkness and quiet of night tempt it forth. It seems to be fond of warmth, as it is always found in greater abundance near fireplaces and ovens. Though this or some allied species of cockroach was well known to the ancients, and termed by them *Lucifuge*, because they ran away from the light, it is not quite certain that it is not the sound of the footsteps of the person carrying the light rather than the light itself which alarms them. They run with great celerity; but, though quite able to ascend perpendicular surfaces, they do not, as a rule, when established in the kitchen, venture upstairs. Probably the larger supply of food, and greater warmth, tend to prevent them from wandering from the kitchen and its adjuncts. When seized they discharge from their mouths a brownish fluid of most disgusting and persistent odour, which, moreover, clings to any objects over which they have crept. This, in addition to their voracity, makes them most undesirable inmates of a house. *Dr. Buchanan White*, in "*Science for All*."

Obituary.

We feel assured that all lovers of the art of horticulture and floriculture will regret to hear of the death of Mr. ALEXANDER DICKSON, Sen., of the Newtownards Nurseries. Although a native of Scotland, he was to a great extent, and in many respects one of the first, if not the very first, pioneers of floriculture and horticulture in the North of Ireland. On Monday, October 11, he—having attained almost a decade more than is generally allotted to man—breathed his last at his residence, Church Street, Newtownards, surrounded by a numerous and sorrowing family. The late Mr. Dickson was a Lothian man, having been born on the Whitebog Farm, near Hawthornden, in the second year of the present century. When about fifteen years of age his parents apprenticed him to the gardening business at Dalhousie Castle, where the late Mr. Archibald was the chief gardener. Here he early evinced a marked aptitude for the selection of soils most suitable for the cultivation of such rare specimens of plants as had been sent home by Lord Dalhousie from Canada, of which dominion his lordship was at that time Governor-General. From Dalhousie Castle he transferred his services to the Comely Bank Nurseries, Edinburgh, and here he remained for several years, as the proprietor, Mr. Cunningham, succeeded in persuading him to devote his entire attention to the nursery portion of the business. He displayed a par-

ticular interest in Camellias, Epacris, and Heaths. Of the last-mentioned he was well known to have been the raiser of numerous seedlings, all of which were hybridised by himself, and concerning the pedigree of which he delighted to converse in later years. Mr. Dickson's next change, and one which brought him to a part of the British Islands which was his home for more than half a century, was to Ireland, to take charge of the gardens of the late William Montgomery, Esq., D.L., Greyabbey, County Down, where he remained until the death of his employer. At that time the leading nursery in Ireland was, beyond all doubt, that kept Mr. John Harvey, of Nurseryville, near Comber. The proprietor, who was most enthusiastic in the prosecution of his business, was a frequent visitor to the young Scotchman at Greyabbey, and having ascertained that Mr. Montgomery's establishment was to be broken up offered him the full management of his nursery. Here he pursued his old hobby, and immense quantities of Camellias, Epacris, Heaths, &c., appeared to grow beneath his magic touch. In 1836 he decided on commencing business on his own behalf, and founded the Newtownards Nurseries, the well-earned fame of which is spread over the floral and horticultural world. In his new sphere of life, for a short time, he did not come prominently before the public, as he was engaged at hard work, which, however, produced good fruits. At the early shows in the North of Ireland he was a keen and honourable competitor, and continued a staunch supporter for the advancement of horticulture until of late years. His family, who had grown up and imbibed their father's love for horticulture and competition, took his place. In this country town of Newtownards, when considerably advanced in years, he assisted in informing what is now, probably, one of the largest and best provincial horticultural society in any country. For the last ten years or more his health has failed, and he has now closed an honourable career at the age of seventy-eight. He leaves behind him in the business two sons—George, in the original establishment of Newtownards, and Hugh, at Belmont, near Belfast, where he commenced business on his own behalf in the year 1869. *Gardeners' Record*.

—We have also to record the death, on Sunday last, after a few days' illness, of Mr. THOMAS BUNYARD, at the advanced age of seventy-six. For many years previous to 1873 the deceased gentleman was head of the firm of Thomas Bunyard & Sons, nurserymen, at Maidstone, and was very widely respected.

Enquiries.

He that questioneth much shall learn much.—BACON.

MEASURING TIMBER.—Some few years back I saw a book for measuring timber, which was divided into columns, and had a tape along with it, with the quarter girths measured on it. Kindly say where it can be obtained. *Fitz.*

Answers to Correspondents.

EXHIBITING CHRYSANTHEMUMS. *Amateur* asks where the wooden supports he sees used in exhibiting cut blooms of Chrysanthemums can be obtained? We do not know.

FUNGUS: *J. W., Gordon Castle.* The fungus is a sort of subterranean Puff-ball—viz., *Scleroderma vulgare*. Your specimens are good examples of the small kidney-shaped variety of this common fungus.

GRAPES DECAYING: *W. S., Huyton.* The Grapes seem to be decaying from damp. There does not seem to be anything further the matter that is apparent to us.

INSECTS: *P. & M.* The white grubs, or larvae, found gnawing the roots of your Primulas are the young state of the destructive *Othiorhynchus sulcatus*, a brown weevil. The earth in your pots should be sifted, and fresh mould introduced. *I. O. W.—R. G. L.* The insects found beneath the mattress on a bedstead are dog-ticks, which occasionally breed in great numbers in rotten wood, which should be immersed in boiling water and then washed with turpentine. *I. O. W.*

NAMES OF FRUITS: *Wm. Mortimore.* 2, Reinette du Canada; 3, Golden Nonpareil; 4, Stirling Castle; 6, Moss Nonpareil.—*L. L.* 2, King of the Pippins; 3, Cox's Orange Pippin; 4, not known; 5, Pear Beurré de Capiaumont.—*Constant Reader.* We do not know for certain any of the fruits you have sent. They are a strange lot.—*W. D. & Sons, Stirling.* Kentish Pippin.

NAMES OF PLANTS: *A. R. L.* Stanhopea oculata.—*B. C.* 1, A variegated form of the common Horehound, *Marrubium vulgare*; 2, *Andromeda calyculata*; 3, *Gaultheria Shallon*; 4, *Eleagnus pungens* variegata; 5, *Jasminum Sambac*; 6, *Xylophylla longi-*

folia; 7, *Sisymbrium Sophia*.—*J. D.* We do not recognise the plant. Could you not send us a better specimen?—*J. R. H.* We do not recognise the plant, which, however, appears to belong to the Solanaceae.—*J. S.* *Quercus Mirbeckii*.—*W. C. T.* The tree is *Acer tartaricum*, and the herbaceous plant *Bocconia cordata*.—*T. J.* Scraps indeed! and utterly insufficient for naming. The Ferns are—1, *Pteris serrulata cristata*; 2, *Adiantum setulosum*; 3, *Adiantum formosum*; 4, *Polypodium Robertianum*.—*W. T. T.* We do not recognise the Balsam. Can you send a better specimen?—*P. H. G.* *Sarcanthus pallidus*.—*Geo. Cawston.* Specimen insufficient.—*Ribey.* 1, *Nicandra physaloides*; 2, *Aster Novæ-Angliæ*; 3, *Aster laevis*.—*S. B.* *Sarcanthus rostratus*.—*J. W. Silver.* *Brassavola grandiflora* (white flower), *Oncidium carthagenense*, *Diplacus glutinosus*, and a variegated form of *Sedum sarmentosum*, the *S. carneum* of gardens. Please put numbers to any future plants you may send.

SCALE ON PEACH TREES: *W. L.* We have no particular information as to the use of the Fir-tree oil on Peach trees, but as it can be safely used on a mixed collection of plants it may, probably, be used with perfect safety. In any case you might soon solve the question by trying it, according to the directions, on some few of the shoots.

STOVES: *O. J. R.* We have no great faith in petroleum stoves, but they might serve your purpose if carefully used. Hot-water pipes (of any thin metal) with a small boiler heated by gas (outside the building) would be far safer and better.

* * * Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—George Cooling & Son (Bath), Descriptive Catalogue of Roses, Fruit Trees, Hardy Shrubs, &c.—Osborn & Sons (Fulham), Supplementary Catalogue of Forcing Plants, &c.—John Tucker (Bridgewater), Catalogue of Fruit Trees, Roses, Ornamental Trees, &c.—Joseph Green & Son (Garforth, near Leeds), Catalogue of Hardy Trees and Shrubs, Roses, &c.

COMMUNICATIONS RECEIVED.—T. B.—R. B. & S.—P. H. G.—Camiee (if you think such Crabs are worth cooking, tell your cook to try again)—One who was too Young (we fear it would do no good to publish your present letter, but we should be glad to see the others that you promise to send).—E. J.—K. D.—R. D.—J. R.—A. F.—J. B.—G. W. D.—Visitor.—J. B. & S.—W. T. D.—D. T. F.—W. B.—J. C. M.—A. G. M.

Markets.

COVENT GARDEN, October 21.

Large quantities of American and Canadian Apples have reached us this week, but the bulk have been soft and wormy, showing little signs of keeping. Pines are in demand, and Peaches making high prices. Kent Cobs are in demand at higher rates. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 6	Peaches, per doz. ..	0 18 0
Cobs, per lb. ..	1 8	Pears, per dozen ..	1 6 2 6
Grapes, per lb. ..	1 4	Pine-apples, per lb. ..	2 0 5 0
Lemons, per 100 ..	6 10 0	Plums, ½-sieve ..	2 0 4 6
Melons, each ..	2 0 3 0		

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe, per doz. ..	3 0 4 0	Horse Radish, p. bun. ..	4 0 ..
Aubergines, per doz. ..	3 0 ..	Lettuces, Cabbage, per doz. ..	0 6 1 6
Beaus, French, p. lb. ..	0 6 ..	Mint, green, bunch. ..	0 4 ..
Beet, per doz. ..	1 6 2 6	Mushrooms, p. basket ..	1 6 2 0
Cabbages, per doz. ..	1 0 2 0	Onions, per bushel ..	5 0 ..
Carrots, per bunch. ..	0 4 0 6	— Spring, per bun. ..	0 6 ..
Cauliflowers, English, each ..	0 3 0 6	Parsley, per bunch. ..	0 4 ..
Celery, per bundle ..	1 6 2 0	Radishes, per bun. ..	0 2 ..
Chilis, per 100 ..	3 0 ..	Small saladina, pun. ..	4 0 ..
Cucumbers, per doz. ..	6 0 9 0	Spinach, per bushel ..	2 6 ..
Endive, per doz. ..	1 0 1 6	Tomatoes, per lb. ..	0 9 1 2
Garlic, per lb. ..	1 0 ..	Tunip, new, bunch. ..	0 4 ..
Herbs, per bunch ..	0 2 0 4	Vegt. Marrows, doz. ..	2 0 ..

POTATOS:—Kent Regents, 8s. to 10s.; Champions, 8s. to 9s.; Early Rose 6s. to 8s.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen ..	3 0 6 0	Euonymus, various, per dozen ..	6 0 18 0
Begonias, per doz. ..	4 0 12 0	Evergreens, in var., per dozen ..	4 0 18 0
Bouvardias, per doz. ..	12 0 24 0	Ferns, in variety, doz. ..	4 0 18 0
Chrysanthemums, p. dozen ..	6 0 12 0	Ficus elastica, each ..	1 6 7 6
Coleus, per dozen ..	0 9 0 0	Foliage Plants, various each ..	2 0 20 6
Cyperus, per dozen ..	6 0 12 0	Fuchsias, per dozen ..	0 12 0
Dracena terminalis ..	30 60 0	Myrtles, per doz. ..	6 0 12 0
— viridis, per doz. ..	12 0 24 0	Palms in var., each ..	2 6 22 0
Erica gracilis, per dozen ..	9 0 18 0	Solanums, per dozen ..	6 0 18 0
— caiffra, per doz. ..	8 0 12 0		

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3-0 10	Mignonette, 12 bun.	4 0-9 0
Asters, 12 bunches	9 0-12 0	Pelargoniums, 12	
Bouvardias, per bun.	1 0-3 0	sprays	1 0-1 6
Camellias, per dozen	4 0-9 0	— zonal, 12 sprays	6 0-9 0
Carnations, 12 blms.	1 0-2 0	Primula, double, per	
Chrysanth., 12 bun.	4 0-9 0	bunch	1 0-1 6
— 12 blooms	0 6-3 0	Roses (indoor), doz.	1 0-6 0
Dahlias, 12 bunches	6 0-11 0	— outdoor, 12 bun.	9 0-18 0
Eucharis, per doz.	3 0-4 0	Stephanotis, 12 spr.	9 0-15 0
Feverfew, 12 bun.	4 0-9 0	Tropaeolum, 12 bun.	1 0-3 0
Gardenias, 12 blms.	6 0-12 0	Tuberose, per dozen	1 0-2 0
Gladioli, 12 spikes	2 0-4 0	Violets, 12 bunches	1 0-2 0
Heliotropes, 12 sp.	0 6-1 0		

SEEDS.

LONDON: Oct. 20.—No movement in the Clover seed market can yet be reported. Samples of the new American red are now coming to hand, but these offer no temptation either in price or quality. Alsike and white are unchanged in value. There is a somewhat improved feeling for Trefoil. Rye-grasses keep firm. Good dry winter Tares find buyers at full rates: the condition of many of the parcels now coming forward is very poor. The early and sudden arrival of winter, coupled with the terrible havoc among Potatoes caused in certain districts by the recent heavy rains, have combined to greatly strengthen the market for blue boiling Peas, and a brisk demand, with advancing quotations, has been the result. There is also more inquiry for Haricot Beans. In Canary seed a large business has been doing at a substantial rise on late currencies. Hemp seed continues in dull request. English and Dutch Linseed is much dearer. Fine white Millet, for birds, can now be bought on moderate terms. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday the-trade in Wheat was firm, and the late advance in prices was steadily supported. In foreign Wheat there was a moderate amount of business at full quotations. The advance established from the lowest point varied from 3s. to 5s. per quarter. Good and fine malting Barley moved off steadily at fully late rates; grinding was quite as dear as on Monday se'night. Old malt was dull, but new sorts were in fair demand at full prices. Indian corn was firm, with an upward tendency. Good Russian Oats were in fair demand at late prices, but inferior barely made these. Beans and Peas realised extreme prices. For flour the late improvement in prices was well supported.—On Wednesday there was a firm trade for cereal produce, and the improvement of Monday was supported in all cases. English Wheat sold at full prices, and foreign remained firm. Barley, Oats, and Maize moved off steadily, while there was some inquiry for Beans, Peas, and flour at Monday's figures.—Average prices of corn for the week ending Oct. 16:—Wheat, 41s. 5d.; Barley, 35s. 2d.; Oats, 20s. 6d. For the corresponding period last year:—Wheat, 49s. 9d.; Barley, 40s. 10d.; Oats, 22s. 2d.

CATTLE.

At Copenhagen Fields on Monday prices for all descriptions of beasts were lower than at the close of last week, and a considerable proportion remained unsold. The trade in sheep was not good. Prices had to give way, and even then a clearance was not nearly effected. Calves sold about as of late. Quotations:—Beasts, 4s. to 4s. 8d., and 5s. 4d. to 5s. 6d.; calves, 5s. to 6s.; sheep, 4s. 8d. to 5s. 4d., and 6s. to 6s. 8d.; pigs, 4s. 6d. to 5s. 6d.—Thursday's cattle trade ruled firm. Both beasts and sheep moved off slowly, but at enhanced prices for choice breeds. Calves were steady.

HAY.

Tuesday's Whitechapel Market report states that there was a good trade for most descriptions at full prices. The supply was only moderate. Quotations:—Prime Clover, 100s. to 132s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 110s.; inferior, 30s. to 70s.; and straw, 30s. to 42s. per load.—On Thursday the rather short supply of hay and straw on sale met with a good demand, and prices were very firm for best kinds, as above noted.—Cumberland Market quotations:—Superior meadow hay, 105s. to 122s.; inferior, 50s. to 84s.; superior Clover, 126s. to 132s.; inferior, 84s. to 105s.; and straw, 33s. to 42s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state there is a good supply on sale, and the trade is slow, at the following currency:—Scotch Regents, 80s. to 90s.; Champions, 65s. to 75s.; Kent Regents, 100s. to 110s.; Victorias, 100s. to 110s. per ton.—Last week's imports into London comprised 13,792 bags from Hamburg, 2770 bags Antwerp, 311 bags 5109 casks Stettin, and 438 bags Ostend.

COALS.

The following are the prices current at market during the week:—East Wylam, 16s.; Ravensworth West Hartley, 14s. 9d.; Walls End—Easington, 16s. 6d.; Haswell, 17s. 6d.; Hawthorns, 16s. 9d.; Lambton, 17s. 6d.; Original Hartlepool, 18s.; Wear, 16s. 6d.; Tunstall, 16s. 6d.; Chilton Tees, 17s. 6d.; Tees, 17s. 9d.

Government Stock.—On Monday and Tuesday the closing price of Consols was 98½ to 98¼ for both delivery and the account. Wednesday's final quotation was 98½ to 99, and Thursday's 98½ to 98¼, for both account and delivery.

Now ready, in Crown Octavo, price 2s., Post-free, 2s. 3d.

THE HORTICULTURAL DIRECTORY FOR 1881.

Twenty-second Year of Publication.

Best endeavours are made to ensure the accuracy of this Work up to the time of going to Press.



Those who wish to possess a Copy should apply at once; the Work having a quick sale, delay might cause disappointment.

The HORTICULTURAL DIRECTORY is a complete Register of the Addresses of all the most important Establishments and persons connected with Horticulture in the United Kingdom, on the Continent, and in the Colonies. It is arranged in fourteen sections, and consists of—

- I. London Seedsmen and Florists.
- II. Nurserymen, Seedsmen, and Florists residing within the postal districts of the Metropolis.
- III. County List of the Nurserymen, Seedsmen, and Florists in England and Wales.
- IV. Ditto, ditto, in Scotland.
- V. Ditto, ditto, in Ireland.
- VI. Ditto, ditto, in the Channel Islands.
- VII. Alphabetical Lists of the Nurserymen, Seedsmen, and Florists in Great Britain and Ireland.
- VIII. County Lists of the Seats of the Nobility and Gentry in Great Britain and Ireland, their Gardeners, and the nearest Post Town.
- IX. Alphabetical List of the Seats in Great Britain and Ireland, showing the Counties in which they are situated, their Owners, and the nearest Railway Station, and distance from it.
- X. Alphabetical Lists of the Gardeners, and their full Addresses in Great Britain and Ireland.
- XI. List of the Botanic Gardens and Public Parks throughout the World, with their Curators and Superintendents.
- XII. List of Landscape Gardeners, Garden Architects, and Horticultural Builders and Engineers.
- XIII. List of the Botanical, Horticultural, and Floral Societies in Great Britain and Ireland, with the Names and Addresses of their Secretaries, indicating those that are in alliance with the Royal Horticultural Society.
- XIV. Nurserymen, Seedsmen, and Florists on the Continent.

JOURNAL of HORTICULTURE Office, 171, Fleet Street, London, E.C.

Roses.

CHARLES TURNER'S Descriptive CATALOGUE of his extensive collection is now ready.

Fruit Trees.

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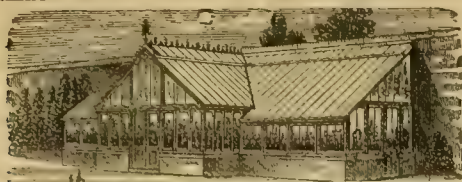
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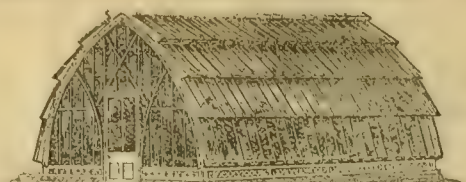
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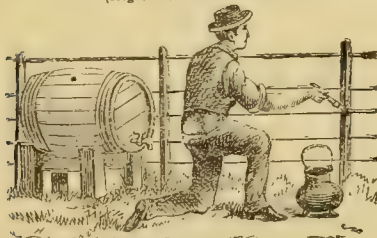
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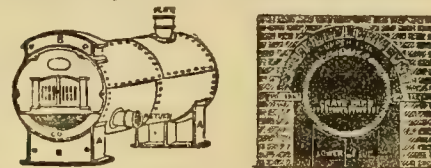
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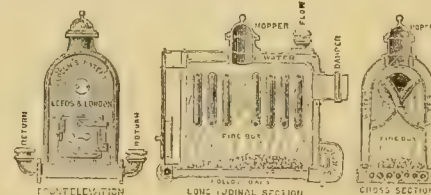
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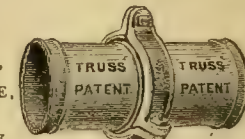
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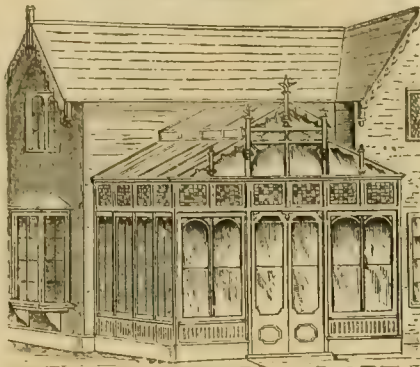
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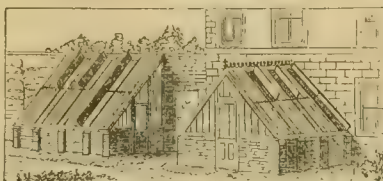
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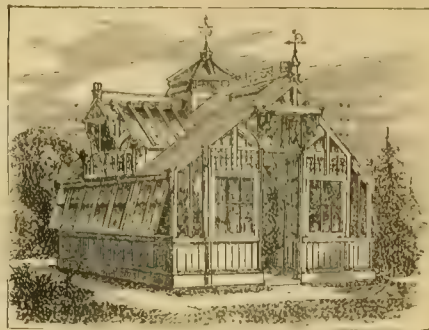
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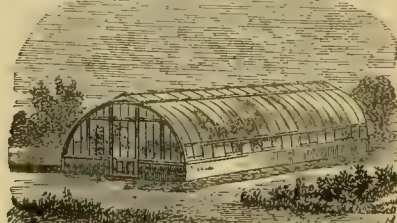
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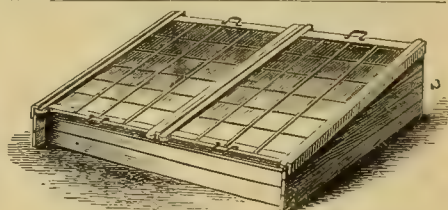


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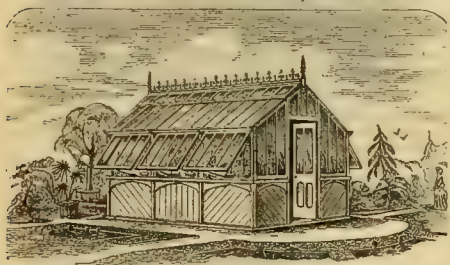
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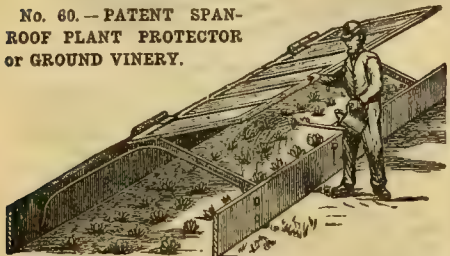
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BALDNESS,

Or for Weak, Thin, and Falling Hair.

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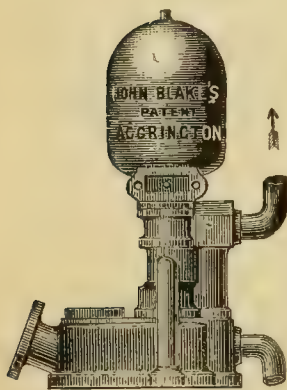
JOHN BLAKE'S PATENT SELF-ACTING HYDRAULIC RAMS,

*For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions,
Fountains, Farms.*

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

No Oiling or Packing Required.

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This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 ft.

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From V. F. BENNETT-STANFORD, Esq., M.P., *Pyt House, Tisbury, Wilts, August 23, 1880.*—"I have no hesitation in saying your Self-acting Hydraulic Ram and Apparatus for Extinguishing Fire, which you laid down here, including about 1 mile of pipes, are very satisfactory. The Ram forces upwards of 3000 gallons per day to a service reservoir holding 25,000 gallons at an elevation of 295 feet, being 70 feet above the roof of the house, from which reservoir the water is distributed to the house, stables, home farm, and several cottages; and in case of fire, four jets can be thrown on to the house from different sides at a great force and large volume. I consider the work has been done well and efficiently, and does you credit."

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March 1, 1880.*—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of the tower, 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

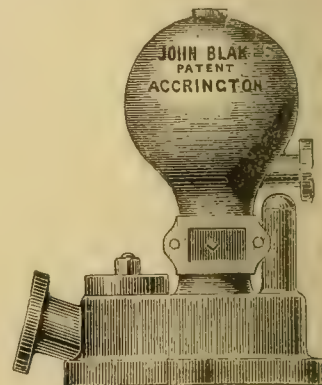
From Sir ROBERT MENZIES, Bart., of Menzies, *Rannoch Lodge, Rannoch, August 30, 1880.*—"The Hydraulic Ram you fixed for me to supply water to Rannoch Lodge and Camerburgh, two houses three-quarters of a mile apart, is a complete success. The extreme distance the water is carried is a mile and a quarter, and though the elevation of the two houses are different, there is a regular supply of seven quarts per minute to each house, which has never ceased since the Ram was set going, about three months ago. Your Ram took the place of one previously tried on the same spot, and which did not succeed, and was in fact a complete failure."

From Capt. GANDY, *Castle Bank, Appleby, February 11, 1880.*—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

BLAKE'S HYDRAULIC RAMS

have been supplied to the following amongst others:—

- | | |
|---|---|
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The Right Hon. the Earl of Crawford and Balcarres.
The Right Hon. the Earl of Derby.
The Right Hon. the Earl of Ilchester.
The Right Hon. the Earl of Romney.
The Right Hon. the Earl of Granard.
The Countess de Morella.
Lord Leaconsfield.
The Right Hon. T. Sothern Estcourt.
The Right Hon. R. More O'Farrell.
The Hon. George Kenyon.
Admiral Sir George Broke Middleton, Broke Hall, Suffolk.
Gen. Gerard Potter Eaton, The Pole, Cheshire.
Sir Henry A. Hoare, Stourhead, Bath.
Sir William Fielding, Feniscowles, Blackburn.
Sir Robert Menzies, of Menzies.
Sir Henry W. Ripley, M.P., Acacia, near Leeds.
Colonel Starkie, Lovely Hall, Blackburn.
Colonel Milligan, Caldwell Hall, Burton-on-Trent.
Colonel Towneley, Towneley, Lancashire.
Colonel Hargreaves, Maiden Erlegh, Berkshire.
Colonel Tremayne, M.P., Carclew, Cornwall.
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Captain Gandy, Skirgill, Penrith.
Captain Townshend, Wincham.
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The Rev. H. J. De Sallis, Portnall Park, Virginia Water.
The Rev. E. G. Edwards, Trentham, Staffordshire.
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S. S. White, Esq., Manor House, Wethersfield, Essex.
The Corporation of Blackburn.
J. Barnes, Esq., Contractor, Chatburn and Hellefield Railway.
The Executors of John Hargreaves, Esq., Burnley.
G. Redmayne, Esq., Brathay Hall, Ambleside.
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The Rev. Canon Bridges, The Avenue, Ewell, Epsom.
A. Stead, Esq., Woodley, Romsey.
John Rowe Bennion, Esq., Nursted House, Petersfield.
J. Spender Clay, Esq., Ford Manor, Surrey.
The Guardians of the Sheffield Union (New Workhouse).
Richard Mercer, Esq., Sandling Place, Maidstone.
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Chas. J. Edden, Esq., Baldole Manor, Hastings.</p> |
|---|---|



This Ram, for deep working wells, will force up one-third of the water passing through it.

RECENT TESTIMONIALS.

From J. SPENDER CLAY, Esq., *Ford Manor, Lingfield, Surrey, August 9, 1880.*—"In reply to your letter of inquiry I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6120 gallons per twenty-four hours, being 120 gallons above the quantity you guaranteed."

From the Right Honourable the EARL of ROMNEY, *56, Eaton Place, S.W., June 12, 1880.*—"Sir,—In reply to your inquiry, I have pleasure in stating that the Hydraulic Ram which you erected for me at Gayton does its work remarkably well, and is a great success. I think the work is especially creditable to you on account of the very small fall of but 3 feet with which you had to deal, and I shall always be glad to recommend you.—Yours faithfully, ROMNEY."

From JOHN ROWE BENNION, Esq., *Nursted House, Petersfield, August 25, 1880.*—"I have much pleasure in saying that the two Hydraulic Rams you put down for me, and which are supplied from a spring now yielding in this dry season only 3 gallons per minute, are sending up an ample supply of water to my house and the home farm, distributing the supply through more than 2000 feet of pipes and to an elevation of 137 feet. Of this result I think you have as much reason to be proud as I have to be satisfied."

From EDWARD SINGLETON, Esq., *Preston Deanery, Northampton, July 9, 1880.*—"The Hydraulic Ram you fixed here for me is very successful. It sends up more than sufficient water for a hundred head of cattle, besides horses, also feeds a steam engine, and during two severe winters we have not had a pipe go wrong with frost as I quite expected they would do. No farmer who requires abundance of water should be without one."

From Col. TREMAYNE, *Perran-ar-Worthal, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons per day to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 357.—VOL. XIV. { NEW SERIES. }

SATURDAY, OCTOBER 30, 1880.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

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J. H. LEY, Royal Nursery, Croydon.

FOR ABSOLUTE SALE, having to give up the land, strong transplanted Deciduous TREES, up to 10 and 12 feet, 4s. to 6s. per dozen; Standard APPLES, from 6 to 8 feet, 6s. to 9s. per dozen, or from 45s. per 100; other Nursery Stock correspondingly cheap. For LIST apply to
T. L. MAYO, Nurseryman, Hereford.

Raspberry Canes.
MR. R. BATH, Crayford, Kent, begs to announce he is now booking Orders for his famous "FASTOLF" CANES, which will be ready for delivery in a few weeks, at 4s. per 100. Cheque or P.O.O. with order.

RHUBARB FOR SALE.—Extra strong Roots, for Forcing and Planting. Price, per dozen, 100, or 1000, of
S. BIDE, Alma Nursery, Farnham, Surrey.
S. B. has also a large stock of HOP PLANTS to offer.

POTATOS.—Covent Garden Perfection, true, 10s. per cwt.; Schoolmaster, 12s. per cwt.
LAURELS, Portugal, fine plants, 2½ feet, 40s. per 100.
R. B. M'COMBIE, Christchurch.

SUTTON'S MAGNUM BONUM.—For Sale, a large quantity of the above (the best Potato in cultivation), true to name, and perfectly free from disease. Sample Cwt. Bags, 6s. 6d. each; cheaper by Ton or Truckload.
J. T. SMITH, Potato Merchant, Wisbech, Cambs.

SALES BY AUCTION.

Addlestone, Surrey.

CLEARANCE SALE, the Land being Sold.
MESSRS. R. AND J. WATERER AND SON are instructed by the Executors of the late Mr. J. Fuller to **SELL BY AUCTION, on TUESDAY, November 2, at 11 to 12 o'clock precisely, on the Premises, the remaining portion of the well-grown NURSERY STOCK, comprising about 3000 Rhododendron ponticum, 115 Kalmia latifolia, 10,000 Green Hollies, from 9 inches to 3 feet: 400 Variegated Hollies, including some fine Specimen Plants; 600 Aucuba japonica, 6000 Deutzia gracilis, 1000 Dwarf Roses, 12,000 Manetti Roses, 3000 Lily of the Valley, Portugal and Common Laurel, 400 Scarlet and Common Horse Chestnut, a quantity of Lombardy Black Italian, and Balsam Poplars and Limes, from 10 to 14 feet: 100 Cupressus Lawsoniana, 6 feet high; Weymouth Pines, a quantity of Trained and Standard Fruit Trees, 30 lots of Border Shrubs, and other Stock and Garden Tools.**

May be viewed three days prior to the Sale, and Catalogues had upon the Premises; at the "Duke's Head" and "Railway" Inns, Addlestone; and of Messrs. R. AND J. WATERER AND SON, Auctioneers and Valuers, Chertsey.

Every Monday.

SALES OF DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE AND MORRIS will **SELL at the Mart, on MONDAY NEXT, and every following Monday, at half-past 11 o'clock precisely, extensive consignments of first-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS from Holland, in lots to suit all buyers.**

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Muswell Hill, N.

CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by J. H. Renton, Esq., who is leaving the neighbourhood, to **SELL BY AUCTION, Without Reserve, on the Premises, Fortis House, Muswell Hill, N., on MONDAY NEXT, November 1, at 12 o'clock punctually, the whole of the well-grown STOVE and GREENHOUSE PLANTS, including 20 splendid Plants of Eucharis amazonica, 50 large Camellias and Azaleas, from 3 to 10 feet, beautiful specimens, and full of flower-buds: 100 Roses in pots, 5000 Bedding Plants, 1500 Strawberries; also 4 DAIRY COWS, 4 PIGS, 200 Head of POULTRY, CHAISE, CARTS, HARNESS, GARDEN SEATS and UTENSILS, 12 Loads of MEADOW HAY, and numerous other items.**

Catalogues of Mr. MILLS, the Gardener, on the Premises; and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Linton, near Maidstone.

GREAT CLEARANCE SALE OF ROSES.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. Grant (Rose Grower) to **SELL BY AUCTION, on the Premises, Wester Hill, Linton, near Maidstone, on TUESDAY, November 2, at half-past 12 o'clock precisely, about 16,000 Standard and Half-standard ROSES, consisting of the choicest and most approved kinds of H.P., Noisette, Tea and Bourbon varieties; also 5000 Dwarf Roses on the Manetti stock, in variety. Lotted to suit the Trade and Private Buyers.**

May be viewed. Catalogues had on the Premises; and of the Auctioneers, Land Agents, and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

The Willows Nurseries, Leicester.

GREAT SALE OF NURSERY STOCK, now Growing upon Land required by the Great Northern Railway for the extension of their line.

MESSRS. PROTHEROE AND MORRIS have received instructions from Messrs. Harrison & Sons to **SELL BY AUCTION, entirely Without Reserve, on the Premises, as above, on TUESDAY, November 2, and three following days, at 11 o'clock precisely each day, a large quantity of NURSERY STOCK, well grown and in excellent condition for removal, consisting of upwards of 70,000 fine FRUIT TREES, which include Apples, Pears, Cherries, Gooseberries, Currants, &c., of all leading and well-known kinds; 80,000 ORNAMENTAL SHRUBS, comprising Aucuba japonica, Cupressus, Hollies, Laurels, and Berberis of sorts, Rhododendrons, Pines, Privet, &c.; 270,000 ORNAMENTAL and FOREST TREES, viz., Ash, Horse Chestnuts, Elms, Limes, Maples, Oaks, Poplars, Sycamores, Quickthorn, and a general collection of other Nursery Stock.**

May be viewed. Catalogues obtained of Messrs. HARRISON AND SONS, Market Place, Leicester; and of the Auctioneers, 98, Gracechurch Street, London, E.C.

Woking, Surrey, near the Station.

EXTENSIVE CLEARANCE SALE of the whole of the NURSERY STOCK, IMPLEMENTS, and EFFECTS, without the slightest reserve.

MESSRS. PROTHEROE AND MORRIS are instructed to **SELL BY AUCTION, on the Premises, Trigg's Nursery, Woking, on WEDNESDAY, November 3, and following days, at 12 o'clock precisely each day, the whole of the well-grown NURSERY STOCK, in excellent condition for removal, including 10,000 Green Hollies, 1 to 4 feet; 1500 Gold and Silver Hollies, 1 to 4 feet; 8000 Common Yews, 3 to 5 feet; large quantities of Portugal Laurels, Aucubas, Common Laurels, Arbor-vitae, and other Evergreens; 11,000 Fruit Trees, 14,000 Fruit Stocks, 15,000 Quicks, 35,000 Ornamental and Forest Trees, consisting of 3000 Limes, 6 to 9 feet; 4000 Poplars, of sorts, 9 feet; 1500 Horse Chestnuts, 6 to 8 feet; 20,000 A-h, 20,000 Beech, and 36,000 Spanish Chestnuts; also the FARMING IMPLEMENTS, CART MARE, HARNESS, and EFFECTS.**

May be viewed. Catalogues had on the Premises, and of the Auctioneers, Land Agents, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. THE VALUABLE ESTATE, part Freehold and part Copyhold, having an important frontage to the high road, to be SOLD BY PRIVATE TREATY. Apply to the Auctioneers as above.

Fulham, S.W.

WELL-GROWN NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will **SELL BY AUCTION, on the Premises, The Nursery, Fulham, S.W., by Order of Messrs. Osborne & Sons (the lease of a portion of the ground having expired), on WEDNESDAY, November 3, at 12 o'clock precisely, an extensive variety of EVERGREEN and DECIDUOUS SHRUBS, a large Assortment of ORNAMENTAL and FOREST TREES, 2000 STANDARD DAMSONS, 5000 BLACK, RED and WHITE CURRANTS, and other MISCELLANEOUS STOCK. May be viewed.**

Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Leytonstone, Essex.

TWO DAYS' UNRESERVED SALE OF GENERAL NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will **SELL BY AUCTION, on the Premises, the American and Fillebrook Nurseries, Leytonstone, Essex, adjoining the Railway Station, on THURSDAY and FRIDAY, November 11 and 12, at 12 o'clock precisely each day, a large varied assortment of GENERAL NURSERY STOCK, including some fine specimen Conifers and Evergreen Shrubs, American Plants, Ornamental and Forest Trees, selected Fruit Trees, fine Standard, Dwarf, and Climbing Roses, some hardy Shrubs in pots, Winter-blooming Plants, &c.**

The stock may be viewed, and Catalogues had one week prior to the Sale, on the Premises; and of the Auctioneers, 98, Gracechurch Street, E.C.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY, during November, at half-past 12 o'clock precisely each day, consignments of DUTCH BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

Orchids, Lilies, &c.—(Sale No. 5716.)

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, November 1, at half-past 12 o'clock precisely, an importation of very fine Bulbs of LILIU AURATUM, just arrived from Japan in good condition; a quantity of rare LILIES, mostly English-grown; barrels of BULBS from Trinidad; 145 fine plants of ODONTOGLOSSUM ALEXANDRE; several small collections of established ORCHIDS, including fine plants of rare and valuable sorts; ORCHID BASKETS, &c.

May be viewed the morning of Sale and Catalogues had.

Plants and Bulbs.—(Sale No. 5718.)

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, November 3, at half-past 12 o'clock precisely, a great variety of HARDY PLANTS, consisting of Roses, Fruit Trees, Carnations, Pinks and Pinks, Azaleas, double Tiger Lilies, and several hundred lots of first-class BULBS from Holland, in large and small lots, to suit all buyers.

May be viewed the morning of Sale, and Catalogues had.

Valuable Orchids.—(Sale No. 5719.)

MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 4, at half-past 12 o'clock precisely, about 100 plants of the lovely ODONTOGLOSSUM ALEXANDRE, in fine condition; also about 350 plants of MASDEVALLIA HARRYANA, supposed to be from a new locality. The Masdevallias are in splendid order, and many of them have fine green leaves upon them, 12 to 15 inches long; they are breaking freely, and buyers may expect to find some good varieties among them. Also a valuable collection of ESTABLISHED ORCHIDS, amongst which will be found the following:—Cypripedium concolor, Phalaenopsis Wightii, Dendrobium Parishii, Oncidium scarceae, Dendrobium Cambridgeanum, D. Ainsworthii, Vanda carolea, Cypripedium Chantini, in flower; Dendrobium Schröderi, &c.

May be viewed the morning of Sale, and Catalogues had.

The Dorset Nurseries, Blandford.

Close to the Railway Station.

MESSRS. PARK AND CROOM have received instructions from the Executors of the late Mr. H. Blandford, who are reducing their stock, to **SELL BY AUCTION, on the Premises, the Nursery, at the top of Salisbury Street, Blandford, at 11 o'clock precisely (Refreshments at 1 o'clock), on WEDNESDAY, November 3, and following day, if necessary, an immense quantity of Ornamental TREES and SHRUBS, including Cedrus deodara, Araucarias, Cupressus (of sorts), Golden Yews, Thuja aurea and elegantissima, Cryptomeria, Thuopsis, Acers, &c.; about 1000 splendid Dwarf ROSES, named; 3000 Common LAURELS, 200 choice named FERNS, Standard HORSE CHESTNUTS, LIMES, POPLARS, for Avenues, &c.; some fine SPRUCE FIRS, BEECH, and other NURSERY STOCK too numerous to mention.**

Catalogues to be obtained of the Auctioneers, Blandford.

The Dorking Nurseries.

TO NOBLEMEN, GENTLEMEN, NURSEYMEN, and OTHERS.
ANNUAL SALE of valuable and well-grown SURPLUS NURSERY STOCK.

MESSRS. WHITE AND SONS will SELL BY AUCTION, as above, under instructions from Messrs. Ivery & Son, on TUESDAY and WEDNESDAY, Nov. 9 and 10, commencing each day at 11 o'clock precisely, a large variety of TREES and SHRUBS, including handsome specimens of Wellingtonias, Deodars, Pinus of sorts, Piceas of sorts, Abies, Araucarias, Thujas, and Cupressus, in great variety and various heights. Also a fine lot of Aucubas, Box, Phillyreas, Common and Portugal Laurels, Variegated and Green Hollies, Irish, Golden and Common Yews, Laurostimus, Berberis, Privet, &c.; Spruce Firs in all sizes, Green and Variegated Ives, and a quantity of Flowering Shrubs; also a splendid lot of Standard Mulberries, and a miscellaneous collection of Greenhouse Plants, Flowering and Foliage. The foregoing are of proper height, and in excellent condition for removal.

To be viewed on the Monday previous to and on the mornings of sale. Catalogues may be obtained at all the usual Inns and Hotels in the neighbourhood; at Messrs. IVERY AND SON'S Nurseries, Reigate and Dorking; and of the Auctioneers, Dorking, who respectfully invite and will promptly attend to applications by post.

POSTPONEMENT OF SALE.

Hassock's Gate, Sussex.

Within five minutes' walk of the Station.

MR. THOMAS SINNOCKS is instructed by Mr. H. Hemsley to SELL BY AUCTION, on the Premises, on FRIDAY, November 3, at 12 o'clock precisely, well-grown Standard ELM, LIME, CHESTNUT, BIRCH, MAPLE, LABURNUM, SYCAMORE, &c., of sorts; 1400 Pyramid APPLE and PEAR TREES, GOOSEBERRY and CURRANT BUSHES; 3000 Choice EVERGREEN SHRUBS and TREES, consisting of Pinus austriaca, P. Nordmanniana, P. Pinsapo, P. Cembra, &c.; Wellingtonias, Araucarias, Cupressus, Biotas, Thujas, of sorts; Portugal and Common Laurels, Evergreen Privet, Beech and Hornbeam for Hedges; Standard and Dwarf ROSES, &c.; the ground being required for other purposes.

May be viewed two days before the Sale. Catalogues on the Premises, or of the Auctioneer, Burgess Hill.

On account of the number of Lots the Sale to commence at 12 o'clock.

WANTED, to RENT or PURCHASE, a good COTTAGE, with Shop attached, 1 acre or more ground, with few Glass Structures, not far from a town, suitable for small Nursery or Seed Business. Address, G. J. L., *Gardeners' Chronicle* Office, W.C.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are Eight and a Half Acres of deep, rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business.—For particulars, Apply to J. WATSON, 38, Crome Street, Bury St. Edmunds.

To Florists, Nurserymen, and Gardeners.

TO LET, by Tender, FLORA COTTAGE, Coniscliff Lane, Darlington, with 2 Acres of Garden Ground, well stocked with the choicest kinds of Apple, Pear, and Plum Trees, both wall and standards, all of named varieties, and other smaller fruits; 2 Vineries, containing 19 healthy Vines in full bearing, under an area of 125 superficial yards of Glass; Peach and Nectarine House, containing 7 Peach, 3 Nectarine, and 1 Fig Tree, under an area of 135 superficial yards of Glass, the whole fitted up with complete staging for plants; 2 Hot Frames for bedding plants, containing an area of 60 superficial yards of Glass; 1 Forcing Pit, containing an area of 27 superficial yards of Glass. The whole of the above is Heated by patent Hot-water Apparatus, in excellent working order. In addition are 13 Cold Frames, containing an area of 75 superficial yards of Glass. The Garden is fully planted with Vegetables, is well sheltered on the north, east, and west, and has an abundant supply of water laid on. Yard containing Root-house, Mushroom-house, and Fruit-room, fitted with drawers and shelves, the whole heated with hot water; Potting-shed, Lumber-shed, &c. The Cottage contains Kitchen, Sitting-room, Two Bed-rooms, Scullery and Pantry, Yard, and Conveniences on Ground Floor, and two good Cellars underneath, with Gas in each room. Also Three Fields of Good Old GRASS LAND, with Buildings, viz.:—No. 1, area 2 a. 2 r. 25 p., with two Loose Boxes and Fold Yard; No. 2, area 2 r. 25 p., with 2-stalled Stable and 2 Boxes; No. 3, area 2 r. 25 p., with 4-stalled Cow-byre, 3 Piggeries, 3 Poultry-sheds and Yards, with Water in each; Calf-house, Boiling-house and Store-room, Manure Tank and Pump. The whole of the Buildings are well and substantially built, and in excellent order.

Apply to W. WRATHER, Gardener, to view the above Grounds. Tenders to be forwarded to Mr. R. B. SAUNDERS, Hutton Grange, Guisborough, Yorks, Agent for the Estate of the Executors of the late Edward Pease, Esq., on or before November 15.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this." Two Cuttings, post-free, for 15. 2d.

One Plant, post-free, 1s. 6d.
 The Home for Flowers, Swanley, Kent.

SPECIAL CHEAP OFFER OF TULIPS

for Bedding.
 Double Scarlet REX RUBRORUM, 4s. 6d. per 100, or 40s. per 1000.
 " White LA CANDEUR,
 " Red and Yellow VAN THOLL,
 Single White QUEEN VICTORIA,
 " Yellow GOLD PRINCE,
 " Scarlet ROI CRAMOISE,
 " Red and Yellow DUCHESS OF PARMA,
 &c. in value delivered carriage free. Smaller orders will have Bulbs added free.

JNO. JEFFERIES and SONS, Cirencester, Gloucestershire.

ANTHONY WATERER respectfully invites

the attention of intending Planters to the following

LIST of desirable and in every way First-class

Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWs, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

" Golden, many thousands, 3, 4, 5 to 10 feet high.

" Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

" laurifolia, myrtilifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

" Golden Queen, 4, 5, 6 to 10 feet high.

" Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

" ARGENTEA, 4 and 5 feet.

LIBEDRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA FISIFERA AUREA, 3, 4 and 5 feet hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently transplanted.

Knap Hill Nursery, Woking, Surrey.

ROSES.

CHARLES TURNER'S Descriptive CATALOGUE of his extensive collection is now ready.

Fruit Trees.

CHARLES TURNER'S Select LIST of the above is also ready. The Trees have made an excellent growth, and are very healthy.

Ornamental Trees, Shrubs, &c.

CHARLES TURNER'S CATALOGUE can be had on application.
The Royal Nurseries, Slough.

GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, and warranted free from Phylloxera, Oidium, and all Disease. Planting Canes, 25. 6d. to 55. each. extra strong Fruiting Canes, 75. 6d. to 100. 6d. ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.

Descriptive Price LIST for 1st. stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Special Offer.

WILLIAM WISEMAN AND SON can offer the Trade about 4,000,000 2-yr. Seedling LARCH, extra fine; also 2-yr., 1-yr. SCOTCH FIR (true Native). Samples and Prices on application.
The Nurseries, Elgin, N.B.

TO THE TRADE.

The undersigned has on offer, all A & stuff:—
SILVER PAMPAS GRASS, clumps: Standard Portugal LAURELS; 2-yr. Common HOLLIES: Common YEWs, 3 feet: ROSE STOCKS; 1-yr., 2-yr. named GOOSE-BERRIES; 2-yr., 1-yr. APPLE STOCKS; 2-yr., 2-yr. ditto; MULBERRIES, 3 to 5 feet: Standard APPLES, Blenheim Orange; Standard ditto, Somerset and Devon cider fruits; Pyramid Apples, fruiting; PEARS, ditto ditto; Dwarf-trained, ditto ditto; Sweet CHESTNUTS, LIMES, PRICKLY COMFREY sets, DIELYTRA SPECTABILIS, HOTEIAS, LARCH, THORN, HAZEL, ALDER, &c.
POYNTER'S PRIZE PETUNIA and other choice SEEDS.

Buyers please send for particulars to
R. H. POYNTER, Taunton Nurseries, Taunton.

Choice Early-blooming Plants.

RHODODENDRONS (Sweet-scented), AZALEAS, &c., fine Plants, well set with buds. Priced Descriptive LIST on application.
ISAAC DAVIES, Nurseryman, Ormskirik.

TWELVE FLOWERING STOVE and GREENHOUSE PLANTS for 21s.—Large, strong plants in 5-inch pots of Anthurium Scherzerianum, A. Duchartrei (the new white variety), Eucharis, Allamandas, Jasminum grandiflorum, Bougainvilleas, &c. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

Surplus Stock at Reduced Prices.

RHODODENDRONS (hardy Hybrid), AZALEAS, &c. Priced Descriptive LIST on application.
ISAAC DAVIES, Nurseryman, Ormskirik.

TWELVE EUCHARIS AMAZONICA for 21s.—The most lovely pure white flower in existence; each bulb has produced spikes of flower three and four times a year, and five to seven flowers on each spike; bulbs now offered will flower again at Christmas. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

Autumn, 1880.

WOOD AND INGRAM'S abridged Trade LIST of Fruit Trees, Forest Trees, Ornamental Trees and Shrubs, Roses, and other Nursery Stock, is now ready, and will be forwarded (to the Trade only), on application.
The Nurseries, Huntingdon.

To the Trade and Large Buyers.

EWING AND CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and FILBERT BUSHES: ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees; MYROBELLA (PRUNUS MYROBALANA), for fencing, &c.
The Royal Norfolk Nurseries, Eaton, near Norwich.

A Bargain.

ONE HUNDRED CHOICE and RARE ORCHIDS for £10 10s., consisting of the most beautiful and fragrant sorts in cultivation, and forming in itself a select collection for the amateur. Could not be bought anywhere else in Europe for £50. This offer is for cash only, and during the present month, to make room before winter. Package included for cash with order. All correctly named, and packed to travel any distance safely. Will produce quantities of flower during winter and spring. Selected for cold or warm house, or mixed. Inspection requested. Nursery close to stations L. B. & S. C. R.; twenty minutes from London Bridge or Victoria.
JOHN H. LEY, Royal Nursery, London Road, West Croydon.

Grape Vines and Forest Trees.

EDWARD MORSE begs to offer Fruiting and Planting Canes of the following kinds:—Black Hamburg, Foster's Seedling, Black Alicante, and Lady Downe's Seedling. Price, from 30s. to 60s. per dozen.
E. M. has also to offer splendidly grown trees of Horse Chestnuts, Sycamores, Norway Maples, Limes, Walnuts, and Elms, fit for General and Avenue Planting.
Original Nurseries, Epsom.

ONE HUNDRED STOVE and GREENHOUSE PLANTS for 42s., or, Extra Strong, 65s.—Good strong stuff in small pots, fit to pot-on at once, being full of roots for months past. Choice and valuable sorts included of Marantas, Crotons, Alcazias, Allamandas, Acacias, and all plants most desirable for an amateur commencing cultivation of plants. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

STRAWBERRIES IN POTS.

Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
H. CANNELL, Swanley, Kent.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—White Garden LILIES, 12s. 6d. per 100; Winter ACONITES, 12s. 6d. per 100; ANEMONE FULGENS, 16s. per 100; single French ANEMONES, 30s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to SANDER and CO., Seed Growers, St. Albans.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also Double White Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—J. R. ALDERSON, Bell Farm, Hershham, near Walton-on-Thames, Surrey.

Fruiting Trees of

APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds. Priced LIST on application to J. GEO. HILL (late John Scott), The Royal Nurseries, Merriot, Somerset.

Bulbs, Orchids, &c.

THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application, Lion Walk, Colchester.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAs, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Note Prices.

FOR AUTUMN PLANTING.

CABBAGE PLANTS Wanted free from Club-root.

Early Enfield Market	Wheeler's Imperial
Early Nonpareil	Robinson's Champion
Early (Dwarf) York	Robinson's Drumhead
Early Battersea	Imperial Oxheart
Sugarloaf	Early Rainham
Thousand-head	Red Pickling
East Ham	

At 3s. per 1000.

LETTUCE PLANTS.—Hardy Hammersmith, Hicks' Hardy White Cos, Giant Brown Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.

Testimonials and samples on application.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming. N.B.—Above Plants are from Messrs. Gibbs' Seed, and Purchasers may depend on good Plants, and true to name.
E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford. Extra Plants to compensate Carriage.

Seakale—Seakale.

RHUBARB and ASPARAGUS for the best house in the Trade. Also DUTCH BULBS and FLOWER ROOTS.

H. THORNTON AND CO. (late A. Dancer), NURSERYMEN and SEEDSMEN, Fulham, London, S.W. HYACINTHS, TULIPS, CROCUS, and other BULBS of the very best quality. PRICED CATALOGUES free on application.

N.B. We make the Growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can possibly be procured in the Trade.

To insure their being supplied, we beg that our Customers may give their orders early, to prevent disappointment, as we are continually receiving orders from all parts, which will be strictly executed in rotation.

Best MILLTRACK MUSHROOM SPAWN.
MATS, very good for covering Mushroom Beds, 25s. per 100.
Dancer's Nurseries, Fulham, S.W.

VIOLAS, PANSIES, HARDY

PERENNIALS, &c.—In consequence of our Nursery Grounds being sold to the new Stechford and Aston Railway Co., we propose to Sell our Stock in Guinea. Hampers, consisting of Twenty Dozen Spring and Summer Plants in over thirty varieties, including eight dozen Violas and Pansies, and forming a complete permanent Garden Collection, really worth £5. One dozen of Hollyhocks or Spiræa japonica will be sent to cover carriage with basket gratis. The two best double Daisies, The Bride, pure white, and The Sweep, vermilion-shaded black, 5s. per 100; Viola Blue Bell, 8s. per 100. Everything we have is separately transplanted, not rooted offshoots.

JOHN PIRIE AND CO., Stechford, Birmingham.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS. H. and F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

ONE HUNDRED THOUSAND HARDY HEATHS, in 42 varieties, at 4s. per dozen, 25s. per 100, or £10 per 1000. This is now a proper time to plant these fine plants, which are suitable for covering mounds or banks, or for rockwork. Fine plants can be ensured.
JAMES SMITH, Darley Dale Nurseries, near Matlock.

Specially Cheap Offer of

FINE SPECIMEN CONIFERS, &c.—Splendid specimen Thuipis dolabrata, borealis, aurea; Cupressus, Austrian Pine, and about 1000 other Conifers, &c., from 4 to 9 feet. Choice Dwarf ROSES, sample dozen 4s. 6d. 200,000 fine transplanted QUICKS, from 12s. 6d. to 30s. per 1000. Fine SPRUCE FIR, 2 to 4 feet.
W. GROVE, St. Owen's Nursery, Hereford.

CEDRUS DEODARA, for Avenues, Lawns,

Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks, 1 free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

TWELVE NEW CROTONS for 21s.—Fine

Plants in 5-inch pots; clean, well-grown plants, which will rapidly make specimens of most beautiful sorts, as majestum, Disraeli, angustifolium, Rex, Andreanum, Mooreana, &c. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.

MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD and SON, 25, Savage Gardens, London, E.C.

FINE FOLIAGE.—Intending Planters should visit H. LANE and SON'S Nurseries, Berkhamstead, to see the variety of Foliage and different styles of Plants.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

Blooming Rhododendrons.

H. LANE and SON, Nurseries, Berkhamstead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

SIX FILMY FERNS, 21s.—Fine plants, well established, and growing freely, of the following five rare and beautiful sorts, in 3 and 4-inch pots:—Todea superba, T. pellucida, Trichomanes radicans, T. Andreanum, and Hymenophyllum demissum. Carefully packed (to travel safely) gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.
JAMES DICKSON & SONS, NEWTON Nurseries, CHESTER.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

STRAWBERRIES.

Strong Roots for Fruiting next year, 4s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade Only.

DOUBLE FRENCH RANUNCULUS.
LEONARD ROOZEN and SONS superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Wanted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)
LEONARD ROOZEN and SONS, Bulb Growers, Overveen, near Haarlem, Holland.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.

Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Flowers for Cutting.

PANCRATIUM ROTATUM.—A most useful plant for cutting for bouquets, or any other decoration. It produces snowy-white flowers, in clusters of nine to twelve, on stiff, erect scapes, deliciously fragrant and extremely elegant. Two guineas per dozen.
PANCRATIUM AMGENUM.—White flowers, very useful for cutting, and deliciously fragrant. Two guineas per dozen.
PANCRATIUM FRAGRANS.—White and fragrant. Not only good for cutting, but one of the handsomest flowering plants known. Four guineas per dozen.
WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.

Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

RICHARD SMITH AND CO., Nurserymen, Worcester.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Enfield Market and Rainham. Apply to Mr. T. DAVIES, Tangley, near Guildford.

STRAWBERRIES

The best sorts for Fruiting next year.
V. H. DE THURY, } Strong plants, all well rooted,
SIR JOSEPH PAXTON, } in small pots, prepared for
PRESIDENT, } forcing, 10s. per 100.
Also strong plants of the above, and other sorts, from open ground, 2s. 6d. per 100, 20s. per 1000. Package free. Extra plants for carriage. Cash from unknown correspondents.
H. J. HARDY, F.R.H.S., Stour Valley Seed Grounds, Bures Suffolk.

THE LARGEST ROSE GARDENS IN ENGLAND.

CRANSTON'S NURSERIES.
(ESTABLISHED 1785.)

New Rose Catalogue for 1880-81,
now ready and may be had post-free on application.

Awarded over 60 First Prizes for Rose Blooms
this season.

CRANSTON'S NURSERY AND SEED CO. (LIMITED),
King's Acre Hereford.

NEW CATALOGUE

FOR
AUTUMN, 1880,
OF THE BEST

PLANTS, TREES, BULBS, ROSES,

&c., REQUIRED FOR

Garden or Conservatory Decoration,

Post-free.

The prices are much lower than goods of the same first-class quality are usually offered at. Comparison and inspection of stock invited. For names and description see Catalogue.

ALL OUR SELECTION. BULBS for GARDEN.

The most showy and finest sorts, specially selected for the purpose.

	Per doz.	Per 100.
HYACINTHS, in separate colours ..	3 0	21 0
ANEMONE, finest mixed ..	0 6	3 6
CROCUS ..	1 5	4d. to 2 0
RANUNCULUS ..	0 6	3 3
TULIPS ..	1 0	7 0

BULBS for CONSERVATORY.

Will produce a beautiful display at about two-thirds of the usual cost.

	Per doz.	Per 100.
HYACINTHS, 12 fine named sorts ..	5 0	40 0
.. 12 extra named sorts ..	7 6	60 0
.. Roman ..	2 6	18 0
ANEMONE, finest named ..	1 0	7 0
CROCUS, finest named ..	1 5	6d. to 2 6
RANUNCULUS ..	0 6	3 0
TULIPS, finest named ..	1 5	2 6

For prices and description of Dutch, French, and Miscellaneous Bulbs, in great variety, see Catalogue.

SPRING FLOWERING PLANTS.

About 100,000 now ready of the best and finest plants for the Spring Garden, including the best Show and Fancy Pansies, Violas, the newest and most showy varieties; Daisies, of all colours; Polyanthus, Sweet William, Canterbury Bells, Wall-flowers, Arabis, Aubrietia, Silenes, the finest Double and Single Primroses, Hepaticas, Sweet Violets, Alyssum, Cheiranthus of sorts, Christmas Roses, Iberis, Forget-me-Not, including the new variety "elegantissima," Sedums, Saxifrages, &c. All in good plants, to stand the winter and produce a fine spring display. For prices, &c., see Catalogue.

HARDY FLORISTS' FLOWERS and HERBACEOUS PLANTS.

A stock of many thousands of good plants, in good named varieties, and at low prices, including fine Double Pyrethrum, Potentillas, Delphiniums, Pæonias, Antirrhinums, Phloxes, Pansies, Show and Fancy; Carnations, Picotees, Pinks, fine Polyanthus to name, Double Primroses, and about 500 species and varieties of the finest Herbaceous Plants in cultivation for garden decoration. For List of sorts, prices, &c., see Catalogue.

WINTER-BLOOMING PLANTS for INDOOR.

A large stock of fine, well-grown plants of Bouvardias, Cyclamen, Solanums, Camellias, Azaleas, Ericas, Epacris, Primulas, Cinerarias, &c.; also of the finest plants and roots procurable for forcing, *Spiræa japonica*, *Spiræa palmata*, Lily of the Valley, *Dielytra*, *Deutzia*, *Azalea Mollis*, *Ghent Azaleas*, *Rhododendrons* set with buds, *Kalmias*, *Andromedas*, &c.; a large stock of the best Stove and Greenhouse Plants, in robust health, perfectly clean and very cheap.

DWARF ROSES.—A fine lot of well-grown plants of the leading varieties.

FRUIT TREES.—Apples, Pears, Plums, Cherries, &c., well-grown and splendidly rooted.

STRAWBERRY PLANTS.—A Collection of Sixty Varieties, true to name, good plants and cheap.

CONIFERS, &c.—Pretty pyramidal plants of the best varieties, for winter bedding.

EVERGREEN and DECIDUOUS TREES and SHRUBS.

—For prices and all particulars see Catalogue.

WM. CLIBRAN & SON,

OLDFIELD NURSERY, ALTRINCHAM.

NEW ENGLISH ROSE,

H.P. MRS. JOWITT (Cranston's).

First-class Certificate awarded by the Royal Horticultural Society, South Kensington, July 27, 1880.

First-class Certificate awarded at Wirral Rose Show, July 24, 1880.

First-class Certificate awarded at Shrewsbury, July 28, 1880.

First-class Certificate awarded at Liverpool Rose Show, July 31 and August 2, 1880.

We are now booking orders for this superb New Rose, to be sent out this Autumn. For description see our new ROSE CATALOGUE, now published.

Extra strong ground plants, 7s. 6d. each.

Usual Discount to the Trade.

CRANSTON'S NURSERY & SEED CO.
(LIMITED),

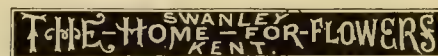
KING'S ACRE, HEREFORD.



Bulbs!—Bulbs!

H. CANNELL AND SONS beg to intimate that their CATALOGUE of WINTER-FLOWERING PLANTS, BULBS, ROSES, and CHRYSANTHEMUMS, contains also a number of most useful Plants for the present season, all of the best and newest kinds, and offered at the very lowest price consistent with quality and correctness.

All lovers of flowers not having hitherto corresponded with H. CANNEL AND SONS are respectfully requested to send their address at once, and a complete set of this year's CATALOGUES will be sent.



EDMUND PHILIP DIXON

Begs to state that he has made arrangements to send out the very desirable

**NEW RASPBERRY,
BAUMFORTH'S SEEDLING.**

This splendid new and distinct variety was raised from a batch of Northumberland Fillbasket Seedlings, and has been exhibited for several seasons against all the best and approved sorts—always carrying off the First Prize. It received a First-class Certificate at the Leeds Horticultural Exhibition this year, as well as the Judges' Commendation at many of the leading Shows.

The Fruit is of an immense size and fine quality, in shape more round and larger, of a darker crimson colour, and the seed-pips considerably more developed and prominent than the parent. It is of vigorous growth, with large dark green foliage, and from its strong and prolific constitution frequently throws out a second crop from the present season's young wood.

Orders are now being booked, and will be executed and sent out in strict rotation. Each purchaser of two dozen Canes and upwards will receive a beautifully coloured lithographed plate of the fruit.

Price 10s. 6d per dozen Canes.

A few extra strong Canes at 18s. per dozen.

USUAL DISCOUNT TO THE TRADE.

The Nurseries, Hull, Sept.

STANDARD PEAR TREES.

*All the leading kinds of Hardy
Pears—Grand Trees.*

Prices, with Sample, on application to

CRANSTON'S NURSERY AND SEED CO.
(LIMITED),
KING'S ACRE, HEREFORD.

PAUL'S NURSERIES, WALTHAM CROSS, HERTS.

WM. PAUL & SON

BEGIN THEIR AUTUMN SALES WITH

1,000,000 ROSES,

STANDARDS, DWARF STANDARDS, DWARFS, CLIMBERS, FORCING ROSES, HALF-SPECIMEN and SPECIMEN ROSES, of unsurpassed quality, orders for which they respectfully solicit.

Priced Descriptive CATALOGUES free by post.

N.B.—It was from their firm that 50,000 Roses were exhibited at the Alexandra Palace Rose Show, July, 1880.

FRUIT TREES.

All the best sorts in every style of growth, true to name, and of unexceptionable quality.

ORNAMENTAL TREES.

One thousand species and varieties, including EVERGREENS, CONIFERS, AVENUE, ROADSIDE, and PARK TREES, WEEPING TREES, AMERICAN PLANTS, CLIMBING and WALL PLANTS.

CAMELLIAS.

The largest and best Stock in England.

Plants, well set with bloom-buds, from 2s. to 10s. 6d. each; Specimens from 15 to 30 guineas each.

HYACINTHS, TULIPS, and OTHER BULBS,

Imported from the best Growers, and sold at the lowest remunerative prices.

Priced CATALOGUES free by post.

IMPORTANT.—Observe the Christian Name and Address:

WM. PAUL & SON, Paul's Nurseries, WALTHAM CROSS, HERTS.

INSPECTION OF THE STOCK INVITED.

Visitors by Railway can enter the Nurseries from the Platform, Waltham Station, Great-Eastern Railway.

ROSES, FRUIT TREES, CONIFERS, ORNAMENTAL TREES AND SHRUBS.

PAUL & SON,
THE "OLD" NURSERIES, CHESHUNT, N.,

INVITE INSPECTION FOR

ROSES,

Which, as STANDARDS and DWARFS, are of the Advertisers' usual free quality and of moderate prices. For Descriptions and Prices, see Descriptive LISTS.

FRUIT TREES,

STANDARDS, PYRAMIDS and DWARF-TRAINED.

PAUL & SON, believing it is not generally known that they are now amongst the largest holders of really fine Fruit Trees in the Kingdom, invite the inspection of intending Planters of the following, amongst other leading articles of their stock :—

40,000 STANDARD APPLES, with fine heads and clear straight 5 to 6 feet stems, from £7 10s. to £10 per 100.

STANDARD PEARS, PLUMS, and CHERRIES, in proportionate quantities.

10,000 of the cleanest best HORIZONTAL and FAN-TRAINED TREES of APPLES, PEARS, and PLUMS which can be found.

10,000 PYRAMIDS, from 2 and 3 years to transplanted root-pruned trees of 10 to 12 years' growth.

50,000 GOOSEBERRIES and CURRANTS, of all the best sorts.

Specialities of STRAWBERRIES and other SMALL FRUITS.

VINES, extra fine Fruiting Canes, all grown from eyes this year.

The COLLECTION of CONIFERS and EVERGREEN PLANTS, AVENUE and STANDARD ORNAMENTAL TREES and SHRUBS, now one of the most complete of the Kingdom.

Priced Descriptive CATALOGUES of the above Post-free.

PAUL & SON, THE "OLD" NURSERIES, CHESHUNT, N.
LONDON "ORDER OFFICE," LIVERPOOL STREET STATION, E.C.

THE GENERAL HORTICULTURAL COMPANY (JOHN WILLS, Limited).

Central Offices : Warwick House, 142 and 144, Regent Street, W. ;
and 29, 30 and 31, Warwick Street, W.

The Company having made large purchases from the leading Bulb Gardens of Holland and France, are now prepared to supply HYACINTHS, TULIPS, NARCISSI, CROCUSES, and all other BULBS for Autumn Planting, at low prices, and with a large discount to Shareholders ; Non-shareholders will be treated with on the most liberal terms.

The Company also supplies all kinds of NEW and RARE PLANTS, Ferns, Fine-Foliaged and New Holland Plants, Standard and Dwarf Roses, and all kinds of Fruit and Forest Trees, Evergreens, &c., GARDEN SEEDS for Autumn Sowing, FARM SEEDS, HARDY PLANTS for Winter and Spring Gardening, PLANTS for FORCING, &c., MUSHROOM SPAWN, and all kinds of GARDEN IMPLEMENTS and REQUISITES, at the lowest prices.

FRUIT, BOUQUETS, FESTIVE and MEMORIAL WREATHS, FLORAL CROSSES, DRIED FLOWERS, &c., sent to all parts of the country on receipt of letter or telegram.

The General Manager may be consulted as to the re-arrangement of Gardens, Laying-out of Grounds, and General Landscape Work, also for the Erection of Conservatories, Greenhouses, Forcing Houses, &c., and will attend at any part of the country for these purposes.

Catalogues on application. Early Orders are respectfully solicited.

JOHN WILLS, General Manager.

IMPORTANT SALE of ODONTOGLOSSUM ALEXANDRÆ AND MASDEVALLIA HARRYANA.

MR. J. C. STEVENS begs to announce that he has received instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 4, about 1000 Plants of this lovely ODONTOGLOSSUM, recently received from a new locality, in the best possible condition. The MASDEVALLIAS are also in splendid order, having green leaves from 6—15 inches long. These Plants have been established in pots about a month, and are breaking freely. There will be 350 of these fine plants offered.

On view the morning of Sale, and Catalogue has.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN,
LONDON, W.C.

THE BEAUTIFUL WHITE JAPAN ANEMONE.



For those who do not know this lovely flower we would describe it as being like a very large Wood Anemone, growing from 3 feet to 4 feet high, and bearing from a dozen to twenty flowers on each stalk. As regards purity and beauty, it is fit for a bride's bouquet. For room decoration it is also exceedingly useful, either in pots or in the shape of cut blooms ; lasting fully a week in water if cut when freshly opened. The plant is perfectly hardy, needs no skilful cultivation, and is cheap. In mild seasons this Anemone blooms from early in August till the end of October.—BROCKHURST, in "Gardening."

Each. Per dozen—s. d. s. d.
Extra Strong, in Pots, showing bloom .. 9 0 1 0
20s. value Carriage Free.

Carters

THE QUEEN'S SEEDSMEN,
237 and 238, HIGH HOLBORN,
LONDON, W.C.

OSBORN & SONS

beg to announce that they have now ready
for distribution a

SUPPLEMENTARY CATALOGUE OF PLANTS FOR FORCING AND WINTER DECORATION,

Hardy Trees and Shrubs (at low prices), Roses, &c.,
post-free on application.

THE FULHAM NURSERIES, LONDON, S.W.

DANIELS' CHOICE FLOWER ROOTS.



OUR GUINEA BOX

Choice Hardy Flower Roots
for Outdoor Planting

Contains the following liberal
assortment, all in sound picked
bulbs, with full Instructions for
Cultivation. Case, packing, and
carriage free to any Railway Station
in England or Wales :—

- 25 Hyacinths, choice mixed
- 200 Crocus, in variety
- 12 Tulips, Rex Rubrorum
- 12 " La Reine
- 12 " Double, mixed
- 12 " Single, mixed
- 12 " Parrot, mixed
- 25 Anemones, double, mixed
- 12 " scarlet
- 25 " Single, mixed
- 12 Polyanthus Narcissus, mixed
- 12 Double White Narcissus
- 12 Pheasant-eyed Narcissus
- 6 Campanelle Jonquils
- 25 Ranunculi, Scarlet Turban
- 25 " mixed Turban
- 50 Snowdrops
- 50 Winter Aconites
- 12 Spanish Iris
- 6 Triteleia uniflora
- 2 Lilies.

559 Roots in all.

Half the Quantity, 12s. 6d.

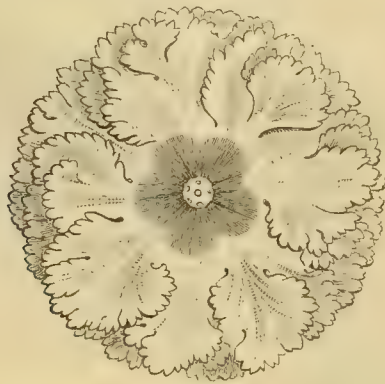
Other Collections for Greenhouse and Conservatory, Window
Boxes, &c., 12s. 6d., 21s., 42s., 63s., and 84s.
Beautifully illustrated CATALOGUE post-free on application.
From R. MORRIS, Esq., *Reading, April 6, 1880.*—"I am
highly pleased with the box of bulbs sent. The Hyacinths and
Tulips are really splendid, and quite a show in our neighbour-
hood."

DANIELS BROS.,
The Royal Norfolk Seed Establishment, Norwich.

NEW WHITE PRIMULA.

WILLIAMS'

PRIMULA SINENSIS FIMBRIATA ALBA "MAGNIFICA."



(Electro of above, 5s.)



Trade Mark.



Trade Mark.

B. S. WILLIAMS

Has much pleasure in offering the above NEW PRIMULA, the whole stock of which he has purchased from Messrs. J. & J. HAYES, Edmonton, and can with confidence recommend it as being far superior to any strain hitherto offered. The habit of the plant is exceedingly compact, with deeply indented leaves of a light green colour. The flowers, which are of great substance, measure $2\frac{1}{4}$ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage.

To be sent out in December, in Sealed Packets, price 5s. each.
Price to the Trade on application.

 The whole Stock of the above is in my hands, 
consequently, to ensure the genuine article, all packets will bear my name and
Trade Mark, without which none are genuine.

A List of the Names of those in the Trade that have purchased my New Primula will be published in the "Gardeners' Chronicle" in December, when the Seed will be ready.

OPINIONS OF THE LEADING HORTICULTURAL PAPERS.

From the "Gardeners' Record and Journal of Agriculture," April 10, 1880.
"NEW STRAIN OF PRIMULA.

"We have received from Mr. B. S. Williams, Victoria and Paradise Nurseries, Upper Holloway, London, some Primula blooms of an entirely distinct type from any at present in cultivation. The flowers are of large size, pure white in colour, with distinct citron eye, each petal being deeply and beautifully fringed. It is a long way the most charming variety of this valuable tribe of decorative plants. It is certain to become immensely popular immediately on its being sent out, as there is an elegance and a beauty about it all its own. We congratulate Mr. Williams on his success in securing this extremely valuable strain of Primula."

From the "Garden," April 10, 1880.

"CHINESE PRIMROSE ALBA MAGNIFICA.

"It is interesting to see the various beautiful forms into which the Chinese Primrose is breaking. Mr. Williams has just sent us one with every petal fringed in the most elegant way, the colour being white save the large yellowish centre."

From the "Journal of Horticulture and Cottage Gardener," April 8, 1880.

"We have received from Mr. B. S. Williams, of Upper Holloway, flowers of a new Primula, which will be sent out during the present year under the name of *P. sinensis fimbriata alba magnifica*. The flowers are of great size, about $2\frac{1}{4}$ inches in diameter, deeply and beautifully fringed, the colour being white. The trusses are over 6 inches in diameter, and very freely produced. This is an extremely attractive variety, and is likely to become a great favourite with cultivators."

From the "Gardeners' Magazine," May 1, 1880.

EXTRACTS FROM ARTICLE ON NEW CHINESE PRIMULAS.

"To particularise the white strains of Primulas is hardly necessary, for those offered by the leading firms are thoroughly good."

"The very distinct strain recently introduced by B. S. Williams under the designation of *Alba magnifica* has for its distinguishing characteristics a capital habit and flowers of the largest size and splendid quality, the white being exceptionally pure."

TESTIMONIALS.

From Mr. A. INGRAM, Gardener to His Grace the Duke of Northumberland, Alnwick Castle, April 17, 1880.

"SIR,—The Chinese Primula flowers you so kindly sent me are just to hand; the flowers are large and perfect, with a well-defined yellow eye, beautifully fringed, and of great substance."

From Mr. ANDERSON, Gardener to His Grace the Duke of Grafton, Wakefield Lodge, April 26, 1880.

"SIR,—The flowers of your new Primula *sinensis fimbriata alba magnifica* arrived in good condition, and, judging from the flowers sent, it certainly is a great improvement on the old Primula *sinensis fimbriata alba*, it being so beautifully fringed."

From Mr. J. DALE, Gardener to the Right Hon. Viscount Boyle, Brancepeth Park.

"SIR,—I received the blooms of Primula quite safe, and consider it to be a first-class variety and a great acquisition to that useful class of plants for winter blooming, and shall certainly recommend it."

From Hatherop Castle Gardens, April 6, 1880.

"SIR,—Many thanks for the Primula blooms, which reached me safely. I do not think I ever saw one so beautifully fringed; it will be quite an acquisition."

Yours truly,

"G. BIRCH."

VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

NOVELTIES FOR 1881.

GEORGE COOLING & SON

Have pleasure in offering the undermentioned

NEW VARIETIES of VEGETABLES, which they have every confidence in recommending as being desirable improvements in their respective classes:—

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"NE PLUS ULTRA."



Although Dwarf Beans are already numerous, this variety will prove to be a great acquisition.

Quite distinct in seed and growth to any other variety; habit dwarf and compact; very delicate in flavour, and very early. As a forcing variety we believe it will have no equal. It is enormously productive, both indoors and out. Ninety-three pods were at one time gathered from a pot containing three plants last Spring.

Under the name of Cooling's Early Forcing Bean, it was awarded the only First-class Certificate at the Chiswick Trials in 1877, when nearly 200 varieties of Beans were grown.

We have placed samples for trial in the hands of the leading Gentlemen and Market Gardeners in this Neighbourhood; all are unanimous in opinion that it is in all respects the finest Dwarf Bean they have ever grown.

The engraving is a fair representation of a single plant in pot.

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NEW BEETROOT,
"OMEGA."

As a variety for salads and culinary purposes, the Omega Beet must excel all others. It will not be useful as a decorative plant (the foliage during the greater part of the season being green in colour), but one trial will be sufficient to commend itself to all who desire a really rich-flavoured and handsome Beet. It is quite distinct, and has been carefully selected by ourselves for many years.

The chief characteristics of this Beet are the small amount of top it produces; the remarkably handsome shape of its root, which is of medium size; its colour, which is of the richest crimson; and more especially its flavour, which is delicately sweet, and will be found far superior to any variety yet introduced.

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No. 1, containing 2575 Fine Bulbs	..	..	£5	5	0
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No. 6, containing 738 Fine Bulbs	..	..	£5	5	0
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"I feel it only just to inform you of the great success of the Bulbs. They were the admiration of all who saw them."
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IN

Distinct Shades of Colour for
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When Hyacinths are ordered by name for bedding purposes, disappointment often occurs from the fact that there is always a slight variation in tint, however careful and accurate the descriptions may be. In the following arrangement we have divided the Hyacinths offered into red, blue, and white, and in the subdivisions each shade will be found perfectly distinct, our object being to supply Hyacinths which shall prove a striking contrast to each other when planted side by side. Each variety offered will be found to correspond accurately to the description given. This system effects a considerable saving in cost.

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			Per doz.	Per 100.
			s. d.	s. d.
RED	{	Sutton's Scarlet	..	6 0 45 0
		Sutton's Dark Rose	..	6 0 45 0
		Sutton's Pink	..	6 0 45 0
BLUE	{	Sutton's Blue	..	6 0 45 0
		Sutton's Light Blue	..	6 0 45 0
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THE

Gardeners' Chronicle.

SATURDAY, OCTOBER 30, 1880.

DILSTON CASTLE.

AN old tower forms now the only remnant of Dilston Castle. A noisy mountain stream, which takes its course through a deep glen running close to the walls, and called the Devil's Water, gave the Castle its name. This ill-named little river rises on the edge of Allandale, waters the vales and the numerous hollows of a winding valley, and joins the Tyne about a mile below Dilston. That beauty may be maligned is evident from the name given to this very lovely stream.

In the time of Henry I. Dilston Castle was the border fortress of William, Lord of Devilstone, and after passing from his family, by marriage, to that of William of Tynedale, it passed by a similar process, in 1494, to that of the Radcliffes, one of whom made another fortunate match with the heiress of the house of Derwentwater. Having thus become a family of the first importance, the Radcliffes were elevated to the rank of Earls of Derwentwater, owning two splendid dwellings, that beneath the brow of Skiddaw, on an island of their patronymic lake, and that at Dilston, which they erected close to the ruined tower of their predecessors. Both these houses have been destroyed. Not a stone remains of the lake dwelling, and when, a few years since, the confiscated estates of the Earls of Derwentwater were owned by the Commissioners of Greenwich Hospital, the cattle of their famous agent, John Grey, of Dilston, grazed on the site of the proud dwelling of the now extinct family.

Never has ruin been more complete than that of the house of Derwentwater, and as to their two chief dwellings, not even the memento of a ruined wall remains on the island of their lake, and here at Dilston nothing remains except their fragmentary tower and the little chapel which received their bones. Even in the grave they did not rest in peace, for on entering the place where they and their tenants and retainers worshipped—a plain building, where the family pew and rails of the altar still remain—I was told that the coffins had been removed from the vault below to the Catholic chapel at Hexham, where a "sister" showed a memorial in the graveyard standing on the spot where they were placed, and told the story of their arrival in privacy by night; that of the beheaded earl was taken into Essex by Lord Petre, a descendant of his only daughter.

The story of James Radcliffe, the last Earl of Derwentwater, is a very touching one. Attachment to the faith of his fathers, and to the lost cause of "James III.," was his worst fault. He was brought up at St. Germain's, and was himself the son of a daughter of Charles II., the Lady Mary Tudor. On Tyneside no man was so universally beloved for his generous, noble character. We read in one of many rustic ballads commemorating his goodness or his beauty—

"O, Derwentwater 's a bonny lord,
And golden is his hair,
And glinting is his hawking e'e,
Wi' kind love dwelling there."

On the occasion of the Pretender's futile

attempt in 1715, after the death of Queen Anne, several of the Catholic families of the North showed an imprudent preference for the House of Stuart over that of the reigning House of Hanover. Lord Widdrington and others rose in rebellion, and proclaimed "James III." at Warkworth with sound of trumpet. They then marched to Alnwick and repeated the same ceremony. The Earl of Derwentwater was urged to join them, and when he hesitated Lady Derwentwater threw down her fan before him indignantly, exclaiming, "Take that and give your sword to me." She was the Lady Macbeth of her husband's unhappy fate.

The site of Dilston is delightful, and the property has been lately sold to Mr. Beaumont, M.P. for South Northumberland, who has slightly enlarged John Grey's super-excellent farmhouse and has turned it into a capital shooting box. The old tower is just near enough for the owls that hawk about it, or perch among its broken walls, to be seen on moonlight nights from the front windows. The Devil's Water is still nearer, contracting the lawn in front, and warning persons by its restless murmurs not to wander with incautious steps too near the precipice. The grounds do not require much artificial aid from landscape gardeners.

A path running through several clumps of trees, some wearing the handsome blue and red uniform of the Scotch Fir, skirts the river cliff, and the stranger to whom the scene is new can have no eye for any other landscape gardening than that incomparable scene created by the river. The necessary channel cut here by the Devil's Water in its passage to the Tyne is not much less than 200 feet deep, and the banks which bound the garden are almost perpendicular. There is nothing to prevent a fall plump into the river, except the growth of timber and of shrubs hanging on the steep face of the cliff, and here and there a yawning gap seems to ask for a little wire to secure it, or a net to catch any inadvertent person who may slip over the edge of the cliff.

The Earl's was a home-loving as well as chivalrous heart, and when he rode forth to join the rebels and looked on the fair scene that lay around him, and thought of his great estate and his hospitable home, and the happy life he had led among his people—a life young as yet, and about to be exposed in a hopeless undertaking—he paused and drew rein beneath a window of the Castle. A ballad has put these words in his mouth:—

"I could not lose my bonnie holts,
Or shaws and knowes so green,
Where poppling by the moss-grown stones
The waters flash between."

"Were all around me not my ain,
I'd freely gang the gate;
Wha has na fortune fights mair bauld
Than one wi' large estate."

At this instant of natural hesitation Lady Derwentwater leaned from a window above, threw down her fan, and pleasantly invited him to exchange it with her for his sword! So

"He looked down on the shaws and wood,
Syne up to his castle hall—
On the wavy trees, and flowering banks,
By the burnie's wimpling fall,"

and rode on to his death. The rebels, Scotch and English, advanced to Newcastle, where the townspeople had walled up the gates with stone and lime very strong. They returned to the borders, halting at Jedburgh and Hawick, and pursued by the King's troops.

Lord Derwentwater had married his Lady Macbeth in his twenty-third year. Four years later (1716) he was condemned to death after trial in Westminster Hall. One of the seventy-five noblemen and gentlemen of England who had rallied to join the same standard, his friend Lord Widdrington, who was reprieved, said, in parting with him, "I shall never forget you!"

The unfortunate Earl behaved with admirable courage and resignation. He was executed on Tower Hill, a wail of horror rising from the multitude as his head fell. The grief in his own country, on Tyneside, was deep and genuine. On the night of his execution it was said the Devil's Water ran high and ran with blood, and a brilliant aurora borealis at the same hour seemed to the peasantry a pledge of Heaven's coming vengeance. The "Northern Lights" are still known in the North as "Lord Derwentwater's Lights."

A few years since it was reported to Mr. Grey that "the Countess of Derwentwater" had taken possession of the old tower of the Devil-stones. She remained there some days, and was then lifted and removed with her camp into the road. A certain mystery attaching to the "Countess," of whom no one knew anything except from herself, rendered her a person of some romance, and ignorant people lent some credence to her tale, as they afterwards did to the more serious imposture of the Tichborne Claimant. It is not generally known perhaps that the Commissioners of Greenwich Hospital Estates sounded the pretensions of the person calling herself the Countess of Derwentwater with commendable pains, and they discovered the absolute falsity of her statements. She confidently alleged that several important documents, her marriage and baptismal registers and what not, might be found in certain depositories on the Continent. The receptacles were examined, and it was found that her papers had no existence. Lord Derwentwater left two children—a son who died in France from the effects of a horse accident at the age of nineteen, and the daughter before mentioned.

Having paid due respect to the romantic history of Dilston and to the misfortunes of the popular young Earl, it will not perhaps be inappropriate to devote a brief space to John Grey, the agriculturist and improver. By force of character and talent Mr. Grey rose to a very proud position among those whose interests specially attach them to the land. He was known to the noblest among that class as a wise and trusty counsellor, while the labourers recognised him as their friend. "Send me," wrote Lord Spencer, "a first-rate ploughman—the sort of fellow you have in Northumberland." He saw in the education of the labourers an undeveloped force in the future of agriculture, and in proof of the correctness of his views land proprietors from all parts of the United Kingdom sent to him for the well trained men of Dilston, instructed labourers, who were required for offices of trust on their estates. He sent his educated Northumbrians to Windsor, Woburn, Holkham, Althorp, Chatsworth, and to numerous other less renowned estates, whither they were called by virtue of their intelligence. It will suffice to add on this subject that the labourers of the North, have always sought education eagerly, and hence their excellence.

There are several memorials of Mr. Grey around his dwelling. His ranges of farm buildings have been removed, but there are still his garden seats, commanding such points of the distant landscape as he most admired, and there are his zigzag paths down the cliff, which reach some delightful riverside walks, including a path frequented by a white nun, who appeared to Lord Derwentwater the night before he left on the fatal expedition, and commanding a bridge some distance up the stream which leads into a wood where he loved to walk. The most touching of the memorials is a stone placed on the grave of a favourite pony ridden to bounds by a dashing little son of Mr. Grey's. Having become decrepit, and very much bowed down by old age and infirmity, with crooked knees and an ailment in every joint, she died mercifully in a retired part of the shrubbery by gunpowder and a bullet, though her master could never be brought to sign the order of execution. The inscription on the block of sandstone above her is—"In memoriam, Apple: aged twenty-eight years. 1853." She was a wonderfully plucky pony, full of "go," and perhaps she may gallop yet in

the hunting-grounds of another world; for, if the Red Indian's faithful dog shall bear him company, why not John Grey's favourite pony?
H. E.

CRATÆGUS GLANDULOSA.

It is rather singular that the Thorns have not found more general favour with planters. They are perfectly hardy, require no special care, do not take up much room, are very varied in habit; the foliage, at all times pleasing, is often gorgeous in autumn; the flowers are conspicuous and fragrant; the fruit in many of the species very handsome, and in some edible withal. We do not know that we could enumerate more advantages, if as many, for any genus of trees cultivated for ornamental purposes. Among the best are *C. coccinea*, *C. crus-galli*, *C. tanacetifolia*—to say nothing of the very fine varieties of the common Hawthorn. In 1836 the late Mr. Gordon enumerated sixty species and varieties as then growing in the Horticultural Society's Garden at Chiswick, and until the lamentable destruction of the Arboretum and Wilderness Walk these trees were a source of great delight, and in autumn, when fruiting specimens were exhibited at Kensington, they always attracted much attention. The species we now figure (fig. 101), from the Cambridge Botanic Garden, through the courtesy of Mr. Lynch, is *C. glandulosa*, a native of Canada and the Eastern States of North America. It is of dwarf compact growth, and the fruit shown in our illustration is bright crimson in colour when ripe.

New Garden Plants.

PHÆDRANASSA SCHIZANTHA, Baker, n. sp.*

This is a handsome new species of *Phædranassa*, discovered by M. André, which differs horticulturally from those already known by the limb of the perianth being a bright red, blending off towards the tip into salmon-colour, instead of being tipped with a band of green. In M. André's note, sent with the specimen, he says:—"I gathered the plant in 1876 in the neighbourhood of Pasto, at an altitude of 3000 metres above the level of the sea. *P. chloracra*, which is very common in the sandy fields of the high plateaux of the equator, grows further south. I have only met with it on the equatorial line, often as abundant as *Tulipa sylvestris* in our vineyards of Touraine."

Leaves contemporary with the flower (both in the present cultivated examples produced in October), oblanceolate-oblong, 6–8 inches long, under 2 inches broad at the middle, the blade narrowed to an acute point and gradually downwards to a short flattened petiole, bright green, rather fleshy in texture, glabrous. Scape terete, about as long as the leaf. Umbel 5–6 flowered; spathe-valves lanceolate, above 1 inch long, membranous, withered by the time the flowers are fully developed; pedicels $\frac{3}{4}$ –1 inch long, subtended by filiform white bracts. Flowers scentless, rather drooping; ovary green, globose-trigonous, acutely angled, $\frac{1}{4}$ inch long and broad; perianth forming a very short green tube above the ovary; segments 14–15 lines long, permanently connivent, oblanceolate, obtuse, the bright red channelled claws placed permanently edge to edge, the salmon-coloured blades imbricated, $\frac{1}{4}$ inch broad. Stamens inserted at the throat of the tube; filaments filiform, exserted $\frac{1}{4}$ – $\frac{1}{2}$ inch beyond the segments; anthers linear-oblong, $\frac{1}{4}$ inch long, yellow. Style reddish, exserted beyond the stamens: stigma capitate. *f. G. Baker.*

CATTLEYA MANGLESII, n. *hyb.*

A product of Mr. Seden's persevering efforts. It is a cross between *Cattleya speciosissima* (how distinct from my old *Luddemanniana*!) and *C. Loddigesii*. The flowers have a greater expansion, and far brighter purple colour than are seen in the last-named one. The lip is much wavy, and toothletted in the anterior part, white with an ochre-coloured middle line or disk, with two very small light purple areas, light purple on margin. The bulb and single leaf before me are not to be distinguished from those organs in a short-bulbed variety of *Cattleya Loddigesii*. The column shows a tendency to be more slender, just as may be expected from a descendant of the *labiata* group. I had it from Messrs. Veitch lately. It is said to be an elder product. Though Messrs. Veitch describe the flowers sent as not being as large as usual, they are larger than those of *Loddigesii*, well coloured, and nice from my point of view. *H. G. Rehb. f.*

* *Phædranassa schizantha*, Baker, n. sp.—Folius synanthiis oblongo-lanceolatis viridibus distincte petiolatis, scapo gracili tereti, umbellis 5–6 floris, spathe-valvis lanceolatis, pedicellis $\frac{3}{4}$ –1 pollicaribus, ovario globoso-trigono, tubo viridi campanulato brevissimo, segmentis oblanceolatis 14–15 lin. longis unguibus saturate rubris valvatis facie canaliculatis, limbis obtusis salmoneis imbricatis, genitalibus exsertis.

ST. JOHN'S NURSERY.

If a history had to be written of the horticultural enterprise of this country, one of the first of our famous nurseries to claim the attention of the historian would assuredly be that of Messrs. Richard Smith & Co., at St. John's, a pleasant suburb of the ancient city of Worcester, on the right bank of the Severn. The foundation of the business was laid in a very modest way about the year 1804 by the father of the present senior partner of the firm, to whom is the honour due of having by great energy and enterprise worked it up to its present magnitude and high position in the world of commercial horticulture. It is impossible without actually paying a visit to St. John's to form any definite conception of the extent and character of this truly wonderful plant manufactory; but we hope before closing this paper to give the reader at least "some idea" of its

of which altogether there are 40 miles. So we proceed leisurely up the long central walk, our guide pouring out his statistics at a rate that the pencil fails to keep pace with. "Yes," he remarks, "we put in every year 500,000 cuttings and 360,000 grafts in one house alone. This is one of the propagating houses—a very useful span-roofed house, as you see, and 365 feet long. That is the herbaceous and alpine plant department. The stock there is 300,000, and 46,000 are kept in pots, but we will look in there by-and-bye." "The place over there, on the left?—that is Pitmaston," and we should add here that Pitmaston House and grounds are now nearly surrounded by the nursery, in which are grown in great quantities the best of the fine hardy fruits raised at and sent out from Pitmaston during the first quarter of this century by the late J. Williams, Esq., and of which we need only mention the Pitmaston Orange Nectarine, the Pitmaston Duchess Pear, Pitmaston

problem—that of quartering the ground as if hunting for fur and feathers, but not quite so closely. So we start for a two or three hours' walk, and come out at the end with a chaotic mass of notes and statistics in our pocket-book.

Turning aside from the main artery, we dive into a fine quarter of standard Hollies, weeping trees, from 8 to 9 feet high, of the Silver Queen and Golden Queen varieties, and smaller specimens of the new weeping form of the Milkmaid Holly, a very good thing; Golden Queen again and Waterer's Dwarf, besides great numbers in various sizes of all the best green-leaved kinds. Then follow splendid brakes of Golden Yews; quarter after quarter of Aucubas, in many varieties, including *Aucuba limbata*, which has fine golden-edged leaves, is one of the best of the variegated section, and principally used for pots. Another brake or two contain 10,000 handsome well grown plants of the common Spruce Fir, all designed for Christmas trees. "How many youngsters will that lot amuse!" suggests the guide—a family man—who waits not for an answer, but plunges at once into a quarter of Yuccas and tree Ivies, which are "done" largely, as the two hardiest and best subjects for planting in vases. Of Yuccas, *Y. recurva* and *Y. gloriosa pendula* are turned out in the largest numbers; but the stock also includes such fine things as *Y. californica*, *Y. filamentosa*, *Y. recurva variegata*, *Y. stenophylla*, *Y. Treculeana*, and *Y. tortulata* or *Ellacombei*. The number of sorts of Ivies grown in the tree form are eight, and as all are very ornamental subjects, especially for winter decoration, we may give their names:—*Hedera aurea maculata*, clouded gold; *H. baccifera lutea*, yellow-berried; *H. canariensis*, green-leaved; *H. marginata argentea*, a new silver-striped form; *H. palmata*; *H. Roegneriana*, and *H. tricolor variegata*. Of climbing Ivies there are over thirty sorts, select and distinct, but too numerous to mention here.

Next to claim attention was a very beautiful lot of plants of *Retinospora pisifera*, from 6 to 8 feet high, a Japanese Conifer, even more handsome as a specimen than *Cupressus Lawsoniana*, and which no amount of frost seems to hurt, "and yet," says our friend, "it is seldom asked for, but I cannot understand why. Through all the frost of last winter it stood unscathed, while *Cupressus Lawsoniana* in many parts of England was killed outright." Laurels in immense numbers next came under review, and here there was plenty of evidence that the common form had been hit very hard by the frost, while the best of all Laurels, *rotundifolia* and the Colchic Laurel, escaped unhurt. The latter makes a fine pyramid, of which there are many examples, ranging from 2 feet to 7 feet in height. Then a large break of standard specimens of Mountain Ash, a handsome deciduous tree that does well in towns, and should be more largely grown than it is in city and suburban gardens. The noble North American *Magnolia acuminata* is represented by such a stock of standards as is not often seen. They do one good to look at them, but the time for staring is brief indeed, and here close by is another brake or two of resplendent Golden Yews that take the eye at once, owing to their fine size and form, and we were going to add claim respect for their age, some of them being at least twenty-five years old.

Standard Limes and Elms cover a considerable area, and amongst the latter we noted a fine stock of *Ulmus latifolia pendula*, the best of all Weeping Elms, its habit most nearly of all taking the form of an umbrella. Another weeping tree of note is a perfectly pendulous variety of Larch. The golden Laburnum, a tree which in spring comes of a rich golden hue, and which has received the stamp of merit of the Floral Committee—a First-class Certificate—next comes under notice. In connection with this our guide relates that where this golden form has been budded on the common Laburnum and even when the original bud has died, heads of a bright golden colour have resulted as a consequence of the inoculation of the stock by the golden bud. *Cytisus austriacus* may also be mentioned as a very desirable little plant. A plant which is known to stand the smoke of towns well and thrive where the variegated *Acer Negundo* will scarcely live, is the variegated Dog-wood, *Cornus mascula variegata*, a rapid-growing shrub, which in the form of standards and pyramids is largely grown and has a fine effect. Another very pretty tree, and one which, like the Golden Oak and the Purple Beech—both extensively



FIG. 101.—*CRATEGUS GLANDULOSA*. (SEE P. 556.)

resources—some notion of the magnitude of its operations.

Let us commence then by stating that its area is 189 acres (there were four only at the commencement), and that the first feature which rivets the attention of visitors is a wide and perfectly straight walk through the nursery $1\frac{1}{2}$ mile in length, flanked on either side by wide borders containing specimen plants of every kind of evergreen or deciduous tree or shrub that is of any commercial value—a promenade of which we do not know where its like is to be found. One gets over this surprise—but only to be bewildered by others, for gigantic is the scale on which everything is done at St. John's. Our guide, who well understands his business, at once plunges into details, and we learn that "the glass" covers not less than 5 acres; that the nursery contains some 86 acres of fruit trees and Roses, and 91 acres of ornamental trees and shrubs, forest trees, and Conifers; that the ground is divided into large, nearly rectangular areas, by walks varying in importance from cart tracks to ordinary footpaths,

Golden Pippin, Pitmaston Pine-apple, Pitmaston Nonpareil, and Pitmaston Golden Wreath Apples, the Pitmaston White Cluster Grape, and the Pitmaston Green Gage Gooseberry. Some distance further on we come to a large block of buildings lying between the great central walk and the Malvern Road. "These are the packing sheds, and close by are the stables, where eight horses are kept for nursery purposes. "A fine shed," we suggest. "Yes, it is 200 feet long, and roomy, as it need be. Why, during the winter months—the lifting season—there are forty-seven men employed here, and during the year a ton and a-half of string is used in this department alone." "Crates, did you say? Yes, you should see the heap when packing commences." A stack of straw suggests an enquiry as to the quantity of that article used, and the reply was 120 tons.

But "Halt, Mr. Guide," for a minute or two—let us see which way the land lies; in other words, decide before going any further how we can manage to see the most with the least expenditure of leg power. There appears to be only one way of solving the

cultivated here—should be freely planted in woods and pleasure-grounds near a mansion, is the golden variegated Spanish Chestnut, *Castanea vesca aureo-variegata*, a handsome bold golden variegated tree. Besides the Copper or Purple Beech tree, of which there are 20,000 plants in all sizes, there is here a new weeping form which promises to take a high position among trees of a pendulous habit. After this comes another fine tree—the Fern-leaved Birch, *Betula asplenifolia*, and then quarters of the cut-leaved, chestnut-leaved, and silver-leaved Beeches, which in turn are succeeded by a grand lot of Planes of various heights, with stems as straight as gun-barrels; next a fine quarter of the Kilmarnock Willows, most valuable of all plants for cemetery work; and one of *Salix Wolseyana*, a plant more graceful in growth than the last-named. Following the Willows come *Robinia inermis* layered in flats, and again in the form of round-headed trees; also *R. inermis aurea*, and perhaps the finest of all the False Acacias for avenues, *A. Bessoniana*, a rare grower, and a grand tree for towns. A most popular town tree also is the Almond, and judging by the quantity grown here the demand for it must be very large. Pre-eminent amongst the Thorns, of which about two dozen sorts are grown here, is Paul's Double Crimson, which is grown in great numbers, and in sizes ranging up to 9 feet. In another quarter a new Purple Birch is pointed out as a most promising tree, being of a fine dark colour, and a very quick grower; and belonging to the same category as regards colour, is the beautiful *Acer Schwedleri*, the leaves of which change when ripe from green to a purple hue. "What a fine effect those Golden Oaks have." "Yes, very beautiful. By-the-bye, Oaks are a speciality here. We grow eighty species and varieties," and off we go to have a look at a few of them; making a note by the way that the fine evergreen *Quercus Fordii* stood the severe winter very well, and that *Quercus pectinata*, a pretty cut-leaved form, was specially worthy of mention.

Out of the Oaks we proceed through a few quarters of other things, and come suddenly upon a fine lot of Conifers. Off goes our guide again. "Conifers!—we have got hundreds of thousands of them, and fine clean stuff they are, as you can see;" and as we did see to some tune before we had done with them. There is a nice lot of *Cedrus Deodara*. "Yes, we have 80,000 of it, and 50,000 plants of *Cedrus atlantica*, from one batch of seed. You shall see them directly." In another direction we come upon a handsome lot of plants of *Abies* or *Picea nobilis*, and are shown beautiful examples of *nobilis glauca*, *Engelmanni glauca*, and *Pinsapo glauca*, "the three best glaucous-leaved Conifers grown," as our companion puts in. Conifers?—there are Conifers everywhere, of a clean and vigorous growth, and of all sizes and sorts.

But we inquire for the Rose quarters. "Roses?—come over on the other side," and over to the other side we go, inquiring on the way how many they "do." "Oh," says our friend, still brimful of figures, "our stock of standards on the Brier is 60,000, and of dwarf Roses on the seedling Brier and Manetti we have 120,000." "Manetti stocks?—yes, there are 300,000 of them. And we have 70,000 Roses in pots." The Roses are not all in flower at the time of our visit, and one quarter looks pretty much like another, so that we made no notes of particular sorts, as indeed would be useless, knowing that at St. John's they "only grow the best, and plenty of them." And Roses do grow here: soil and climate suit them to perfection, and they cannot do better.

Plodding along through the Rose quarters, we come upon sections devoted to fruit trees, and soon get an idea as to the extent and importance of that department. Apples, Pears, Plums, Cherries, &c., in vast numbers come under review, and one cannot help but admire the trees, which make a free, clean, and healthy growth, are neatly trained in the various forms required, and kept scrupulously true to name, by systematic inspection and comparison. "Apples?—we have got all the best sorts, but of course greater quantities of some sorts than others. We 'do' more of Lord Suffield than of any other variety—about 20,000 a year. The next largest in demand?—oh, Dumelow's Seedling, Cox's Orange Pippin, Warner's King, and Blenheim Orange." "The Worcester Pearmain?—ah, that is a beauty: you saw it in London, when it received a First-class Certificate?" "Yes," we reply, "and

very much admired it, for it is a beauty, and evidently as good as it looks."

With reference to Pears we learnt that the greatest demand is made for such sorts as Marie Louise, Louise Bonne of Jersey, Souvenir du Congrès, the Jargonelle and Pitmaston Duchess—the Jargonelle, if we remember rightly, heading all others with an annual sale of about 5500. In Cherries the run upon May Duke and the Morello is about the same—some 3500; and Governor Wood comes next with a total of 1200. Of Apricots the demand is largest for the Large Early and Moor Park. Plums have a tremendous sale; Denyer's Victoria being the greatest favourite, judging by the stock of over 20,000 plants. "Gooseberries?—we have over 40,000 of them; and such sorts as Warrington, Crown Bob, and Green Gage sell best, and are of course grown in the greatest numbers." "Black Currants?—well, we have 10,000 plants of the old Black Naples, 8000 of Lee's Prolific, and 10,000 of the White Grape, to say nothing of the stocks of other sorts." Such is a faint outline of what is done in this department, which, however, we cannot leave without specially alluding to the successful way in which the Mistletoe is grown on young Apple-trees, and which meet with a ready sale. There are trees here with bunches of the mystical epiphyte from one to ten years old; and as an interesting fact we may mention that the propagator, after many failures, has succeeded in getting it to grow on the Oak.

(To be continued.)

ROYAL GARDENS, KEW.

THE number of visitors (569,134) to the Royal Gardens during the past year exhibits a very great falling off (156,288) as compared with 1878. No return so small has been recorded since that for 1872. The deficiency may, with confidence, be attributed to the miserable weather which prevailed during the whole of last summer, and which culminated in the disastrous hailstorm of the morning of August 3, which wrecked the greater part of the glass houses and compelled their closure to visitors for the remainder of the summer.

The bank holiday of the following day, August 4, brought the greatest number of visitors (51,949) admitted in any one day during the year.

The experiment of opening the gardens at 10 A.M. on the mornings of the four bank holidays still appears to me to be scarcely justified by its success. The following figures give the total numbers admitted during the day, and also the numbers of persons who on each occasion entered before 1 A.M.:

	Total number during day.	Number before 1 A.M.
April 14	19,430	2,557
June 2	15,205	1,094
August 4	51,949	3,028
December 26	752	286

The lessons given to the young gardeners in the evening twice a week through about nine months of the year still continue to give satisfactory results, and may be regarded as having settled down into part of the routine of the establishment. The demonstrations in elementary meteorology, physics, and chemistry have been given in the large room of the Jodrell laboratory.

Hailstorm.—Early in the morning of August 3, Kew was visited by a severe hailstorm, which is believed to have inflicted damage upon the Royal Gardens to which their previous existence fortunately supplies no parallel. There is, in fact, no record of breakage of glass by hail, in Kew, on any previous occasion. The hailstones averaged 5 inches in circumference, and descended with such violence as to bury themselves in the ground.

The amount of glass broken was necessarily very great, and was unavoidably increased in the repairs. Some idea of the magnitude of the destruction may be obtained from the fact that the broken glass amounted to 18 tons.

The large extent of the repairs which had to be immediately undertaken involved much replacement of decayed woodwork and extensive repainting. The progress of the works was rendered still more a matter of anxiety and labour by the comparatively low temperature and heavy rains which closed the summer of last year. This involved a heavy expendi-

ture in tents and tarpaulings, to temporarily protect the denuded houses. Two large temporary buildings had also to be erected for the protection of the workmen. Thanks to the energetic action of the Board, the necessary works were carried out, with the aid of contractors, with promptitude and despatch. The whole expenditure was covered by a supplementary vote in the estimates. Although the collections generally suffered much from exposure to wet and cold, the actual number of losses has not been large. The injury done under such circumstances can, however, only be expected to slowly reveal itself.

BOTANIC GARDENS.

Palm-house.—As the hot-water apparatus described in the report for 1877 is of a novel construction, I think it necessary to state that it gives entire satisfaction, whether as regards wear, the economical consumption of fuel, or the diffusion and easy control of heat. Many plants now flourish which had for many years previous to its introduction led a languishing life, and even some that it was impossible to cultivate at all, such as the Cocoa-nut Palm, grow well. Of the Pandanaceæ, the finest specimen in Europe, that in the northern wing facing the entrance, has now reached the glass, not only over its head, but on both sides, and as from its bulk and weight it cannot be removed from its position, if accommodation is not given for its further development in its present position it must be destroyed. Having regard to the great attraction of the plant to the general public and to the scientific visitors from all parts of the world, I think it only right that the assurance should be given, that whatever conclusion may be arrived at it will not be hastily formed.

The ruinous condition of the *Tropical Fern House*, alluded to in the report for 1878, has been remedied, and the repair of the woodwork of various other houses has been overtaken at the same time as the replacement of the glass destroyed by the hailstorm in August, 1879, the effects of which are elsewhere detailed. In effecting these repairs pine-wood has been largely replaced by teak, which it is hoped will eventually prove a great economy. I may mention that the teak-wood tallies, giving the names of the collection of plants in the Arboretum, &c., which were placed in the ground in 1872, show no signs of decay.

THE ARBORETUM.

The efficient keep of this fine piece of ground, and its ever increasing classified collection of hardy trees and shrubs, is a source of continual labour and much consideration, especially with regard to its future. The condition of Kensington Gardens is a standing warning as to the possible future condition of the trees at Kew. These grounds are in many respects similar; in both the soil is very bad, and requires copious supplies of loam; many of the trees are old and stricken with disease; and the increasing number of visitors renders it impossible to preserve them in the wild condition which was formerly their most attractive feature.

As in Kensington Gardens many years ago, so more recently at Kew, the Brambles, Thyme, and other wild plants which once (till within the last twelve years at Kew) clothed the gravelly and sandy tracts, have, together with the Ferns in the woods, disappeared, and their places are now occupied by lawn grass, which requires constant mowing.

The devotion of the Kew pleasure ground to the purpose of a classified arboretum (for which it was so liberally and graciously relinquished by Her Majesty) has greatly complicated the problem of its keep; not only by involving an expenditure apart from that of the general care of the woods, lawns, and paths, &c., but by introducing a new demand in many respects antagonistic to the maintenance of the objects for which the grounds was originally laid out and planted with forest trees. During the first ten years of the Directorship of Kew, nearly the whole of the ground was a game preserve, covered by timber, and the clearing of open spaces (whether for the purpose of replanting or for meeting the requirements of the Arboretum) was prohibited. The result was the loss of many old trees, the absence of young ones to replace them, and the ruin of the collections, which, being planted in the woods, were starved for want of light and of soil, as well as strangled by the roots and destroyed by drip from the surrounding and overhanging trees. For the last fifteen years this policy has been modified; and the interest shown by the public, and especially by

horticulturists, in the Arboretum, has led to its requirements being regarded as paramount.

Hitherto every effort has been made both to preserve the beauty of the grounds and to consider the necessities of the young collections of trees as to light, air, and freedom for growth. The principal clearances made for planting the specimens have been along the frequented paths and in the form of long, straight, or winding avenues cut through the woods, thus bringing the collections into prominence and enabling the public to see the specimens and to find the way to them. In the coming year I hope to be able to report that the whole collection has been arranged in this manner, and that the principal walks and avenues are lined with objects of interest systematically disposed, with abundant space left for additions. In the course of this arrangement the majority of the trees have had to be planted much nearer to one another than they can remain; and after the lapse of a few years every alternate one in most cases, and two out of three in some cases, will have to be moved backwards to admit of the full development of itself and its neighbours. Though this plan of close planting has great disadvantages, it is in many respects advantageous; it is economical—the young trees being near to one another and to the path, less labour is involved in staking, weeding, watering, and cleaning; they are also kept better under inspection, and, above all, the necessity for destroying many large trees growing in the ground behind them has been obviated.

I need not say that this plan of close planting with a view to subsequent dispersal would not have been adopted had it been possible to create the Arboretum by one effort, and had the formation of a complete collection of trees and shrubs been the only object to be attained. The Kew Arboretum has been the creation of a quarter of a century, and is the result of slender means. The sums expended on the area it occupies have been as much devoted to the preservation of its ornamental character, and to the formation and keep of walks, lawns, and paths, as to the requirements of the young specimen trees, &c.

I regret to say that this portion of the grounds suffers greatly from the unconsumed smoke of the gasworks and manufactories at Brentford, which is not only most prejudicial to the plants, but so blackens the labels that they become illegible in a few years.

INTERCHANGE OF PLANTS AND SEEDS.

The following is a statement of the plants, &c., sent out during the past year, and included in consignments:—

	Ward's Cases.	Packets of Seeds.	Stove and Greenhouse Plants.	Herbaceous Plants.	Trees and Shrubs.	Number of Recipients.
Britain	253	3815	1010	1327	118	
Continent	286	194	61	34	25	
Asia	8	137	51	..	16	
Africa	41	127	..	..	11	
America	6	223	182	..	19	
Australia and New Zealand	3	51	58	110	8	
Total	19	2387	4533	1122	1437	197

The receipts have been during the past year 3754 living plants of all kinds, and 2900 packets, bags, and boxes of seeds from 196 contributors. They were distributed as follows:—

	Ward's Cases.	Packets of Seeds.	Stove and Greenhouse Plants.	Herbaceous Plants.	Trees and Shrubs.	Number of Contributors.
Britain	350	636	511	587	102	
Continent	599	124	185	389	15	
Asia	7	740	218	5	24	
Africa	6	102	128	138	20	
America	5	743	234	53	443	22
Australia and New Zealand	2	366	59	..	..	13
Total	20	2900	1410	912	1423	196

(T. be continued)

"THE GARDEN."—We note that our contemporary, *The Garden*, has lowered its price from 6d. to 4d.

DISEASE IN PLANTS.

[The substance of an address on Elemental Pathology, delivered at Cambridge in the Pathological Section of the British Medical Association, by Sir James Paget, Bart., President of the Section.]

EVERY pathologist must have felt that the greatest difficulty in his study is in the manifold complexity of the body in which it is pursued. The living human body is, surely, the most complex mass of matter in the known world. In composition it surpasses the highest powers of chemical analysis; in mechanism it is as far beyond the calculations of the physicist; its structures are but dimly seen with the most perfect microscope; all the known forces of Nature are constantly and coincidentally at work within it; through circulating blood and a nervous system every part is within swift communication with all the rest; and it includes the apparatus of a mind from whose influence no portion of its matter is distantly removed. And in this body the pathologist has to study, not that which is fixed, orderly, and natural, but that which is in disorder and unsettled. May we not therefore hold that, among all the sciences of observation, human pathology has, in the very nature of its subject-matter, the greatest difficulties to contend with?

I have long and often felt that in these difficulties we might gain help from studying the consequences of injury and disease in the structure of plants. For although these, too, are complex, minute, and hard to analyse, yet they are less so than are the structures of any but the very lowest animals; and, which is most important, the processes in them are not subject to the influence of a nervous system, or of a common nutritive fluid distributed from a central organ and quickly carrying to every part materials derived from all the rest. In the absence of a nervous system and of a quickly circulating nutritive fluid, we come nearer to the opportunity of studying a really elemental pathology, nearer to the changes wrought between formed and varying formless matter. I say, without a nervous system and without a circulating fluid; for though some of the properties of vegetable structures, such as are shown in their subjection to the influence of anæsthetics, their movements in relation to light, and the various groupings of their colouring particles, indicate a likeness to the properties of simple nervous structures; and though, through communicating minutest channels, every portion of a plant may be regarded as in relation with all the rest, yet these small degrees of likeness can scarcely detract from the great contrast between plants and animals in the having and the not having nervous systems and circulating bloods.

It was in the hope of promoting a study of elemental pathology that I determined to put together various facts in vegetable pathology which, in the idleness of vacations, I had learned. I was nearly turned from my purpose when I found the vast quantity of good scientific work that has been done in it; the many volumes of books and the hundreds of papers relating to the injuries and diseases of plants, which have been written within the last twenty years by both botanists and cultivators, especially by those engaged in the schools of forestry and orchard culture in Germany. I saw no hope of studying them worthily; but, in those that I have had time to read, I have seen enough to make me more than ever sure that human pathologists may find, in watching the consequences of injuries and diseases of plants, facts of the highest interest in their more proper study.

I must disclaim all pretence of an ability to treat the subject as a scientific botanist, or a practical gardener. I can only, as a human pathologist, see that knowledge of great value is within our reach; I may be able to point out to you where and how some of it may be found; and I can promise attractions of novelty in the study, and of renown to be gained from it; for, admirable as is the work already published, very little of it has been done by those who could fully estimate its value in human pathology.

OVERGROWTHS.

In my selection of subjects I will limit myself to those that are of interest in general pathology; and, first, to hypertrophies, or the simple overgrowths of natural, or nearly natural, structures. Of these I do not know that there are in plants any well marked instances corresponding with those which are the most frequent in animals, in which a part grows in direct proportion to the exercise of its function, and

thus may grow to relative excess when its function is, through the will or for necessary adjustment, excessively discharged. But, in plants there are abundant opportunities of studying those forms of hypertrophy which depend on an increased supply of nutritive material to any part. To mention but one: the arts of partial or complete "ringing" and of constricting or bending the branches of trees depend for success on their ensuring an accumulation of nutritive sap in the part of the branch from which its movement is checked. The result is what we may call a hypertrophy of flowers, or, in other instances, of fruit, or wood, or bark, proportionate to the increased supply of nutriment; just as, in ourselves, hairs and some other structures will grow excessively with an excessive afflux of blood; or, still more and in almost exact parallel, as limbs will grow with a retarded reflux of lymph.

Similarly, I believe that you may find in plants many instances of the kind of hypertrophy which, in ourselves, we call compensatory, in that, one part being repressed or removed, another enlarges with growth of natural structures, as if for compensation; for I think that some of the arts of gardening are based on observations that removal of certain parts of plants will induce an overgrowth of others. Perhaps, among these you may find facts which may help to explain those obscure cases in animals and ourselves in which parts or organs, which have no natural alliance in function, are yet commonly allied in disease, as if they were in some relation of complementary nutrition. Such are the excessive growths of connective tissue and fat which may follow the removal of the generative organs; events well known but, I believe, not well explained. Only consider how many of the luxuries from our orchards and gardens are really such growths as in our pathology we should call hypertrophies, and that to produce these is within the art of the gardener, and you may see how large a collection of facts which may be useful in our study are within our reach, and, which is yet more important, within the range of experiment.

WASTING.

Let me speak next of some illustrations of the simple defects of nutrition, which we class as atrophies or degenerations.

I am not sure whether there be among plants any atrophies by mere wasting of parts once completely formed, which may be compared with the emaciation of animal structures.* Shrivelling, drying, withering, and defective growth are only too frequent; but these are all different from that unmaking and removing of structures which we trace in both the healthy and the morbid processes of nutrition in animals.

The atrophies with degeneration are very numerous; but I will take for illustration only that group which we may see beginning all around us in the decay and fall of leaves. This decay is their senile degeneration. It is marked chiefly by their changes of colour—the changes to which we owe the characteristic beauties of our autumn scenery. These are accompanied by changes of texture, shown in the dryness and brittleness of the leaves, and by changes of chemical composition; but I will refer only to the changes of colour, and observe that these indicate decay, not death. They do not occur when fresh leaves are quickly killed, as in hot water, or when they are pressed and dried for an herbarium.

Among many things to be observed in the changes of colour, let me first ask you to note their usual symmetry. One of the characteristics of mere degenerations, as we see them in old age, is that they are symmetrical. I hardly need cite instances; many of us may study them in ourselves or one another. Symmetrically we become, equally on right and on left, bald, or grey, or wrinkled, or dusky with dark pigment in our epidermis, and harsh-skinned with thickening and hardening of its cells. Now, similarly, the rule in leaves is that, in so far as they are symmetrical in shape and structure, so are the changes of colour which mark their decay or degeneration.† You may find, indeed,

* I may have overlooked many instances of it; but some that may seem like mere wasting are rather diseases with associated degeneration. Such are the gum-disease (gummosis) the flux (resinosis), and others of the same group, which I find classed as liquefactive diseases, and in which cell walls, wood, and other structures dissolve in or into turbid juices. See Sauer, *Handb. der Pflanzenkrankheiten*, p. 184; and Frank, *Encycl. der Naturwissenschaften, Pflanzenkrankheiten*, p. 369. I venture to guess that these may give help in the study of our mucoid and other liquefactive degenerations.

† "In so far," for the symmetry of living things is not mathematical; it is artistic, in the divine perfection of art.

very many exceptions to the rule; for it cannot be observed in leaves which have been unequally expanded, or whose several parts have not been equally exposed to heat and light, or in which parts have been killed or injured. Many accidents may hinder the observance of a rule of symmetry; but the observance cannot be an accident; and, if you will pick up leaves enough, and look well at them, you will see that the general rule of symmetry in the changes of decay is as evident as is the similar rule in our own symmetrical diseases and degenerations.

The changes may best be seen in those leaves or leaflets of dicotyledons which have a simple bilateral symmetry, a median vein, or fibro-vascular bundle, passing through the length of each leaf and giving off side-branches; but it is often scarcely less plain in palmate and in pinnate leaves, both in their several divisions and in the comparison of each division with its opposite fellow. In such leaves you may trace, in each pair of similar parts, similar changes of tint spreading uniformly or gradually over them; usually, first from a darker to a paler green, from brighter to less bright; then to pale yellow or brown, or to some tinge of red, or scarlet, or flame colour, or some other of the tints that make autumn scenery glorious.

Now let me point out some things in our pathology which these facts may illustrate. The changes of colour are not mere chemical changes ensuing in a dead part. Leaves do not usually die till after, sometimes long after, they have fallen. Their changes of colour and of texture, even to the last dull brown in which they crackle as we tread on them, are vital changes in the same sense as are those which we see in ourselves in the advance of old age. In this view they may be taken in evidence on the question as to the nature and meaning of some symmetrical diseases.

There are at least two reasonable theories concerning these diseases. One is, that the symmetry is due to the relation between some morbid material in the blood and certain parts which are symmetrically placed, and are exactly identical in composition; absolutely like to one another, and not absolutely like to any other part which is not similarly affected by the same material in the blood. This was the theory on which Dr. William Budd and myself wrote our essays on the symmetry of disease nearly forty years ago. The other, which at that time I only ventured to suggest, but which is now, I think, rather dominant, is that symmetry in disease is determined by the disturbed condition of symmetrically disturbed nerves, the disturbance issuing from a single nervous centre. The symmetry of decay in leaves may be taken as a strong fact in support of at least these two principles: 1. That symmetrical changes may occur in degeneration and disease, as certainly as in development, without any influence of a nervous system or of a circulating blood; and 2. That, among structures, which, to all our tests, may appear identical, those alone may be absolutely alike which are symmetrically placed. Surely no two things can appear more alike than are two adjoining leaves of a tree, or two parts of the same leaf; and yet, if under the same conditions, these do not decay in the same time and measure, it can only be because they are not absolutely alike. Thus the symmetry of decay in leaves may prove that none but symmetrically placed parts may be verily alike; and thus the possibility, to say the least, that in ourselves a diseased blood may similarly affect only such parts, and thus that, among symmetrical diseases, there may be some of which the essential and sole necessary condition is some morbid material in the blood.*

(To be continued.)

CORNFLOWER.—One of the prettiest things in the show-house at Kew of late have been some pots of *Centaurea cyanus*, the common cornfield weed, whose blue flowers are so charming. Now that it is raised to the dignity of a show plant we shall not care to call it a weed again. It is said to be the favourite flower of the Emperor of Germany, and another Emperor is stated to have preferred it to all other flowers in his garden. We must say their Imperial Majesties show their good taste.

* In connection with this subject it may be useful to study the variegations of leaves, in some of which, as in many varieties of *Begonia*, a perfect symmetry of colour is observed; in others, as in many Laurels, complete asymmetry. Instances of completely unilateral decay may sometimes be found in Cabbage leaves and Turnip leaves near the roots; sometimes, also, in Laurel leaves. They may be suggestive in the study of unilateral organic diseases, some of which are not wholly due to disturbances of trophic nerve-force.

DIMORPHISM IN PLANTS.

SOME of the difficulties which the botanist and the gardener have to encounter—and, it must be added, some of the advantages they gain—are due to the property that many plants have of assuming different appearances at different times and under different circumstances. The sudden appearance of a shoot—say of a Beech tree—with finely cut leaves, is a case in point. The gardener calls it a “sport,” the botanist a “bud-variation,” but neither appel-



FIG. 102.—*FICUS REPENS*, ORDINARY STATE.

lation gives much clue to the cause of these productions. Among the assigned causes are—1. The dissociation of previously mixed qualities, as when a plant of hybrid origin suddenly breaks up, as it were, into its parental forms; 2. reversion, wherein a plant or animal suddenly manifests the characteristics of some of its more or less remote progenitors. This process is in essence very similar to that last mentioned. Then, 3, we have the persistence in adult life of characteristics usually confined to the juvenile stages of growth only. This is what happens in Junipers, *Retinosporas*, and other Conifers, wherein it is not unfrequent to find two different sorts of branches and foliage on the same bush. A well-known instance of this occurs in the Eucalypts,

wherein the foliage of the young tree is markedly different from that of the old. Sometimes, for some reason or other, the plant retains its juvenile condition, and never assumes the form proper to mature age, as in the case of *Abies bifida*, long thought to be a distinct species from *A. firma*, but which is now incontrovertibly proved to be only an immature state of the latter. The *Marcgraavias* afford another example of this diversity of form of the same individual plant, while, to come nearer home, the flowering condition of the common Ivy, as contrasted with its ordinary state, may be cited as an equally striking case of diversity of form in the same individual plant.

The direct cause of these phenomena is, however, not easy to ascertain, and the explanations afforded, though reasonable enough, do not apply in all cases, and can hardly be put to the test of proof except in rare instances. There is another class of cases, 4, where the form and appearance of the plant are altered to suit particular circumstances. We give at fig. 102 a good illustration of this, in the little creeping Fig, *Ficus repens*, or *F. stipulata*, so common in our stoves and greenhouses. The specimen figured was kindly sent to us by Mr. Garnier, of Kylemore Castle Gardens, Galway. So long as this remains flat against the wall the leaves are close and small and thin, the stems too are slender, and adhere to the wall by little rootlets. If, however, a shoot become detached from the wall it is apt to assume the appearance shown in fig. 103, and if cut off and struck it may be treated as a standard, and used as a decorative plant on the greenhouse stage, mixed in with flowering plants. This was done at least thirty years ago by the late Mr. Masters, of Canterbury.

No one who was not aware of this peculiarity, and who saw the two forms separately, would consider them as forms of the same species—much less of the same individual. This should serve as a caution to those who multiply species, and particularly to the students of fossil plants, who are sometimes wont to make the most astonishing statements on the most unsatisfactory evidence.

HYACINTHS AND TULIPS.

ANY one not in the trade seeing the bulb fields of Haarlem must wonder what becomes of the millions of bulbs grown there, but when we come to think that the windows and greenhouses connected with almost every well-to-do home in England are embellished during winter or spring by plants obtained from them, and that the majority only do duty for one year, as they are generally cast away after flowering, astonishment ceases; and it then becomes a mystery how the vast demand can be supplied, especially when it is known that it takes several seasons to get the offsets from the saleable bulbs up to a size and strength to fit them for the market: and yet things are so managed in this age of progress that if a demand be created for anything, no matter what, the supply is forthcoming. Well, it is so with Hyacinths and Tulips, and long may our Continental friends, who are so ably engaged in their culture, flourish, for, from the pains they take to meet our requirements and serve us at a cheap rate, they deserve success, as the price at which the bulbs are sold places them within the reach of all. But there seems a danger of their cheapness making us wasteful, for no sooner do the blossoms fade than the plants are thrown away to the rubbish-heap or are got rid of in some way or other.

This ought not to be, for, although they may not be fit for pots again, were they only taken care of and planted out anywhere in shrubby borders, by the side of woodland walks, or even dotted about thickly among grass under deciduous trees on lawns and pleasure grounds, they would be very natural-looking and quite an ornament, and go far to enliven places in spring that are now often bare and neglected. All we have to do, if they are placed under trees, is to let the grass grow as it lists till the foliage of the bulbs is ripe; and there is nothing objectionable in this, but just the reverse, as I can testify from grounds I frequently have the pleasure of seeing where only broad spaces are cut by the machine, thus affording soft green rides or walks leading hither and thither among clumps of *Rhododendrons* or shrubs and other objects of interest, and the effect is far more pleasing than is produced by any close-shaven lawn. If these latter were only managed and kept something after the manner just mentioned, we should have plenty of room for all our spare bulbs and Primroses, and hundreds of other plants might be grown among the tall grass and be made

to look quite at home. I do not know whether Hyacinths have ever been tried in woods or copses, for if planted there it is possible that they would cross with our blue bells, and if so, what a galaxy of beauty we should be able to enjoy with the ground carpeted with all shades of colours, besides having the air redolent of the sweetest of odours.

For early flowering in pots the Roman Hyacinths are decidedly the most useful, as they may be had in bloom long before the others, and being smaller and

sprinkling of sand, that each when pushed down may get a portion under, which will prevent the bases coming in immediate contact with the earth, for when they do this they are liable to rot. The same remark applies to the large kinds, which should therefore be protected in like manner.

The general way of potting these is one in a pot, but three will be found much the best, especially if wanted for windows or vases, as by flowering them so closely together a grand show may

some hours previous to covering them with ashes, which will give them time to drain and the bulbs to dry, as otherwise there is risk of decay.

When potted a common cold frame is the most suitable situation to stand them in, as there they can be protected from rain, and the slower they come on till they get plenty of roots the stronger and finer will the flower-spikes be. This being so, instead of the lights being kept closed they should be tilted at the back; and to prevent the bulbs pushing themselves out of



FIG. 103.—*FICUS REPENS* WHEN DETACHED FROM THE WALL. (SEE P. 560.)

looser in their spikes they are more suitable for cutting or working up in bouquets. Another advantage in growing these, is that they take but little room, and eight or ten bulbs may be potted together in a 7-inch pot. By putting a few at a time in heat a good supply and a constant succession may be easily kept up. The soil best adapted for them is a rich friable loam, made somewhat lighter than is required for the Dutch sorts, and in potting the easiest and most expeditious way is to fill the pots very lightly, and then thrust the bulbs in at equal distances apart, and to a depth sufficient to bury all but the tops. Before doing this, however, it is always advisable to give a

be made in a very small space. The thing to be aimed at is to have colours that will harmonise well, such as pink and white, blue and white, and so on, or else to have all three of one variety and then arrange them in stands in the windows according to taste. If potted singly 5-inch pots are quite large enough, but if three are made choice of 7-inch pots should be used, and in these the bulbs put triangularly as far apart as they can be placed. One very important matter in potting Hyacinths is to have soil for them just fairly moist, to save watering, which is always best avoided till they are on the move, but if they are watered at all before they start it should be

the soil or being subjected to alternate changes, it is necessary to cover the pots containing them with 6 inches or so of fine coal-ashes, which may be allowed to remain on till the plants have made about an inch of growth, when they should be carefully taken out and plunged in any cold pit or frame up near the glass, where for the first few days or a week they will require the protection of a mat to shelter them from the sun and light till they lose the bleached appearance, as otherwise they are apt to suffer injury from a too sudden exposure.

If any are wanted for forcing those most advanced should always be made choice of, and if a few of

these are taken out from time to time and placed in heat a constant succession may be kept up. The great thing in forcing both Hyacinths and Tulips is not to hurry them, but to allow them to come gradually on, for if pushed at all hard not only does the foliage come meagre, but the spikes of the one and the blossoms of the other never develop themselves in the way they otherwise would. To give them every chance of being strong and fine the pots should be placed on a shelf in any warm house, and as the plants progress in growth and get well rooted they must be properly attended to with water, and if occasionally they have a little clear liquid-manure it will be found of great assistance to them, especially in cases where the soil they are potted in is not sufficiently rich or they are at all limited for room.

Hyacinths for glasses do best with the water barely touching the base, as then there is no fear of their rotting, but as there is loss from evaporation and what the roots take up, fresh water must be added as required to make good the waste. To keep the whole sweet it is advisable to put a few small pieces of charcoal in each glass, which should be stood in some dark cupboard till the bulbs have made a fair start, when they should be gradually transferred from thence to the windows, where they can receive all the light and air possible. Tulips are not adapted for this mode of culture, but with five or so in a 6-inch pot they make a grand display, and are splendid room ornaments or for assisting to embellish a greenhouse. When done with for either of these purposes they come in admirably for beds or borders, and after a year or two, if well cared for, do for lifting and potting again. *Rex rubrorum* and *Tournesol* are the two most showy, and as a contrast to these *La Candeur* is a good white; but there are many others that are very desirable where large numbers are grown. *J. S.*

GARDEN GOSSIP.

BY A LADY.

ON LADIES' GARDENING. — The old woman of the tiny garden described in my last paper (p. 264), said to me, the other day, "I'm terrible fond of flowers, and I do all the work to them myself, every bit of it. You see, ma'am, it wouldn't do for men to be wasting their time over such work as that." I could not help wondering what some of our great florists would say to having the business of their lives run down in that fashion. This is a hunting neighbourhood, and her husband is the "earth stopper," so she probably considers fox-hunting a more useful occupation for men than the cultivation of flowers. But her remark sufficiently accounted to my mind for the presence of so many old-fashioned flowers in her garden. One, at least, she pointed out to me as having been preserved for thirty years. Doubtless men beat women in most points of gardening, but there is generally a lack of patience in their composition which unfits them for the careful preservation of individual specimens. They remind us of Nature (according to Tennyson) :—

"So careful of the type she seems,
So careless of the single life."

Their care for the type results in their improving it into something very different from the original plant. The new form is probably more beautiful and more perfect than the old, but it has lost the charm of association, which, to a female mind, is the greatest charm that flowers possess.

Women are by nature conservative; they cling to the past, and to anything that reminds them of the past; while, as a rule, men live more in the present, and have a greater love of change. If men take to gardening, this leads to revolutions among the flower-beds, and results in the loss of many old favourites which, if the woman be the gardener, hold their own in undisturbed possession for many a long year.

It follows that, had we none but women gardeners, we should have no progress; had we none but men, we should lose many a flower which delighted our forefathers, but which survives now only through the affectionate care of some female hand.

I think this distinction between a man's garden and a woman's garden is so real that it would not be difficult to guess which ruled in any garden visited for the first time. When a man rules I must confess that the general effect is likely to be better than when his wife takes the command into her own hands. More

money will be spent on the purchase of new flowers, and more paid labour will be put into the ground, if his position in life enables him to make use of any other labour than his own. In a woman's garden "pretty bits," and individually attractive flowers, will be likely to catch the eye, rather than the general effect of the whole. Be her station in life what it may, her garden is likely to bear much the same character as that of my old woman, which glanced at from the road is rather a jumble of bright colours, but when examined carefully is found to be full of interest.

It is not that the female eye is necessarily deficient in perception of artistic effects, but that when the preservation of a favourite flower clashes with the general arrangement of the garden, the love for the individual plant will generally prevail, and effect will be sacrificed. Nay, more, the lady gardener will allow her affections to twine themselves round particular paths, arbours, or trees; and obvious improvements which entail the sacrifice of any of these are not improvements in her eyes. How often we hear it said, "I do not care to revisit such and such a spot; it is quite changed since I lived there; the trees are cut down, the flower-garden is turned into a lawn-tennis ground; the place is quite spoilt." Yet, perhaps, a stranger would say, "How much the place is improved!"

Among the trials and troubles that beset the life of a gardener, surely this is one not to be overlooked; for many a gardener has a lady over him, whose taste must be consulted, and whose love for old arrangements, decaying trees, and old-fashioned flowers, must often interfere sadly with the improvements which he would like to carry out, and tend to destroy that harmony which ought to exist between the mind that conceives and the hand that executes any work. The gardener is blamed by strangers for not doing what he cannot do without displeasing his mistress; and it is not every gardener who is strong-minded enough to defy the opinion of the outer world, and rest satisfied with the approbation of his mistress and of his own conscience. *A. B.*

Notices of Books.

Paxton's Flower Garden. Revised by Thomas Baines, F.R.H.S. Part I. Cassell, Petter, Galpin & Co., London, Paris, and New York.

Paxton's Flower Garden, in three volumes, as issued to the world by Dr. Lindley and Sir Joseph Paxton, was a book of botanical authority, and as such its descriptions of new plants, and its illustrations, are frequently quoted in botanical and other publications. We are therefore extremely sorry to see that the two plates forming the principal features of Part I. of the reissue before us are, though entirely new subjects, numbered respectively plates 1 and 2—an arrangement which must lead to inevitable confusion, since the references to the two editions will not correspond, and consequently those who consult the new issue to find a portrait of some particular plant which they may see quoted as being figured in this work, will find themselves at a loss. Such a source of confusion was wholly unnecessary, and it would have been easy and far more convenient, supposing new plates to be really required in a reissue, to have added the new subjects under supplementary numbers. Or if the contents needed to be varied, a variation of the title would have prevented misapprehension. In the opening part, now before us, both the plates, as we have said, are new—namely, *Aerides crassifolium* and *Spiræa palmata*, but neither of them can be considered as very successful illustrations for a work of this status, being coarse in execution and heavy and incorrect in colouring. The gleanings, which form the second part of the work, have had certain portions expunged and replaced by more modern subjects, the additions being only too conspicuous from the difference of style, especially the omission of authorities for the names, which at once strikes the eye. The letterpress accompanying the plates appears, from the examples before us, to be more cultural than descriptive, and coming as it does from a well-tried practical hand is, so far, satisfactory, but we regret, for the reasons stated, that the work has not taken some other form. It may even yet be not too late to prevent further inconvenience by a modification of the title. The plan which has been followed throughout of spelling the specific names with capital initial letters is very objectionable. In

other respects the work is neatly got up, as those issued by this firm usually are.

Greenhouse Favourites. London: Groombridge & Sons.

This forms a handsome table volume, and is illustrated by thirty-four plates printed in colours, representing popular greenhouse flowers, some of them very fair in quality, but none of high-class merit. The text consists of instructions for the culture of the several flowers, and are for the most part reliable, and sufficiently minute to serve as useful instructions to amateur cultivators, but the illustrations do not in all cases very closely correspond with the text. Thus, for example, under *Primulas*, the text refers almost wholly to *P. sinensis*, while the two plates given in connection with the name represent *P. japonica* and *P. Sieboldii* respectively.

— The issue of *European Ferns* (Cassell & Co.) has proceeded as far as Part XIII. The literary work continues to be done in a satisfactory way, though the plan of issue involves the constant recurrence of fragmentary portions of the subject. The objection we formerly noted, that of the plates consisting of coloured figures of the entire plants, diminished below—often much below—natural size, calls for the same remark as before—namely, that such figures are of very little utility. That of the *Balanium Culcita* (here called *Dicksonia*), represented in the present part, might be taken as a representation of any of the many other large compound Ferns having triangular fronds. It would be desirable also that the venation and fructification should be more clearly brought out in the figures.

Garden Operations.

HARDY FRUIT GARDEN.

After the late deluge of wet, the sharp frosts that we are now having impede the work of planting seriously. There is, however, nothing lost by waiting a few days for the soil to be in proper working order before undertaking any of the many operations which demand attention at the present season, such as top-dressing, root-pruning, and planting. We turn our hand to anything in preference to puddling among wet soil. I have already adverted briefly to planting and root-pruning as it is practised at the present day, and would now supplement those remarks with a few observations upon the utility of planting fruit orchards more extensively than is at present the case. If there be one thing more than another that is calculated to lower the science of gardening in the estimation of employers it is the continued want of those indispensable culinary fruits which are in such demand during the winter season. The Apple crop of late years has been almost *nil* in many gardens; the question, then, is, have we no remedy.

Many suggestions and theories have been ably advanced as to the cause of this dearth of hardy fruit. The change of seasons has been blamed, and rightly blamed too (by none more than by myself), for many of our disasters, but after all there is still something left in the background. I have had opportunities this season of travelling over a considerable area in this district, and a minute observation of what I saw irresistibly forces upon me the conclusion that a more natural system of cultivating Apples especially, would yield better results. Nearly every orchard that I have seen, whether cultivated or uncultivated, contained a far greater proportion of fruit than anything that we have been able to obtain from what is generally accepted as a more modern system of cultivation. Argument is all very well, but one fact is worth a thousand arguments unsupported by practical results. Here, then, is a probable way out of the difficulty, which need not interfere with existing arrangements, and which will, I venture to hope, yield a valuable addition to our supply of culinary fruits. The trees, as far as variety is concerned, should be selected for their merit only—say a dozen or a score of useful prolific kinds. The situation should, if possible, be contiguous to the garden, and be sheltered from violent winds, which are fatal alike both to blossom and fruit. An elevated situation such as would afford the necessary shelter would answer best, as in that case there would be no lurking vapour nor stagnant water to create an atmosphere prejudicial to the setting of the fruit by acting injuriously on the tender organisms of the blossoms during late frosts. It is quite evident that we must depart from the cup-and-saucer system of cultivation, and revert to the good old-fashioned orchard system, which seldom failed to yield a plentiful supply of its fruit in due season. *W. Woods, Canford Manor.*

FLOWER GARDEN.

Flower gardens—at least so far as regards summer bedders—were, in these parts, suddenly and ruthlessly dismantled on the morning of the 20th inst., by the unusual occurrence so early in the season of a heavy snowstorm. Unfortunately, the injury done to bedding and other flowering plants is only a very small proportion of the damage that has been caused thereby, more especially to deciduous trees, such as Oak, Elm, Chestnut, and Beech; all these being as yet in full foliage the weight of the snow caused the boughs to snap off in all directions. Scores of these kinds of trees in the grounds and park here are thus maimed, whilst, strange to say, evergreens and Conifers have entirely escaped. But to return to flower garden matters. We are now making a thorough clearance of all plants that will not stand the winter, and replacing these with small hardy shrubs, such as *Retinosporas*, *Cupressus*, *Junipers*, *Golden Yews*, variegated *Hollies*, *Eunonymus*, variegated *Box*, *Berberis*, *Cotoneasters*, *Yuccas*, &c.—these do duty as “sentinels,” or say, as central “dot” plants, whilst the undergrowth, for the most part, consists of plants that have done duty for the summer bedding, and do not therefore require to be transplanted. Among these are the hardy *Sedums*—several kinds; *Herniaria glabra*, *Veronica repens*, *Veronica incana*, *Antennaria tomentosa*, *Golden Thyme*, *Ajuga reptans purpurea*, and many others. The large vases and basket beds we fill with shrubs in mixture, using a goodly proportion of variegated *Box*, *Aucubas*, *Hollies*, and *Periwinkle*, with the darkest green-foliaged shrubs, such as *Yews*, *Portugal Laurels*, and *Cotoneaster*; and breaking the formality of the arrangements with neutral tinted, or what may perhaps be more properly termed silvery foliaged shrubs, such as *Cedrus Deodara*, *Cupressus Lawsoniana argentea*, *C. torulosa*, and *Retinosporas ericoides*. There are numbers of other plants suitable, perhaps more suitable than some here named, but these make no mean display, and are inexpensive and bear frequent removal well. The labour of dressing a flower garden in winter garb can be much lessened by the use in the summer arrangements of hardy plants, and this too without detracting from summer effect. Several beds here that had not a tender plant in them except a few *Alternantheras*, and *Grevilleas*, *Dracenas*, or *Abutilons*, were as much admired as any containing the best of the tender bedders, whilst, to make the said beds bright and cheerful for the winter, the labour has been insignificant, merely the substitution of hardy sentinel plants, such as *Yuccas*, *Retinosporas*, and small *Junipers*, for the *Dracenas*, *Abutilons*, &c. Even where spring effect has to be considered rather than winter, such a use of hardy plants for summer is alike desirable, particularly the use of the dwarf carpeting plants, into which bulbs may be dibbled, and *Wallflowers*, *Myosotis*, *Silenes*, &c., can be planted. *Dahlias*, *Salvia patens*, herbaceous *Lobelias*, *Marvel of Peru*, *Cannas*, *Gladiolus*, and tuberous *Begonias*, all should be lifted—the bulbous plants dried and stored in any place free from frost, the others planted thickly in dry soil in cellars, or sheds, from which frost is excluded. In dry situations, and where it is not intended to furnish the beds for winter, *Cannas* may safely be left in the beds, but they require surface protection of some sort, the neatest being cocoanut fibre refuse, though cinder-ashes, old tan, or bracken are all effective protectors. All other kinds of bedding plants ought now to be in their winter quarters. Give abundance of air in favourable weather, and till the turn of the season but just sufficient moisture—to *Pelargoniums* in particular—to keep them from flagging; damp, both atmospheric and at the roots, which conduces to rotting off, being the principal evil to avoid in order to safe wintering.

The planting of trees and shrubs may still be continued as long as the weather remains open; *Roses*, too, will now safely transplant, and by removal thus early there will be no danger of the plants suffering should we have a dry spring season. In our light soil we find it necessary to entirely lift all the plants in order to well trench and manure the beds every alternate year; a cultural plan that evidently answers, as we rarely have a speck of mildew, and always an abundance of good flowers. At any rate, whether fresh planted or not, a good thick mulching of manure applied now would be of immense benefit both as a protector and root feeder. In addition to these greater operations there are numbers of others of smaller moment that can be done, so to speak, at leisure, and yet that will materially advance the work for the busier spring time. Among these are *Laurel* and other shrub pruning, fence and hedge trimming, turf levelling, and fresh surfacing of walks with gravel. In regard to the maintenance of neatness till the leaves are all down, this will be an impossibility; but some attempt should be made, say once a week or so, to have a general clear up. *W. Wildsmith, Heckfield.*

FRUIT HOUSES.

FIGS.—Three weeks ago I directed attention to the importance of getting the early pot trees from which

ripe fruit is to be gathered in April ready for starting by the middle of November, and since that time we have cleared away the plunging material, shortened back the roots, and rebuilt the turf walls, using virgin turf, crushed bones and old lime rubble for the new roots to work in. These walls are firmly rammed until the level of the pot is reached, when the roots that have found their way over the rim are built in and the walls are carried up 4 inches higher to make room for a mulching of rotten dung and the reception of liquid manure when the trees require water. If the trees have been infested with troublesome insects the woodwork should be painted with good oil paint, the walls and pits scalded and lime-washed, and, to insure the destruction of mealy-bug, one of our most troublesome enemies, a small quantity of turpentine or paraffin should be added to the dressing applied to the trees. When the time arrives for shutting up the house, a good body of fermenting Oak leaves introduced between the pedestals or mounds of earth will economise fire and produce a moist, genial bottom-heat, which will gradually reach the roots, and reduce the necessity of heavy syringing until after the turn of the year. The above treatment applies to large old trees that are not potted annually; but small portable trees may be placed on the surface of the fermenting material until the heat declines to 75°, when they may be partially plunged, or, in order to keep them near the glass, an additional supply of leaves may be taken in at short intervals until the bed is raised to the rims of the pots. Succession houses in which the trees are growing in internal borders may be kept dry until a convenient time arrives for getting them thinned out and cleansed—an operation that requires great care and diligence. When washing with warm soapy water a hard brush may be applied to the old branches, but shoots of the current year, now thickly studded with embryo Figs, will require a painter's brush or sponge, as the slightest injury at this time will disfigure the fruit when ripe.

Get all root-pruning in late houses finished, always bearing in mind that strong-growing kinds when confined to limited roof-space can only be kept fruitful and manageable by limiting the root area and feeding when carrying crops of fruit. Vigorous varieties, like *Castle Kennedy* and the *Ischias*, require plenty of light, heat, and space for growing themselves into a fruitful state, otherwise they will not be found so well adapted to the daily wants of a family as the more moderate growers. *W. Coleman, Eastnor.*

CUCUMBERS.

The recent and somewhat sudden change in the weather has rendered brisk firing necessary at night, in order to maintain the moderately low temperature of 65°. This in its turn renders necessary an increase of atmospheric moisture in the Cucumber-house, as a means of counteracting the somewhat parching influence of the highly-heated hot-water pipes. The plants, too, where the bottom-heat is obtained through the same source (hot-water pipes) will require water oftener at the roots, and this when necessary should be given in the morning, but not before the temperature of the house has reached 70°, so that any superabundance of moisture that might arise therefrom would have time to evaporate before nightfall. Avoid overcropping of the plants, which in most cases will be inclined to fruit rather freely during this and the succeeding months. This, however, must be prevented by removing forthwith all superfluous fruit and male blossoms as they appear. Remove any damaged portion of wood or leaf that may appear on the plants, and let the stopping, thinning, and tying of the shoots be proceeded with as necessary. The linings of dung frames will now require to be attended to regularly, by having them made up weekly or fortnightly, according to the circumstances immediately connected with the operation, and the frames should be covered with double mats at night. The appearance of mildew and canker on plants growing in these frames may be looked upon as a natural consequence of the conditions and circumstances under which they are grown; therefore, the presence of these diseases is not only to be apprehended, but their spreading checked by the timely use of preventives. An occasional dusting of the leaves with the flowers of sulphur will check the attacks of mildew, whilst a dusting of quicklime and new dry soot around the collars of the plants, and over the surface of the beds generally (avoiding the foliage), will not only be the means of saving the plants from canker, and in case of its having previously attacked them arresting its further progress, but also (by means of their moisture-absorbing properties) prove a good antidote against the attack of mildew. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

FERNERY.—The season has now arrived when Ferns go quietly to rest, and cease to require the abundant supplies of water they always delight in during the summer months, but which if given unsparingly after this would soon end in rendering the soil sour, and destroying the greater portion of the roots. These remarks apply more particularly to

such as are planted out in pockets among rockwork, as there the absorbent nature of the porous stone, and the larger body of earth the plants usually have, will be found to hold sufficient moisture to last them for some time, but in cases where they are confined to the limited area of pots, they will require frequent looking over to keep them in that happy medium state of being neither wet nor dry, in which condition they are sure to winter well and start with great vigour when the time arrives for them to move again in the spring. Besides being sparing of water at the roots, it will also be necessary to considerably diminish the atmospheric supply of moisture, and not to syringe overhead, as the fronds are soon injured thereby, especially if the temperature is at all low; and if the reverse, there is much risk in keeping them growing. For the stove kinds, 60° is quite high enough by night, and anywhere between that and 70° by day, according to the weather and the amount of light at command. Greenhouse varieties, properly so called, succeed well in a house ranging from 35° to 45°, which suits them better than a higher degree of heat, as they keep more free from scale and other insect pests that invariably assail them if the air they are growing in is not suitable to their requirements. This may often be seen with *Gleichenias* when grown in stoves, where thrips is sure to get hold of the fronds; but if the plants are kept in an intermediate temperature, they not only escape such disfigurement as these marauders cause, but they are always more robust and healthy, and the same may be said of many others which suffer from over-excitement and the consequences of living too fast. This tells its tale just as surely in the vegetable kingdom as it does in the animal, and both pay the penalty in the weakness they thereby inherit, which, although the recuperative powers of Nature are great, frequently clings to them pertinaciously to the end of their existence.

STOVES.—White flowers are highly prized at all times of the year, but at festive seasons, like that of Christmas, they have a special value, and to get a supply of the most choice then, well prepared plants must be set to work at once. The most amenable and reliable for the purpose are *Gardenias*, which if thoroughly ripened and well set with buds may be depended on to yield a supply, as may also the lovely *Eucharis amazonica*, from bulbs that are strong and have been rested by being kept cool and somewhat dry at the roots. If pots of these are plunged in a bed of brisk fermenting material, or stood in a position where they will get plenty of moist heat, they will quickly respond, to aid them in which they should when started have a thorough soaking of tepid water, and when fairly on the move be kept just moist by applications of liquid-manure, which the *Eucharis*, if growing in soil well drained, is particularly fond of. The same remarks apply to *Gardenias*, but the thing is in both cases not to give it too strong and to use it perfectly clear, as then there is no risk in blocking the air passages or doing damage to the tenderest feeders. Should *Lily of the Valley* be desired in at the same time that, too, must be started, and as the first batches are difficult to coax into bloom, and need some humouring to induce the spikes to emerge from the crowns, it is no use hurrying them, and the best way is to bring them gradually on in the dark. This may be done by covering them with moss or inverted pots, which maintain a more equable degree of heat and moisture till they get sufficiently advanced to bear a fuller exposure. For table decoration there is nothing among flowering plants more beautiful or effective than *Thyracanthus rutifolius*, the gracefully pendulous strings of which when draped with their scarlet blossoms show up in such pleasing contrast with the cloth and its various appurtenances. Not only are they fine for the above-named purpose, but they are almost equally striking suspended in light wire baskets, for which they are well adapted, and if associated with *Panicum variegatum* the effect is most charming. If used in this telling way the plants should be knocked out of their pots at once, and so arranged that they do not look stiff and formal, but by grouping them thus early the leaves and shoots will have time to assume a natural position. Epiphyllums of various kinds are grand treated in the same manner, as to see them to the best advantage they must be elevated, and as they require so little soil it is an easy matter, when on their own roots, to suspend them anywhere from the rafters. Then, again, there is *Bilbergia Moreliana*, the brilliant drooping scapes of which are fine in the extreme, but unless brought up to a level with the eye half their beauty is lost. This plant, too, is epiphytal, and therefore does admirably in baskets with only a small portion of soil, if kept well watered while making its growth. I would just mention another, equally deserving of cultivation for winter blooming, and that is *Centropogon Lucayanus*, of *Æschynanthus*-like habit, good alike for baskets or pots, and of great service for cutting. A few of this with the others named would go far to furnish any house during the dead time of year so shortly before us. *J. Sheppard, Wolverstone Park.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Nov. 1	Sale of Dutch Bulbs and Liliom at auction, at Stevens' Rooms.
		Sale of Dutch Bulbs, at the Auction Mart; and of Stove and Greenhouse Plants at Fortis House, Muswell Hill, by Protheroe & Morris.
TUESDAY,	Nov. 2	Clearance Sale of Pines at Linton, near Maidstone; and Sale of Nursery Stock at The Willows, Leicester, by Protheroe & Morris.
		Sale of Roses, Fruit Trees, &c., and Dutch Bulbs, at Stevens' Rooms.
WEDNESDAY,	Nov. 3	Sale of Nursery stock at Trigg's Nursery, Woking; and continuation of Sale at Leicester, by Protheroe & Morris.
		Sale of Imported and Established Orchids, at Stevens' Rooms.
THURSDAY,	Nov. 4	Continuation of the Sales at Woking and Leicester.
FRIDAY,	Nov. 5	Sales at Woking and Leicester concluded.
SATURDAY,	Nov. 6	Sale of Plants and Bulbs, at Stevens' Rooms.

AT a time when adverse seasons have brought farmers into a condition of almost absolute distress, and when farms are being in all directions thrown upon the hands of their owners, it is but natural, that as drowning men will catch at straws, so also should farmers and their friends grasp at any prospect that may offer to keep them from falling deeper into misfortune. Somewhat of this nature is the advice given by Mr. CHARLES WHITEHEAD, in the pamphlet he has issued,* and in which he strives to show that there are not a few farms where, if market gardening was tackled on to the ordinary agricultural routine of cropping, good and profitable results might follow.

It is one of the curious features of the author's style, however, that though he blows hot at starting, he blows somewhat cool at the finish, for whilst he first sets out the advantages that are offered to the farmer on the one hand, he at the last exhibits the doubts and fears that cloud the prospect, and tells too plainly, that even under the most auspicious conditions, market gardening offers no prospective or actual El Dorado. Market growers are, perhaps, themselves not the most impartial critics; but at least there is no denying the fact shown in their ledgers, and as just now in the matter of vegetables produced by simple culture, such as may be looked for on a farm, there is a tremendous glut—so much so, in fact, that literally hundreds of acres of fine produce will not pay to carry to market—it is not to be wondered at if the professional market gardener should smile gloomily and shake his head when he reads Mr. WHITEHEAD's pamphlet.

Farmers complain enough already of the cost of labour—a very important factor in their balance-sheet. Any indulgence in the luxury of market gardening simply means treble the amount of labour per acre needed in agriculture, and increased wages; a more skilled type of labourer is needed in garden culture, and he looks for and gets higher wages. Rent is yet another very important element, and is perhaps the one which farmers find it the most difficult to encounter. Almost everywhere land used for market garden purposes is rented nearly twice as high as is mere agricultural land, and owners are not likely to be more lenient in rural districts than they are about London, or other large towns. With this style of culture also comes an increased assessment for rating and taxing purposes. Land is now so heavily weighted with local and imperial taxation that any addition to the burdens it has to bear would be too much for both owner and tenant; then there is to be considered the large stock-in-trade needful when market gardening is embarked upon. Seed bills too, become heavy incumbrances, and, not least, manure, for without plenty of manure market garden crops cannot be had. This represents an expense that immensely detracts from the resulting profits. These are some of the considerations that may well urge the farmer to pause ere he enters upon a course of cropping so diverse from that with which previously he has been familiar. The old motto *Ne sutor ultra crepidam* is per-

haps one that needs in this age much qualification, but at least it is exact enough when it deals with the subject of Mr. WHITEHEAD's pamphlet.

Although we are all supposed to be lineally descended from "the grand old gardener" we are not all born gardeners; but even if we were there are few market growers who will not say that to be successful in that branch of horticulture it is necessary that we should know a little about other things besides the valuable knowledge of how to grow Cabbages. In fact, let a grower of any kind have the best of market crops, he is as poor and helpless as the shipwrecked mariner upon a desolate island with a thousand pounds in his pocket, if he can find no market wherein to dispose of his wares. Even if he can find such market some of his profits depend upon the cost incidental to getting them there, and still more upon his business capacity to dispose of them at the best price. Mr. WHITEHEAD sees this difficulty in the case of his farmer clients, and laments that, both in London and in other large towns, it is so difficult to dispose profitably of commodities of which there are in the country enormous quantities. A lack of roomy and accessible markets, and the present system which makes salesmen, greengrocers, costermongers, and others the necessary intermediaries for the dispersion of the various vegetable commodities to the consumer, generally serves to treble or perhaps quadruple the first cost of the articles, and thus whilst the grower gets too little, the consumer finds he has to pay far too much, and both his power to purchase more and also his inclination to do so are limited.

Perhaps we may be singular in the remark, but there is reason to believe that garden products, especially of what might be termed the coarser kinds, are not so largely consumed by our town populations as some persons suppose. Cabbages, Savoys, Turnips, and many similar products are perhaps for the town palate—somewhat demoralised by fiery waters and spicy diets—too common and unacceptable, but Peas, Runner Beans, Cauliflowers, and Potatoes usually find a ready sale. Thus, apart from every consideration and difficulty that may affect the farmer in his efforts to turn market grower comes perhaps the most difficult of all—the finding of an accessible and profitable market; and if just now, as for several years, the professional trade grower, with all the advantage of near position to the chief market of the world, well-trained intelligence, and great practical knowledge, finds his returns are almost profitless, what prospect is there for the farmer who lives remote, and has in all the requirements of the business yet to cut his wisdom-teeth? It is of little use to decry foreign competition, or to urge that our home growers are letting the foreigners cut the ground from under their feet; England is a market for the world, and our business men know no insular prejudices. The foreigner has climate, soil, cheap land, and cheap labour in his favour; against these we can contend in vain. It is from abroad we get products in seasons when our own growers cannot supply them, and this makes the figures quoted by Mr. WHITEHEAD look so appalling; but he adds, "When the English season begins the foreign supply falls off," thus showing that were seasons and climate equal our growers would have nothing to fear, and perchance have now not so much as they may think.

On the other hand, if we pay the foreigner £3,500,000 for garden produce annually, how much of it is spent in aiding British productions of other kinds? There is no bane without its antidote, depend upon it, and some gain if others suffer. Not least, how many millions of people are there who now may partake, out of season, if we may so express it, of those

good things from which in other days they were debarred? It would be incorrect to assume, in spite of all thus written, that we wish to throw cold water upon Mr. WHITEHEAD's zeal or his suggestions. His pamphlet deserves the attention of all farmers, and it will do them good to read it, even though, like us, they somewhat dissent from its conclusions. He treats of market gardening round London, of suitable soils, and of modes of culture; then of temperatures and rainfalls, and of their influence upon vegetable culture; of the methods of rotation and culture in vogue in Cornwall, and other high-class market garden localities; and diverges into a topic to which farmers may turn with special interest—the absurd restrictions that are imposed upon cropping, and which would, under not a few leases, prevent many farmers from growing market garden crops. The wages question is also alluded to, and Mr. WHITEHEAD thinks that the introduction of market gardening into farming offers to the labourer the best chance of getting an increase in his weekly pay, and the most probable means of providing employment for our surplus population. This is an excellent belief, and the prospect a pleasing one, but from which we seem to be drifting rather than approaching. This little interlude, however, serves to show how much of social as well as of political interest there is mixed up with this question of the cultivation of the soil.

We have said enough, doubtless, to draw attention to the subject of this criticism, and would conclude by simply mentioning, that if a business is but a paying one only, and nothing more—and that is the most that can be said of market gardening now—every fresh addition to the ranks of the producers, every increase in the supply without a commensurate increase in the number of consumers, means a lowering of the present prices and of profits. It is not so much vegetables we want, it is rather meat, poultry, and eggs. If our farmers can give us these things they will find a profitable and ready sale for them, and perform a national service.

—ROYAL TUSCAN SOCIETY OF HORTICULTURE.—Among the horticultural societies of the Continent few have manifested such signs of energy and progress of late years as the Royal Tuscan Society of Horticulture, whose head-quarters are at Florence. The International Exhibition held in that city in May, 1874, together with the Congress of Botanists, both organised under the auspices of this Society, were the starting points of a period of renewed activity, and now we hear of a federation of the horticultural societies of Italy, of periodical exhibitions, of an experimental garden and conservatory (see fig. 104), and other signs of progress. In the end of May of the present year a grand exhibition of flowers and products of horticulture was held at Florence, when, among others, the Marchese CORSI SALVIATI, the Marchesi TORRIGIANI, the Countess SPALETTI, greatly distinguished themselves by their exhibits. At the same time a congress of horticulturists was held, at which the best means of furthering the progress of gardening in Italy were considered, together with other practical subjects, including a protest against the Phylloxera laws. In September a great fruit show was held, of which at present we have received no report. To Cav. E. FENZI the Society and the Federation are under very great obligations, not the least of his many services being the superintendence of the *Bulletin* of the Society.

—SEDGES AS CATTLE FOOD.—In this country it is pretty well established that these plants are useless for feeding purposes, and take up room that might be better employed. We learn from Baron VON MUELLER, however, that *Carex Moorcroftii* is eaten by cattle in Tibet in the winter season.

—LINNEAN SOCIETY.—The first meeting for the ensuing session will be held on Thursday, November 4, at 8 P.M., when the following papers will be read:—1. Additions to our Knowledge of the Flora of North-western India; by Professor G. WATT. 2. The Papilionidæ of South Australia (Adelaide and

* *Market Gardening for Farmers*. E. Eltingham Wilson.

Vorke's Peninsula); by J. G. OTTO TEPPER. 3. On Mr. KITCHING'S Collection of Flowering Plants from Madagascar; by J. G. BAKER. Dr. MURIE has been appointed Librarian, in place of Mr. KIPPIST, resigned.

— FLOWERING OUT OF SEASON.—On Reigate Heath last week numerous bushes of the spring-flowering *Ulex europæus* were to be seen in flower side by side with its dwarf autumn-flowering brother, *U. nanus*; the flowering did not appear to extend to the whole of a bush, but only to certain branches, which in many cases were either taller or more exposed than those branches which were not in flower. A few stems of *Rubus Ideus*, which pro-

usual course followed after such a request is to ignore it altogether, but in the present instance we are bound to express our admiration at the excellence of this number and our surprise at its low cost. The etching which serves as a frontispiece is a masterpiece of light and shade, the woodcuts are mostly of high quality, and the general "get up" all that could be desired.

— WELWITSCHIA.—The last number of *Nature* contains an account of some observations made by Mr. BOWER in the Jodrell Laboratory at Kew on the germination of this extraordinary plant. The chief points of interest lie in the fact that the two huge leaves heretofore considered as persistent cotyledons

and money here expended might have been better spent. It is a matter of regret to see societies like this continuing uninterruptedly in the same routine year after year, and doing so little to advance our knowledge of the subjects in whose interest the societies are formed. We ought not to forget, however, that in the Society's Annual a few really good papers have been published, amid much that is of merely ephemeral interest.

— WULFENIA AMHERSTIANA.—On the rock-work at Kew is now flowering a plant of this rarely-met-with species. It is a herbaceous perennial, with closely-tufted spreading obovate obtuse coarsely crenated dark green leaves; from the centre of the

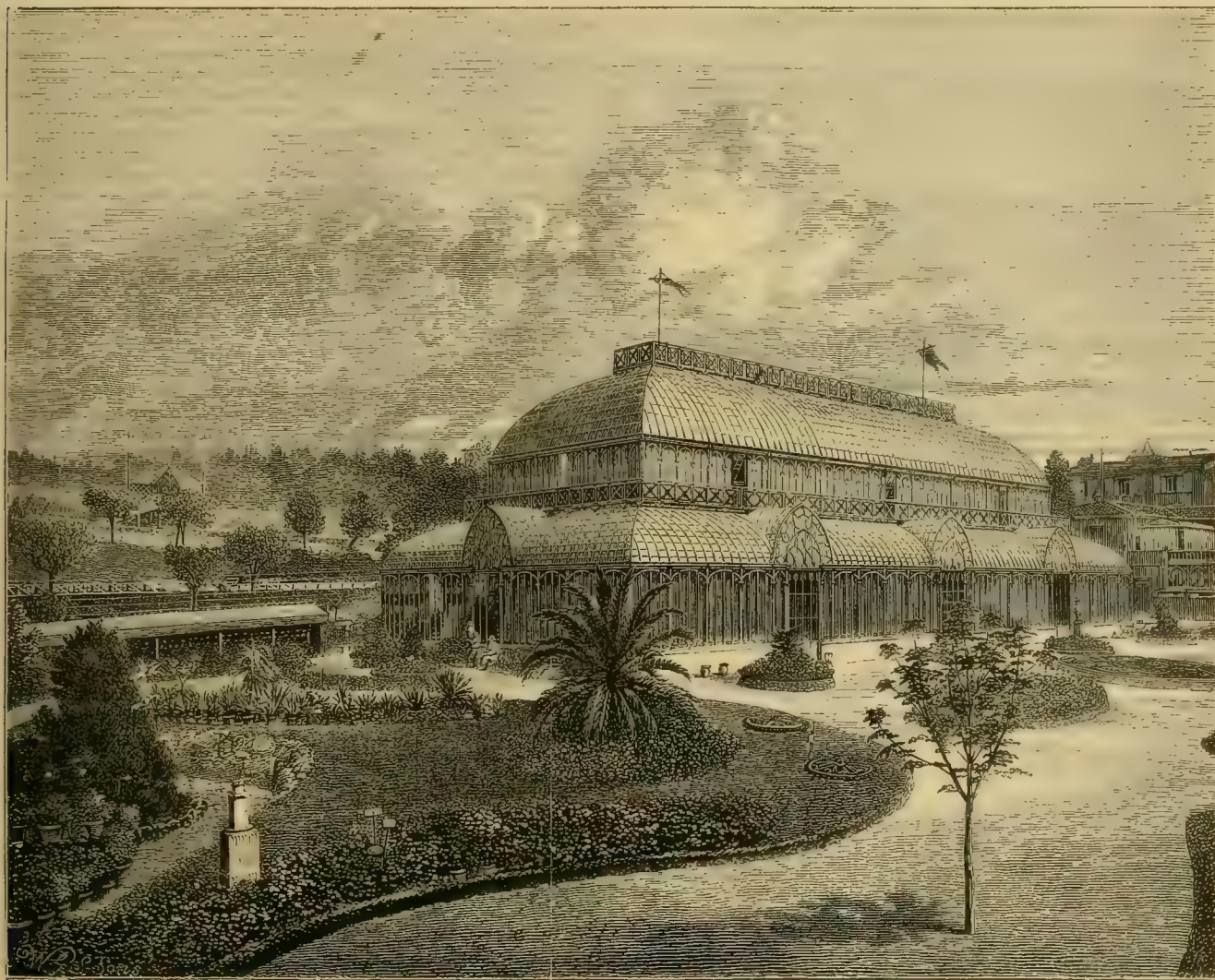


FIG. 104.—CONSERVATORY IN THE GARDEN OF THE ROYAL TUSCAN SOCIETY OF HORTICULTURE, FLORENCE. (SEE P. 564.)

perly ought not to have flowered until next spring, were also in flower, and their leaves looked as green and fresh as if it were July instead of October. These unusual cases of flowering out of season are possibly due to the rains of the latter part of summer, followed by the very hot weather experienced in September.

— ROYAL BOTANIC SOCIETY.—This Society has arranged to hold the following exhibitions next year:—Spring shows on March 30 and April 27; summer shows on May 25 and June 22; and an evening *fête* on June 15. It has not yet been decided what special exhibitions will be held during the season.

— "THE MAGAZINE OF ART."—Messrs. CASSELL send us a specimen number of the journal so entitled, and express the belief that we "shall be pleased to specially notice it in our columns." The

are not really so, but are really the first and only stem-leaves. The true cotyledons remain within the seed for a time, but ultimately become completely free. A connection is, however, kept up with the endosperm by means of a lateral process from the tigellum, or portion of the stem below the cotyledons, and which projects root-like into the endosperm, suggesting a rough analogy to the "foot" of some cryptogams.

— THE NATIONAL ROSE SOCIETY.—The committee of the Society have issued "Some Account of the Exhibitions held by the National Rose Society in 1880, with a complete list of awards." Considering that some account of the Society's proceedings were given at the time in all the gardening papers, we fail to see the advantage of the present publication, and have an impression that the time, labour,

tuft of leaves arises the flower-stalk, 6—8 inches high, slender, and bearing a raceme of small lilac flowers, all drooping to one side.

— "A BOOK ABOUT ROSES."—As an indication of the wide-spread love of Roses, to say nothing of the merits of the book itself, we may mention that Canon HOLE's book under the above title has reached a seventh edition.

— KEW GARDENS.—The annual report for the year 1879 has just been issued. It contains as usual some details as to the working of the establishment for the year, and as to its far-reaching intercourse with other gardens. Many valuable notes on economic botany, extracted from the correspondence with foreign and colonial botanic gardens, are also given. We shall publish extracts from this report from time to time.

The principal event of the year was the disastrous hailstorm of August 3, noted by us pretty fully at the time, and of which some notion may be gained by the statement, officially recorded, that the broken glass amounted to 18 tons. The greatest praise is due to the officials for the promptitude and zeal with which they set themselves to work to avert the evil consequences to the plants, and to repair the damage to the structures. Had they been more afraid of responsibility and more trammelled by official routine, leading to vexatious and in this case disastrous delays, the results would have been far more serious than they were. We regret to find in the present report no appendix such as was published on former occasions and containing a classified list, with synonyms, &c., of the cultivated plants belonging to some important natural order. An authoritative catalogue of succulents, Orchids, Conifers, and the like would be very valuable, even if published piecemeal.

— **EFFECTS OF SNOW ON POTATOS.**—The unusually early fall of snow that has taken place over such a wide range of the kingdom will have been likely to do much injury to the large breadths of late Potatos still in the ground when the snow fell. It appears somewhat strange that snow-water should affect Potatos in the way it does—by giving them such a disagreeably sweet taste, as badly as if they had been touched with frost. The objectionable flavour to some extent wears off after a time, but never seems to go completely. The best kinds, containing much starch, like the different forms of Regent, appear to be more affected by contact with snow-water than varieties in which the starch is present in less quantity.

— **FLOWERS IN OCTOBER.**—As autumn deepens to winter flowers decrease in quantity, but there are yet many to lend a touch of the beautiful in various aspects while autumn works out its desolating mission. Of the cut flowers that are supplied to the market we may mention *Odontoglossum Alexandræ*, *O. grande*, *Vandas*, *Phalenopsis amabilis*, *Begonias* of the winter-flowering type, *Pansies*, *Fuchsias*, *Zinnias*, *Asters*, *Coreopsis*, *Xeranthemum*, *Mignonette*, double *Chinese Primulas*, *Scarlet* and other *Zonal Pelargoniums*, *Vesuvius* largely preponderating, *Gladiolus*, hybrid *Rhododendrons*, the white *Anemone japonica*, *Bouvardias* in variety, *Hogarth* and *Vreelandi* being conspicuous; *Roman Hyacinths*, *Gardenias*, *Tuberose*, *Violets*, *Heliotropes*, and a few others: surely enough for the most fastidious to select from. A bridal bouquet of the first order was made up of *Gardenias*, *Eucharis*, *Tuberose*, *Orange blossom*, *Pancratium*, double white *Chinese Primrose*, white *Roses*, *Lapageria rosea*; while the chaste blossoms of the *Phalenopsis amabilis*, raised a little above the surface of the other flowers, gave a truly artistic finish to this charming arrangement. What are known as "dress flowers," i.e., a short wreath worn by ladies on their dresses just below the throat, are now much in vogue, and with some fitting green leaves are made up of *Roses*, *Bouvardia*, *Zonal Pelargoniums*, *Yellow Marguerite*, *Heliotrope*, &c. Button-holes are formed of white, salmon-coloured, and buff *Tea Roses*; *Gardenia*, *Tuberose*, *Odontoglossum Alexandræ*, *Bouvardia*, *Camellia*, *Heliotrope*, *Roman Hyacinths*, &c. Button-holes formed of white flowers are, as a rule, much more in request than those made of coloured flowers; and, indeed, very few gentlemen appear to care for bright colours in their coats. In the case of dress flowers, they, in many instances, are required to match the colour of the dress. There is a very large demand for cut-flowers just now, and to provide them taxes to the full the energies of those who lay themselves out for this work.

— **MANAGEMENT OF NOVELTIES IN ROSES.**—In a racy article contributed to the *Florist and Pomologist* some years ago, the late Rev. W. F. RADCLIFFE published some very useful suggestions as to the treatment of pot plants of new *Roses* when received. "They generally arrive tied to a Currant twig which roots faster than the stock. The ties should be cut with a pair of scissors, and the twig should be removed and replaced with dead wood. Scissors are better than a knife to cut the ties, as you are less likely to bruise the unhardened wood, which looks like a seedling *Asparagus* three weeks old. If the novelty arrives in the autumn take it out of the pot and plant it in the Cucumber frame. Do not

water it, but put dry leaves over the surface. Put the lights on only at night or in bad day weather. I lost last winter none so treated. If a pot plant arrives in summer in clayey mould, baked as hard as a brick in the pot, before you plant it out soak it in a bucket of water till the ball is wet through, or you will never wet it; white fungus will then ensue, and the plant will make no growth. A twelve hours' rain alone will wet this hard ball. After you have wintered your novelties in the frame, in May plant them in two rows, with their balls on raised banks, such as *Thorn hedges* are planted on. I planted out this spring sixty-six frame-wintered pot plants and forty *Roses*. The banks are about 3 feet wide, with ditches between them; the banks run north and south, so that the rising sun heated one side and the setting sun the other. The top is heated by the sun in the ascendant. After planting I put on a heavy mulching of black dung, battered down, and covered the manure with 2 inches of burnt field ashes to protect the mulching—these were also battered down. Water during the torrid weather was poured on the centre copiously."

— **ERAGROSTIS ELEGANS.**—This is a fine annual grass of an ornamental character which is almost as striking in decay as it is in the full vigour of its growth. When grown in masses on rockwork and other conspicuous places clumps of this grass have a very pleasing effect, and when green has given place to brown, even in death, the decorative quality is retained. Mr. BARRON uses it with excellent effect at Chiswick.

— **HORTICULTURAL GARDENS FOR SOUTHAMPTON.**—Some time ago a few of the most ardent supporters of the Royal Southampton Horticultural Society set on foot a proposal to establish, by means of a company, some horticultural gardens for Southampton. The matter has remained in abeyance for some time, but recently a public meeting was held at the Guildhall of the borough, presided over by the Mayor, Mr. W. H. ROGERS, the well-known nurseryman, of Red Lodge, Southampton, to discuss the matter, and there was a large attendance of those interested. The desire of the promoters is to secure a permanent site for the exhibitions of the local Horticultural Society, and it is stated that it is a matter of necessity, as the last estate left in Southampton had recently changed hands, and was in process of being built upon. They are desirous of securing a piece of land containing about 14 acres, forming a part of Bannister's Park, near the Common, on the north side of the town. The spot is very happily situated, having a dell, with rising ground in the centre, which could be made a permanent site for exhibitions, and allowing sufficient space for provision for archery, cricket, lawn tennis, &c. The boundary of the land can be utilised by being laid out as ornamental grounds. The land is beautifully timbered, indeed there is scarcely an estate at Southampton that has more beautiful trees, and it is a favourite spot for artists to resort to in search of objects of natural beauty to sketch. The land would have to be fenced, and roads and paths made, but the Mayor thought that it would not be difficult to raise sufficient money to do what is required; the cost of maintenance to be provided out of the endowment fund formed of a portion of the capital. Already the sum of £2600 has been guaranteed, and it is thought that another sum of £1400, raised as a subscription fund by means of shares, will give the requisite amount. Resolutions were passed with enthusiasm, pledging the meeting to further the scheme in every way in its power, and providing that the necessary funds should be raised in £1 shares, the capital being £6000. A provisional council was appointed to carry on the labours of the inquiry committee; and it was further resolved that when 4000 shares are taken the scheme shall be proceeded with.

— **DOUBLE CLEMATISES.**—Probably the interesting group of double *Clematisses* which followed on the introduction from Japan of *C. Fortunei* by the explorer whose name it bears, has not yet come to be so much appreciated as it deserves to be as furnishing pillar plants for the conservatory. In addition to *Fortunei*, with its creamy-white, sweet-scented flowers, we may mention *John Gould Veitch*, lavender-blue; *Lucie Lemoine*, white; *Duchess of Edinburgh*, white, very full and pure, and deliciously scented; *Mrs. G. Innes*, pale lavender-blue; and *Countess of Lovelace*, bluish-lilac, very fine and sweet. It should be borne in mind that all these partake of the patens character,

and bloom from the old or ripened wood. In every case the flowers are quite distinct. In their young state the sepals more or less incurve over the silky tails of the ovaries, but gradually they unfold, and the full-blown flowers are large and striking, and remain in perfection for a considerable time. All these *Clematisses* are hardy, and do well against a south-west wall, though complaints are sometimes made that they do not flower so freely as might be desired. It is in the conservatory that these fine *Clematisses* flourish, and they are admirably adapted for planting against pillars and supports; in such positions and in good soil they are almost perennial bloomers.

— **ALCOHOLIC FERMENTATION IN PLANTS.**—When plants are deprived of oxygen gas it appears that alcohol is formed in all their tissues without the aid of any ferment. If a vegetable cell containing sugar be cut off from its supply of oxygen—be suffocated, in fact—the sugar it contains becomes broken up or changed into carbonic acid, alcohol, and other products. Moreover, the various alcoholic ferments only produce their effects under the same conditions. Alcoholic fermentation, then, depends solely on the suffocation of a living cell containing sugar. Starting from these ascertained facts M. VAN TIEGHEM, in a recent number of the *Annales Agronomiques*, alludes to a peculiar disease in Apple trees due to a suffocation of the roots, followed by the production of alcohol in their tissues. On microscopic examination the tissues were found healthy, except the medullary rays, the cells of which, instead of containing starch or sugar, contained brown oily globules, the residue left after the formation of the alcohol, which latter is diffused throughout the root, tinging the cells of a characteristic brown colour, and giving rise to an easily detected alcoholic odour. Judging from these appearances what was the nature of the disease M. VAN TIEGHEM made inquiries as to the character of the soil, and from this, as well as the fact that the season had been extremely wet, his diagnosis was confirmed, and he in consequence prescribed efficient drainage as the remedy for the disease, and with good effect.

— **ROBINIA BESSONIANA.**—A very successful piece of street planting may be seen in the Sutton Court Road, Turnham Green, a new thoroughfare running parallel with the west boundary wall of the Royal Horticultural Society's Gardens at Chiswick. As the work of planting was superintended by Mr. A. F. BARRON it may be concluded it was well done, and it is shown in the luxurious growth and general well-being of the trees. *R. Bessoniana* is a free growing form, more so than in the case of the ordinary type of the *R. Pseud-Acacia*, which takes on a straggling growth, while the one under notice, though of free growth, is yet compact in its development. A large number of trees have been planted, which are doing remarkably well and very even in appearance throughout.

— **FOG.**—We are getting into a state of trepidation concerning "fogs"—in fact, as to their nature and cause are all very much in a "fog;" that is, however, but a mental one, and out of which we hope some day safely to emerge. The popular impression appears to be that fog is smoke, and that the furnaces and fireplaces which create smoke are the creators of fog, and that for all the ills and discomforts that flow from fogs the smoke and its causes are responsible. We may well question the exactness of this reasoning, or, perhaps, assumption. Fog is a terrible nuisance in a large town, and especially so in the metropolis. What evils it possesses are there, because of the surroundings, greatly intensified; but fogs are not the property or privilege of the town—not even of the metropolis alone, and those who have to endure their thick gloom in the rural districts can tell of a thickness that is almost suffocating, and of a darkness that can almost be felt. Smoke may intensify fog, but smoke alone cannot create fog; if it did, whence come the terrible and most dangerous fogs that afflict the ocean, and render at certain times the English Channel so dangerous? We get tremendous fogs in districts remote from masses of smoke generators when the forces that generate fog are in operation; and no doubt wherever there is most moisture, either in or on the earth, there will the aqueous vapour be most dense and troublesome. London may be finely drained, but it lies in a valley; and from the Thames are ever arising the exhalations that produce fog. Equally where streams and rivers run there is the

greatest amount of vapour. It may be easier to explain the cause of fog than tell how to get rid of it; but probably it will be found that smoke has no more to do with its formation than it has with wet cycles or excessive frost.

— **FASCIATED STEM OF VEGETABLE MARROW.**—A few days ago we had an opportunity of seeing in a private garden at Kew a very remarkable fasciated stem of the Vegetable Marrow. It was nearly 4 yards long, and varied from 6 inches in its widest part to 3 inches in its narrowest. With the exception of rather prominent furrows it was flat, and bore leaves on both the upper and lower surfaces. As many as ten leaves were given off from some of the nodes or fusion of nodes; and several normal fruit were borne by this fasciated stem. In some respects this seemed to be the flattening of a single stem rather than a combination of several. Thus, a section of an internode was like a figure 8, very much compressed laterally. Whether the cavities were original, or only the result of subsequent separation of the tissue, we could not ascertain, but the former appeared to be the case. On the other hand, the large number of leaves proceeding from the oblique nodes indicated either a fusion of several stems, or the suppression of so many internodes of a single stem. We understand this phenomenon is not uncommon in tropical countries when the plant is growing in very rich soil, and Dr. G. WATT of the Indian Educational Department informs us that he once cut a Marrow which was about 6 feet 6 inches long. It is now in the museum at Aberdeen.

— **THE FINEST TRAILING CAMPANULAS.**—We are not quite sure whether, as a matter of individual preference, we should not vote for the old *Campanula hederacea*; but that is probably because it is linked in with so many pleasant herborising rambles; but, putting that personal bias on one side, we shall gain the assent of the majority by naming *Campanula isophylla* as the best of its kind, and next to it the white variety. The latter was flowering freely in Mr. WARE'S nursery the other day. It is worth calling to mind that this *Campanula* is only known in a wild state in a little strip of coast bordering the Riviera. Two or three other plants, such as *Saxifraga florulenta* and *Convolvulus sabatius*, are in like case. Why? That's a question which the geologists might help to answer.

— **THE WEATHER.**—General remarks on the weather during the week ending October 25, issued by the Meteorological Office, London:—The weather has been generally fair over the greater part of the kingdom, but very dull and wet in the south and south-west of England. Snow has fallen in many places, and on the 20th was very heavy over the south-eastern parts of England. At some stations hail showers occurred. The temperature has been considerably below the mean in all districts, the deficit ranging from 8° in "Ireland, N." to 11° over southern and central England. The lowest readings registered occurred on the 22d, the thermometer falling to 19° at Markree Castle, and to 21° at Parsons-town and Brookborough. Over central England the minima ranged from 21° at Shrewsbury to 30° at Oxford. The rainfall was more than the mean in "England, S.," "England, S.W.," and "Scotland, E.," but much less elsewhere. In the south and south-west of England the fall was greatly in excess, and at Falmouth the total fall during the week was 3.84 inches. Bright sunshine shows an increase in all districts except "England, S." and "England, S.W.," the percentage of total possible duration ranging from 58 in "Ireland, N." to 21 in "England, S." The wind was generally moderate from the north in nearly all parts of the kingdom during the first three days. By the 21st, however, a north-easterly breeze had appeared over the south of England, which subsequently extended to all except the more northern stations (where the wind was westerly), and continued to prevail till the 24th, reaching the force of a gale in the south and south-west on the 21st and 22d. At the close of the period the westerly current in the north had spread to all except our south-western coasts.

— **GARDENING APPOINTMENTS.**—Mr. DELL, late Gardener to the Earl of DARTMOUTH, at Pats-hull, has been appointed Gardener to E. HERMON, Esq., M.P., Wyfold Court, Henley-on-Thames. — Mr. QUINTIN READ, for fourteen years Gardener to WILLIAM HALLINS, Esq., Pleasley Vale, near Mansfield, has been appointed Gardener to F. T. MAPPIN, Esq., M.P., Thornbury, Sheffield. — Mr. W. SHEP-PARD, late Foreman at Hardwick Hall, near Ellesmere, has been appointed Gardener at Brisworth Hall, Northampton.

EXOTIC AND HARDY FERNS.*

FERNS, though so common, are a class of plants beloved by old and young, whether seen growing in a plant-stove mixed with our brilliantly coloured stove flowering plants, side by side with the graceful *Dracæna* and stately Palm, or scattered over a fernery, some suspended in baskets, others peeping out from among stones, virgin cork, and similar rustic material, the arrangement imparting to them such a natural appearance that one is almost carried away with the idea that he is suddenly transported to a warmer clime, and is looking upon a scene in the native home of these beautiful plants.

In our woods and on our rockeries we have them again, not quite so beautiful at first sight, but quite as interesting, perhaps more so if their likes and dislikes are studied and their wants supplied.

Nearly every place of any pretension now-a-days has its fernery. We find these of all shapes and sizes; some have the Ferns planted out on a rockery or other material, while in some the Ferns are confined to pots.

The planted-out system looks very pretty when the plants are well arranged, but many of the choicer sorts are apt to be lost sight of, and overgrown by their stronger brethren.

When grown in pots they are more under control, and can be used for decorative purposes; they are better to cut from besides, as the fronds will last longer.

In places where cut Ferns are required during winter it is a good plan to grow on a batch of plants expressly for the purpose; such kinds as *Adiantum cuneatum* and *formosum* should be turned over in the spring, repotted or cut up as they may require, started in stove temperature, and grown on until the month of August, when they should be gradually hardened off to stand a moderately cool temperature during winter. They will do well in a late vinery, and a row of them in 8 or 10-inch pots will not interfere with the appearance of the house, improving it rather than otherwise, while the moisture given off by the plants during winter will not be enough to injure the Grapes, late vineries as a rule being kept on the dry side. Fern fronds cut from a dry atmosphere like this will stand for three days under ordinary circumstances, while those cut from a moist stove or fernery will scarcely last more than as many hours. Some recommend steeping the fronds in water for a time before use. I have tried the plan, but have not found the fronds to be benefited in any way by such treatment.

A few words on potting and soil will not be out of place here. The entire stock should be gone over about the first week in March. Some will need shifting into larger pots; many may be reduced and put back into the same sized pots again. The free growing kinds of *Adiantum* should be cut up and started afresh. For all free growing Ferns use a good loam chopped up with a spade, and put through a half inch sieve. Only the fibry lumps should be used, with a good sprinkling of sand, with for some kinds the addition of a little bone-meal. For those kinds that are of slow growth, and do not require shifting often, a mixture of loam and peat, with charcoal and sand added, will suit best. The peat lasts longer than the loam, and does not run together so soon.

Space would not admit of my going over the long list of exotic Ferns now seen in cultivation. I will briefly notice a few of the leading sorts, commencing with the free growing varieties. In the foreground stands the beautiful *Adiantum farleyense*, a plant now met with in almost every collection. It is especially adapted for show purposes, being so distinct in form. It requires an intermediate temperature, and should be heavily shaded in summer or it will lose its beautiful green colour, and become yellow and sickly. In potting, care should be taken not to disturb the roots more than is necessary, and only to give a moderate shift. Among other *Adiantums* we have *peruvianum*, which is an improvement on the well known *trapeziforme*. Both of these varieties will be found useful to cut from during winter, though they require stove temperature, for the pinules are thicker than the finer cut varieties, and consequently stand the change in atmosphere better when cut. I have known ladies prefer these Ferns to the common *cuneatum* for wearing in their dresses at the dinner-table.

* Read at the meeting of the Scottish Horticultural Association on September 7.

For hanging in baskets I think *Adiantum assimile* is about the best. *A. gracillimum* makes a neat little plant when grown in 5 or 6-inch pots, but does not look so well when grown in larger sized pots.

Adiantum macrophyllum is a fine plant for dinner-table work, and affords great relief after plants of the *Dracæna* type have been much used.

Adiantum reniforme is a plant that requires more care than any of the other kinds with which I am acquainted. It is not often seen in good condition. It may be grown in a greenhouse out of cold draughts, but it is more at home in a fernery with an intermediate temperature.

Blechnum brasiliense and *corcovadense* are two useful free-growing Ferns, and come in well for mixing with flowering plants in the conservatory during the summer months.

I pass on now to the slower-growing kinds.

The *Cheilanthes* is a Fern that requires a little more than ordinary attention to grow it well. In damping down the house care should be taken not to syringe this plant, as it suffers from the application of water to the fronds.

Among the *Davallias* *D. Mooreana* is the genera favourite. It makes a grand specimen plant, and may sometimes be seen from 5 to 7 feet through. Plants of this size should not be disturbed at the root for two or three years, as they take some time to recover themselves if broken up and repotted. An extra amount of bone-dust should be used in potting this, and, as it is shallow rooting, plenty of drainage should be given. Not more than 9 inches of soil is necessary for a large pot, if more is used it becomes sour and injures the plant. This plant deserves to be more cultivated than it is, and will be found very useful to cut from.

Davallia bullata makes a good specimen when grown upon turf raised above the rim of the pot in the shape of a half ball, and the new growths pegged on to the turf. There are several more of the *Davallias*, which are all shallow rooting, and require plenty of drainage.

The *Gymnogrammas* should not be overlooked, though they do not require particular attention. Of these, those of the *chrysophylla* type are about the most useful. I have seen *G. chrysophylla* *superba* stand well for six months at a time in a cool conservatory. All the *Gymnogrammas* are impatient of water both at root and top.

Nephrolepis exaltata, *N. davalloides* and *N. davalloides* *furcans* are noticeable for their long and graceful fronds. They do well either in pots or in baskets.

Platycerium alicorne is a grand plant for growing on blocks of wood or cork, and it requires but little moisture beyond what it receives from the syringe in the ordinary damping down.

In the *Pteris* family we have a large selection, both stove and greenhouse, all of them very useful plants. *P. argyrea*, a large and distinct variety, is valuable for its silvery foliage. *P. tricolor* resembles it somewhat, but is streaked with a reddish-purple band as well as with white; it requires stove temperature, and is often a prey to brown-scale, requiring some care to keep it clean and in good condition, but when well grown it is a decided acquisition to a collection of Ferns. Such kinds as *P. crenata*, *serrulata*, *serrulata* *cristata*, *tremula*, &c., may be grown either in the greenhouse or stove, and require but little attention. The *Todeas* are now seen in better condition than formerly, and do best in a cool house with a close moist atmosphere. They should be potted in good loam, and kept dripping with water. The same treatment should be given to *Trichomanes radicans*, excepting that it should be grown in a pan, and the peat mixture used instead of plain loam.

HARDY FERNS.

In selecting a site for a rockery on which to cultivate hardy Ferns a place should be chosen where the plants can have the benefit of shade, shelter, and abundance of moisture. These three requisites, however, are not essential to the well-being of all hardy Ferns without exception, as some require very little shade, and some much less moisture than others. The Parsley Fern, *Allosorus crispus*, for instance, is found growing on the hills in Wales and the North of England, often at a great elevation, and usually among rocks or on very stony ground. Care will be required to keep this in good condition during summer, for though it grows best in stony soil it soon gets dried up if not attended to.

The same remarks apply to the *Polypodies*—most

of them do well among stones. *Polypodium Dryopteris* (the Oak Fern) should have a shady position, or it will soon become brown and lose its beauty. *Polypodium vulgare*, the most common of the Polypodies, will grow nearly anywhere in dry situations, and is often found upon trunks of trees, rocks, or dry banks, and seems to do with but little water. *Polypodium Robertianum*, the Limestone Polypody, is another kind that thrives with but little moisture, and may be found growing on rocks or old walls.

The *Aspleniums* are found in great abundance in some parts of the country. *Asplenium Trichomanes* may be seen in very large masses about the lake district of England, covering the walls and banks. It is a small Fern of very dark colour, growing only 3 or 4 inches high. *Asplenium Ruta-muraria* is smaller still, and grows in little tufts, also on walls and rocks. *Asplenium Adiantum-nigrum*, is another species found growing on dry banks in many parts of the country. It is very distinct in appearance.

Ceterach officinarum is a Fern that does well on the rockwork, and is a pretty acquisition, but it requires looking after during summer, as it is apt to suffer from drought.

The common Maidenhair, *Adiantum Capillus-Veneris*, is a Fern requiring a sheltered position if grown outside. It may be found about the sea-coast in England, but I have never been able to find very large specimens of it.

Cystopteris fragilis is a frail little Fern, but a very free grower, delighting to ramble among stones or other rough material.

Perhaps one of the most striking of hardy Ferns is *Polystichum Lonchitis*, the Holly Fern. It is an evergreen species, and a cheerful plant for the winter months. If planted on the rockwork, its position should be where it can get a good supply of moisture, and it does well planted by the waterside. *Polystichum angulare*, though common, should not be overlooked when making a selection for the rockery. It is nearly evergreen, though it is sometimes cut down by hard frosts. There are several good varieties of it, such as *proliferum* and *imbricatum*, the former being easily increased by pegging down the old fronds into any light soil, when they will then throw up young plants freely.

The Lady Fern (*Athyrium Filix-femina*) is a very desirable plant, and will succeed anywhere in a shady position. Many of the crested varieties are very pretty, *Victorie* being one of the best.

The last of our native Ferns I shall mention is *Osmunda regalis* (the Royal Fern). This is a very distinct species, and a general favourite. It grows freely on swampy ground, and should always be supplied with abundance of water. The variety *cristata* is a great improvement on the parent plant.

There are two other species of Ferns I would recommend to those who may be planting a rockery. First, *Onoclea sensibilis*, a hardy exotic, native of Virginia, free growing, of a pale-green colour, resembling the *Osmunda*, but only growing about 9 inches or 1 foot high; and *Adiantum pedatum*, also a native of North America, and sometimes going under the name of *canadense*. It is deciduous.

In conclusion, I may add, that although my notes on hardy Ferns have been confined to their culture outside, it will repay any one, where the means are at hand, to devote a cold glass structure to them. Their likes and dislikes may there be attended to more efficiently, and greater success will be the result. *Charles Warwick, Foreman, St. Ann's, Clontarf.*

ORCHIDS AT KEW.—Among the plants now in flower are *Lælia pumila*, a dwarf species, with flat spreading flowers of a lilac colour, the lip rolled round into a tube, with a rich violet-purple spot at the apex; *L. Perrinii*, with narrow pale lilac flower-segments, bent backwards, and the tubelike lip white, with a rich purple stain at the apex; *Pleione maculata*, with white flower-segments and a gougé- or trowel-shaped lip, marked with radiating bars of purple, and longitudinal ridges or crests of small toothlike yellow projections; *P. lagenaria* is very similar, but the flower-segments are of a lilac colour. *Dendrobium formosum giganteum* is a noble species, with flat, roundish white flowers; the sepals are narrow, the petals broad or roundish, the lip 3-lobed, the two lateral lobes erect, the terminal lobe flat, horizontal, yellow. *Epidendrum purum* has elegant slender drooping spikes of greenish-yellow flowers; *Odontoglossum biconense* is in bloom, as usual, together with *Cypripedium insigne*, one or two *Vandas*, and other species less conspicuous.

Home Correspondence.

Lilium speciosum in the Open Border.—I had intended sending you some results of experiments on growing *Lilium speciosum* in my wood at Wisley, but press of gardening and other work prevented. I have lately received a note upon, and specimens of, this Lily from my friend, Mrs. Newall, of Littleborough, a well-known successful grower of *L. speciosum* and other Lilies in the open border in an uncongenial climate. Her leaves and flowers were good, and her experience in so different a locality being the same as mine, it seems a pity that more attention should not be drawn to a most beautiful late autumn-flowering plant little cultivated in borders, and yet easy to grow when suitably placed. I will begin with the experiments at Oakswood. We planted three large beds with good bulbs—No. 1 of *L. speciosum rubrum* and album, No. 2 of album, No. 3 of rubrum. No. 1 was sheltered, partly shaded, and round it bracken grew up late. As this at last smothered the *Rhododendrons* I had it cut, and by mistake it was also cut round the Lilies. For a time this bed looked the best of the three, but when rough weather came many of the leaves and flowers became spotted with brown, and were spoilt. Bed No. 2 was in complete shelter and thick shade; less than a fortnight ago the leaves in it were green, and the flowers in full beauty; yesterday (Oct. 22) the leaves continued green, and the few remaining flowers beautiful, though not of full size. I send a flower and leaf picked yesterday, and which had therefore weathered the snowstorm, that you may judge them. In bed No. 3, in still thicker shade, the flowers were of very rich colour, and most of them perfect; but the stems, having to carry greater weight than those of *L. speciosum* album, some of the latest flowers touched the ground, and were browned and spoilt. A forked stick would, of course, have prevented this; none of our Lilies were staked, as I find they stand weather best when allowed to hang about freely. It is, I think, something in the second week of October, when border flowers are no longer abundant, to be able to cut as beautiful a vase of flowers for the table as mixed *L. speciosum rubrum* and album, cut long so as to show flower-buds and leaves in one of Powell's tall green glass vases. Mrs. Newall wrote, October 12:—"I have any quantity of *L. speciosum* album out, a few *Roses* and one or two late *L. auratum*; the flowers I know are poor [they were all very respectable, some quite good], but then they are blooming when, except a few *Anemone japonica*, there is nothing else at all in the garden. I think very highly of *L. auratum* as a Lily for Lancashire; it is earlier than the others. I could not grow *L. speciosum* at all in the shade to flower, because it would be too late, but I am trying *L. auratum* under trees, and I shall take your idea of the bracken undergrowth because, as it keeps caterpillars away from Cabbages, perhaps it will also keep slugs away from *L. auratum*. I used quantities of soot as manure during the earliest growth, and found it efficacious. My Lilies suffered from a dry summer, and all are now feeling an early frost, high winds, and hail from which no overgrowth has protected them. I find, as you do, that those not staked, though untidy and sprawling-looking, keep their flowers best, as they bend before rain and wind." I may end by saying that among the flowers sent up by Mrs. Newall on October 12, some were quite fine ones, and the leaves green, strong and healthy. *George F. Wilson, Heatherbank, Oct. 23.*

A Large Turnip.—I have just seen, at the office of the *Amandale Observer*, in Annan, a Turnip weighing 17 lb., and measuring 34½ inches in circumference. It is labelled as "Pomeranian White Globe, grown at Dirhops, in the parish of Middlebie, Dumfriesshire, from seed supplied by T. & R. Carlyle, of Waterbeck." It would have been interesting to know the out-turn per acre in weight, but that information is not yet available. *J. A. C.*

Church Decoration.—When attending a harvest thanksgiving festival at a rural parish church a few weeks since, I was interested with the manner in which the decorations were carried out. I will not take up your space by describing more than that of the font, although the whole was equally well deserving, for it was all neatly and tastefully executed, and had a highly pleasing effect, and yet there was no choice fruit, flowers, or plants of any kind used, as is customary at festivals of this kind, with the exception of a few at the "altar"—the greater part of the material used being that of a nature within the reach of any one living in the country. The font, apparently a very old one, which may have done service at the baptism of some of the parishioners' great-great-grandfathers, is octagonal in shape, and stands on a raised bed of dressed stone of the same shape, and some 5 or 6 feet in diameter. This bed was covered after the style of carpet-bedding, and was edged with *Sedum Lydium*, having small crimson-

coloured *Dahlia* blossoms nestled into it a foot or so apart, and a similar band encircled the foot of the pedestal of the font. The space between these edgings was carpeted over with trusses of the seed-vessels of *Traveller's Joy* (*Clematis Vitalba*), and arranged along the centre of this soft silvery carpet, at equal distances apart, were well-grown small plants of *Blechnum corcovadense*, which had a charming effect, relieving all stiffness. Creeping, as it were, up the pedestal and over the font were sprays of a small green-leaved Ivy, with bunches of the scarlet berries of *Crataegus Pyracantha*, and those of the Snowberry tree (*Symphoricarpos racemosus*) irregularly and tastefully dispersed amongst them. Round the brim was a wreath composed of Ivy, thickly studded with clusters of its unopened flowers, and mixed with small *Dahlia* blossoms of various colours, and a fringe formed of a common white *Fuchsia* with a crimson corolla drooped gracefully from beneath it. Carefully arranged sprays of Brier, covered with its coral-like berries, filled the font, and springing from its centre was a faultless specimen of *Dracæna indivisa* with its arched foliage gracefully drooping over the whole, and giving a perfect finish to what struck me at the time as being a very pleasing piece of decoration worthy of notice. May I here mention that the silvery trusses of the seed-vessels of *Clematis vitalba* are an excellent substitute for *Selaginella* for covering the soil of plants when used for table decoration. *Thos. Coomber.*

Isotoma axillaris.—I most fully endorse the eulogium passed upon this pretty little plant in your columns a fortnight ago. I received a few seedlings from a correspondent in the early part of the summer, and planted them out round a standard *Rose* tree, where they have been a mass of bloom for the last ten or twelve weeks. They were, comparatively speaking, uninjured by the frost and snow on the 19th and 20th. In a young state it is difficult to distinguish this plant from its congener, *Lobelia coronopifolia*, which I received from the same source. The flower of the latter is, however, poor and insignificant. *H. Harpur-Crewe, Drayton Beauchamp Rectory, Tring, Oct. 26.*

The Acorn Crop.—It may interest you to learn that the acorn crop is far from being a failure in this neighbourhood, the trees being literally covered with them. They may be swept up by the bushel under almost every tree. The same may be said of Spanish Chestnuts. *G. Merritt, Kimpton Hoo.*

Auriculas and Fir-tree Oil.—"J. D." says at p. 496 that the Auricula blight did not seem to do much harm to the plants, and that he had seen plants killed or injured by the use of Fir-tree oil and paraffin. I am quite certain that my plants were injured by the blight. When I repotted them in the spring I shook them all out and dipped them in rather strong soft-soap and tobacco-water, but I soon saw that I had not killed them all, so I determined to try the Fir-tree oil. I mixed half a pint with 4 gals. of water, and took three plants and plunged them up to the rim. I then waited several days to see the effect, and on turning them out I was satisfied so well that I proceeded to dip the whole collection. After I had plunged them all I dipped the leaves in for the greenfly, and laid them on their sides to drain for half an hour. It is more than a month now since I did it, and I cannot see that the plants are injured in the least. I have turned out most of the plants that were the most affected and examined them through a magnifying glass without being able to see a live aphid, or that the roots are at all injured. *A. Grant, Gr. to Captain R. G. Gausen, Brookman's Park, Hatfield.*

Lycaste Skinneri alba or virginalis.—A grand specimen of this most lovely Orchid is now in flower in the collection of Orchids belonging to C. Winn, Esq., Selby Oak, near Birmingham. It is without doubt the most lovely of all the *Lycastes*. This variety is the finest I have ever seen, equal in size and shape to good varieties of the favourite *Skinneri*, but being of as pure a white as is possible to conceive. *A. Outram.*

Broccoli.—It is no doubt quite true, as Mr. Fish says, that the last two winters have destroyed large quantities of Broccoli, but this has not been the case here, and I attribute my success, not to any specially favourable position as regards climate, for the very reverse of this is the case, but to the practice I adopt, which is as follows:—After a crop of early Peas or Broad Beans I have the ground hoed over, to destroy weeds. I then set a man to make good holes, a foot deep, with a heavy iron bar; after him another drops very strong tough-stemmed plants, which are put into the holes and well watered in, after which a little soil is pushed to the plants with an ordinary dibber. The hoe is again sent through the piece, and the work is complete. I never think of digging the ground for Broccoli. I have sometimes had it forked over between them while they were growing. I have come to the

conclusion that the woody stemmed plants, the late planting, and the hard ground which keeps the plants from growing too rank, are the causes of my success. You have the age in them without the soft rampant growth, and in the spring you get a better development than from the spongy, leafy plants, even if they do manage to stand the severity of the winter. Last year, owing to the cold, late season, the Broad Beans were much later in coming off the ground, and for the same reason the Broccoli plants were unusually small, though sown at the usual time; and, to make matters worse, the situation was a very cold, low-lying one; yet, notwithstanding these untoward circumstances, we cut heads from 8 to 12 inches over by hundredweights at a time (from 5 to 6 cwt. are required here for a meal), while my neighbours in far more favourable positions apparently were mourning over their losses. I never think of heeling-over, as Mr. Fish proposes. The sorts I depend upon are Sutton's Perfection, Leamington, and Sutton's Late Queen. *Robert Lloyd, The Gardens, Brookwood Asylum, Surrey.*

Flowers out of Season.—Among other flowers out of season I may mention that the *Pyrus japonica*, of both sorts, the pinkish white and the deep red, have been flowering shyly on the south wall of my house since the 11th. Since Thursday the 21st the minimum readings of my thermometer at 5½ feet from the ground on the outside of a north window have been, as taken in the morning:—21st, 30°; 22d, 24°; 23d, 23°; 24th, 26°; 25th, 36°; 26th, 36°. On the 22d, in sheltered bits, there was ice at the river's edge three-eighths of an inch thick. In spite of this, I yesterday found three flowers of the Harebell, *Campanula rotundifolia*, as also of the common Buttercup. Altogether this is a most unusual October. *J. A. C., Northfield, Arran, Oct. 26.*

Another Old Potato.—I remember nearly thirty years ago my father used to grow at Stewkley, Buckinghamshire, a variety of Potato that was dark purple-fleshed, or plum coloured throughout. It was a large, coarse, deep-eyed variety, and was very mealy when cooked. I believe my father had it from Northamptonshire or Bedfordshire. Is it now in cultivation? *Chas. Palmer, Manchester.*

The Cabbage Broccoli.—As this new introduction is now somewhat prominent, I should like to submit to those who can perhaps reply, a few queries that were put to me by an intelligent inquirer at South Kensington at the last meeting of the Royal Horticultural Society. First I was asked, "Why is this vegetable termed Cabbage Broccoli?" My reply was, that "It is said to be a Cabbage in the autumn, and a Broccoli in the spring." "Very good; but of course, if you cut it as a Cabbage, there is an end of it?" Certainly, I replied. "Well, then, what merit does it possess over any ordinary good Cabbage when cooked?" But there I could make no answer. Then I was next asked: "Suppose a rod of ground were planted with this new Cabbage Broccoli, and the same extent with any good autumn Cabbage, which would give the largest produce?" Here my knowledge was again at fault, but I at last suggested that as Broccoli wanted much more room than Cabbage, it was most likely that the result would be in favour of the Cabbage. "Now, then, assuming that it is not cut as a Cabbage, but is left to turn in as a Broccoli, what sort of a Broccoli is it?" Here I had the testimony of one who had grown it to justify me in replying that, as compared with good known Broccolis, it was poor. "Very well," said my querist; "if it is no better than other Cabbages—and to my eye it does not look to be as good—and if it is admitted to be but an indifferent Broccoli, what are its recommendations, and why did the committee award it a First-class Certificate?" Perhaps to these queries Mr. Gilbert or some member of the Fruit Committee can give more complete replies than I could; and therefore, as it is not improbable many readers would like to read these replies, I take this method of putting the question. *A. D.*

Wintering Echeverias.—It is not, I think, generally known that the small Echeverias of the secunda type can be wintered perfectly out-of-doors. It is a source of relief to gardeners during the winter months to be able to dispose of as many bedding plants as possible on the cool system, in order to make room for more tender subjects under glass. Echeverias are perfectly safe built against a south wall and protected from severe frost by dry bracken or other dry litter. We stack them in coal-ashes, making the first row at about 18 inches from the base of the wall, and sloping each succeeding row backwards to nothing, so that the plants form a sloping bank, having their roots comfortably embedded in dry coal-ashes. I remember two years ago, during a horticultural tour in the North of England, seeing a large quantity of Echeverias destroyed by the frost of 1878-79, notwithstanding that they had the protection of well-glazed frames which were covered with mats and litter. The

plants were planted close to each other in dry sand. It appears, therefore, that much coddling makes the plants tender, and renders them more susceptible to injury. I used to winter Echeverias on the borders of cool houses, but they are always tender in the spring, and an incubus on one's hands till late in the season, whereas plants wintered out-of-doors can be put out at any time in the spring without fear of injury. *Cultivator.*

The Cranberry.—Messrs. Dick Radclyffe & Co., to whom we are indebted for the use of the accompanying illustration (fig. 105), are making an attempt to introduce the culture of this fruit. There are several varieties, but that figured (*Vaccinium macrocarpum*) is perhaps the best. It is a North American species, which grows naturally in swamps and peat bogs which become somewhat dry in the summer season. Our American friends have been much sharper in the matter of Cranberry culture than we have, in spite of the fact that scores or hundreds of acres in Scotland, Wales and Ireland are adapted for its cultivation, as "it will grow where nothing else will." A little book by Joseph White, entitled *Cranberry Culture*, and published by the Orange Judd Company, of New York (London, Triebner), may very advantageously be perused by those who have the opportunity of introducing the cultivation



FIG. 105.—THE CRANBERRY.

of these plants. Large quantities of preserved Cranberries reach us from America, but there is no reason that we know of why large quantities should not also be sent from Ireland and Scotland if the attempt were fairly made.

The Celery Maggot.—So far as my observation extends, the Celery maggot has been almost unknown during the past season, the cause for which seems difficult to determine. One thing suggests itself to my mind as being the most probable reason for its comparative absence, viz., the hot, dry weather we experienced during the summer months may have been unfavourable to the production of the larvæ, or, in other words, the hatching process of the eggs of the Celery-fly (*Tephritis onopordinis*) was impeded by atmospheric influence. Whether or not this reason may be assigned for its rareness this season, it is nevertheless gratifying to see our Celery free from such a troublesome pest as it has proved itself to be in previous years. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Root-Pruning Fruit Trees.—I am quite prepared for a great outcry against my heresy upon the subject of root-pruning of certain hardy fruit trees, but at least I have upon my side the unquestioned fact that if there are a million of Apple trees in the kingdom that produce fruit, at least 990,000 do so without the aid of root-pruning. Of course what I

have to say on the matter refers solely to established trees, and not to trees that are often removed for convenience or other reasons, and which therefore are, in the process of removal, being often root-pruned. Excessive sappy growth needing the corrective of such a drastic operation as the cutting away of the roots is the product of soil of exceeding richness. It is a fault in cultivation to plant trees where such growth is produced; a good cultivator should know better than to make that mistake. Where such is the case root-pruning exercises but a temporary check, for when the new roots get a start the root-power becomes doubly excessive, and the last state of that tree is worse than the first, unless the surgeon is called in to amputate those same roots once every couple of years. The mere act of digging or forking amongst fruit trees is not root-pruning; a few small fibres may be disturbed, but the main sources of life remain untouched. To fork deeply amongst established trees is good culture, and it is improved when long manure is spread over the surface in the spring. This is done in all good market gardens, but root-pruning is in their dictionary almost an unknown word. For a couple of years growers saw no crops and luxuriant growth, but they did not weaken their trees by root-pruning; they said, Let us wait, and all will soon come right; and the result shows they were correct. All this luxuriant growth is now covered with fine well-developed fruit spurs, and the wood is ripe and well matured. The roots being intact there is every prospect of a grand crop of fruit next year. I must protest against the doctrine put forth by "J. S.," that we do not plant Apple and Pear trees for posterity. If we do not we are a selfish race indeed. If our forefathers had thought the same and acted upon it how badly off would many gardens be for such fruits. We heard a good deal some time since about this same doctrine, and it was all orchard-houses, miniature trees, doll plants in pots, restricted growth, and all that sort of thing, because, said certain theorists, we have to wait so long for our fruit. How little popularity this same doctrine obtains now. Very little indeed is heard of it, and even in orchard-houses the pot plants are planted out. We perhaps realised that, as our fathers had planted for us, so must we plant for our children, for, if not, we should be wanting in an important duty. If, however, it is desired to have dwarf or miniature trees, the Doucin and Quince stocks furnish fitter and more suitable mediums for their production than does the barbarous practice of root-pruning. So little have I seen it practised in gardens that I even now hesitate to believe that even those who most loudly extol it adopt the practice to any material extent. *A. D.* [We have important communications from Mr. Rivers and others, which are held over till the illustrations are prepared. *Eds.*]

Tie the Mats Down.—Winter has commenced early this year, 8° of frost and a fall of snow amounting to over half an inch of water are hints to us to prepare for the worst. Predictions concerning the winter before us will doubtless soon be numerous, and, as usual, pretty much like the thermometers one sometimes sees in shop windows—all warranted correct, yet no two alike. One prediction may, I think, be safely made, viz., that in some gardens a considerable quantity of glass will be broken during the next six months, not so much by the frost as by the means used for keeping it out. To explain: there are at least two methods of securing mats, &c., in position when used as covering for pits, frames, and other glass erections. One is loading them with anything that can be laid hands on, such as planks, timbers, ladders, old iron, bricks, &c. This from a glazier's point of view may appear a good enough plan. A better one in my opinion, however, is to stretch two lengths of stout tarred twine over the mats from end to end of the frame or pit—one near the back, the other near the front, tying the ends to eyes screwed into the woodwork. Eyes are much better than nails (unless it is desirable to make work for the tailor), and they are very cheap. The obvious advantages of this plan are that it is much quicker, more secure, infinitely more tidy, and breaks no glass. When the mats are to be removed the twine is untied at one end and neatly coiled up at the other. *G. Duffield, Winchmore Hill.*

Potato Culture.—In November of last year a letter of mine on the successful cultivation of the Champion Potato near here by a spirited dealer in Potatoes appeared in your columns, and headed "A Farmer's Lesson," was copied from the *Gardeners' Chronicle* into a great number of papers concerned in agriculture. From the letters of information I wrote to many strangers on the subject I hope some of those who put my writing into practice will give us the benefit of their experience in your columns. I estimated the crop, and stated it to be about 10 tons to the acre: I had to bear the chagrin of being contradicted, and was told that 6 tons were nearer the mark. The manning man declined to give the weight per acre, although at first he promised to do so, but said they were perfectly satisfied with the crop themselves. But why make a secret of it? It

would be interesting to learn how great a weight has been taken off an acre of land this season by the treatment I pointed out. So far as I can see, one of the main points towards success is the distance between rows, so that there is sufficient soil to well cover the Potatoes in the row. A piece of ground that was planted with Champions has come under my notice this year: they were planted the usual distance, excepting two rows, which the ploughman on his own responsibility made somewhat wider. These two rows produced more than double the quantity of Potatoes, as well as being much finer in quality and sample, from being better covered, whereas the Potatoes in the other rows were green, small, and spoiled by being half out of the rows. Our spirited dealer has turned up again in the neighbourhood, and this year he has planted a long way over 100 acres of different sorts—being wide awake, and knowing that the Champion cannot have such a sale again as last year; one large field near here has produced a fine crop, with very few diseased ones among them. He has certainly put new life into Potato culture about here, and I hope he will again leave his mark behind him this season when he has cleared all away, as well as receive the thanks of the farmers and of the great quantity of people that he employs. *William Culverwell, Thorpe Perrow, North Yorkshire.*

Suitable Fruit Trees for a Small Garden.—

We are now in the midst of the planting season, and while the weather is fine and drying and frosts keep off is the time to get the work done. It is with many a matter of importance what to plant, and to meet the requirements of these I have drawn out a list of fruit trees, comprising Apples, Pears, and Plums, giving them in the order of ripening as nearly as it can be done. The selection of seven dessert Apples includes Duchess of Oldenburg, Yellow Ingestre, Cox's Orange Pippin, Court of Wick, Adams' Pearmain, Scarlet Nonpareil, and Braddick's Nonpareil. Of kitchen Apples Lord Suffield, Cellini Pippin, Stirling Castle, New Hawthornden, Blenheim Orange, Warner's King, Mère de Ménage, and Wellington or Dumelow's Seedling. All the foregoing should be planted in standards or espaliers. Of Pears our list comprises sixteen varieties, viz., Doyenné d'Été, pyramid or standard; Williams' Bon Chrétien, pyramid, standard, or espalier; Beurré d'Amanlis, pyramid or espalier; Louise Bonne of Jersey, pyramid or espalier; Beurré Bosc, Jersey Gratioli, and Belle Julie, all three doing well either as pyramid, standard, or espalier; Maréchal de la Cour, pyramid or espalier; Pitmaston Duchess, and Doyenné du Comice, pyramid, espalier, or wall; Beurré Diel, pyramid or espalier; Marie Louise, pyramid, espalier, or wall; Glou Morceau, espalier or wall; Winter Nelis, espalier or wall; Josephine de Malines and Bergamotte d'Espéren, both on wall only. The following eight varieties of Plums comprise a selection that can scarcely be improved upon:—Early Prolific, grown as a standard; Denyer's Victoria, standard or wall; Prince of Wales, standard; Green Gage, standard or wall; Prince Englebert, standard or wall; Reine Claude de Bavay, wall; and Belle de Septembre, wall. If these sorts are obtained true to name, and carefully transplanted with plenty of fibrous roots into suitable soil, the prospects of a good fruit supply a few years hence will be as rosy as a gardener could well expect them to be. *R. D.*

Rare Orchids in Flower.—The other day while visiting Mr. Smith, of Brentham Park, among other finely cultivated plants I was very much struck with the rare *Odontoglossum blandum* in full inflorescence. This Orchid has hitherto been but indifferently cultivated, and as it is one of the pigmy race of *Odontoglossum* it does not make much appearance looking at the plant out of flower. In flower, however, it is one of the most captivating of the nævium section. Here from one beautifully finished pseudobulb spring two longish racemes, each with fourteen flowers. The flowers are individually larger than nævium majus, although not quite so spreading, but the ground colour of the flower is purity of whiteness itself, and then the spotting is incomparably the richest that we see in shades of purplish-crimson in any Orchid flower. It quite lights up the benches, and singles itself out, if one may so speak, among all other *Odontoglossum*. The rich crest at the base of the labellum adds powerfully to its attraction, and then when we consider its extreme floriferousness, looking to the dimensions of the pseudobulb, one is inclined to pronounce it the chief of the nævium clan. Mr. Smith's efficient gardener, Mr. McLeod, has certainly the credit of growing this to such perfection, as I have not yet seen elsewhere; and all Orchid admirers are bound to subscribe to its merits as a decorative gem, seen as I saw it at Brentham. Another rarity which is captivating a host of people is *Cypripedium Spicerianum*. Its novelty compels admiration, being one of a group which is now counted by at least fifty species, distinct specifically from all its fellows. I

saw it in bloom in the superb collection of J. C. Hill, of Arnot Hill, Nottingham, and took a note of the flower. Unlike other Lady's Slippers, the dorsal sepal is convolute, rolled backwards towards the foot-stalk, and reminds one of a "filler" for introducing liquid into a bottle. Moreover, two-thirds of its area is white, with the basal portion running into a tone of greenish white enlivened with a reddish band, as if it were drawn from its base to its extremity. Moreover, it is covered with minute black hairs. The inferior sepals are greenish-white; the petals are cinnamon, with a yellowish shade interfused, they, too, having a band of dullish red up the centre. What adds to their attractiveness is the fact that their edges are undulating and crisped. The pouch-like labellum—the lady's slipper—is of a leadenish hue, with a cast of yellow prevailing. The interior is much the better part of this, as it is minutely and conspicuously spotted with pale indian-red. Then the column, which is winged and pandurate, is of a taking white and lilac. Altogether, there is an immense variety in this singular Lady's Slipper, and no wonder that it is much prized and sought after. I also saw this species in flower in one of Mr. Chas. Walker's Orchid-houses at Braxfield, where it quite bears out the high character I have given it. There is a varietal distinction between the two plants which makes the lot all the more interesting. It is in superb health, and to all appearance it is likely to be both a good grower and a free flowering species. *James Anderson, Meadow Bank.*

The Douglas Fir.—I am glad to see this brought under notice, and from my experience of it I can fully endorse all that Mr. McCorquodale says in its favour, for here, in our light sandy soil, it rivals the Larch in growth, making, as it does, shoots from 3 to 5 feet long in a season. As soon as its value becomes better known I am of opinion that it will quite take the place of Spruce, the timber of which is comparatively worthless, it being light, loose-grained and brittle, and fit only for weather boarding, whereas that of the Douglas Fir is hard and solid, full of resinous matter, like the Larch, and very heavy. Not only will it thrive well in light loose land, but it grows almost equally fast in that which is stiff, as is evidenced by one we have in clay, where on a knoll it towers some 70 or 80 feet high, and looks in very good health, having a stem almost as clean and straight as an arrow. The only difference in the appearance of this and the others is that they have darker coloured foliage, especially those that have their roots where there is plenty of moisture, which all Conifers like, so long as the drainage is sufficient to keep the ground sweet. In exposed situations the Douglas suffers in the spring from late frosts and wind, as then its young shoots are tender, but in woods or when planted to grow up among Scotch, Larch, &c., to act as nurses and afford shelter, I find it is very rarely affected. As trees of planting size are worth about 2s. each the best way is to arrange for them to be spaced out at about 50 feet or so apart and then to fill up between, by doing which others can be thinned, and sufficient room left for the rest to become fully developed. The thing, however, to avoid, if grown for timber, is the allowing of too great a spread of side branches, which trees standing far apart are sure to make, while if tolerably close they are driven up with clean straight trunks that become of great ultimate value. Although the Douglas cones freely with us, I have never yet been able to secure any seed, and shall be glad to hear whether any one has been more fortunate, or why it is that the cones are barren. *Pinus nobilis*, *Abies cephalonica*, *A. Pinsapo* and *Deodars* are bearing cones with us, and Oaks are laden with Acorns, so that it would appear that the wet seasons have been much in their favour, which the fine leafage abundantly testifies. *J. Sheppard.*

Deep Cultivation.—I was greatly interested with your editorial last week on deep cultivation. It is an operation the importance of which cannot be over-estimated, or too firmly impressed upon the minds of all classes of cultivators of the soil. I have adopted the practice on our heavy soil, with manifest improvement in the crops from the first season I took the management of it, and so sensible am I of its great importance, that I look upon it as an almost indispensable proceeding. It would be presumptuous of me to attempt to add anything to what you have said respecting the advantages to be derived from deep cultivation; but may I venture to offer a few remarks on our mode of carrying it out? On our tenacious soil it is advisable, I may say necessary, to commence as early as possible in the autumn, that is, as soon as the crops are cleared off; for if left until late in the season, when it has become saturated with rain, it gets puddled in working, and is then, as our men remark, "like so much liver," which is a great detriment to the well-doing of the crops, and it takes a season to bring it round again into a free working state. Moreover, there are other advantages to be gained by working it in early autumn over that of leaving it until late in the season or spring, for if done

at that time it is exposed to the beneficial influence of the winter frosts, which sweeten and pulverise it, thus causing it to work freely for seed sowing. It has also time to consolidate before the crops are put in. This is an important point, which should not be overlooked, for there is little chance of crops succeeding satisfactorily when put in immediately after heavy land is trenched should a dry time set in. In preparing a quarter in the autumn for crops of Peas, Beans, and others of a similar character, we commence by opening a trench at one end, taking the top spit, together with any loose soil which may be left in, and wheeling it to where we intend to finish; this done, the bottom is turned over and broken a spit deeper, and on this is placed a good layer of rank stable manure in an undecomposed condition. The top spit of the next trench is thrown on this, and trench after trench is treated in like manner until the plot is finished. I am perfectly well aware that some excellent authorities on vegetable culture are opposed to the use of rank manure, and there is no question that if some crops were put on ground immediately after it had been dressed with it no good results would follow; but we find from experience that if ground for Peas, &c., is dressed with it in autumn and left until spring before it is cropped, excellent and heavy crops are invariably the result. In our case it is for various reasons unquestionably the best practice to adopt. Plots thus prepared for Peas, if again double-dug when cleared, form without using extra manure suitable quarters for Parsnips, Beet, and other roots. No doubt all practical gardeners are fully alive to the good effects to be produced from deep digging, but many cannot carry it into execution, for the simple reason that they have insufficient hands. It certainly does take a considerable amount of time and strength, but this is in a great measure regained in spring, as there is little trouble in preparing ground thus treated for the reception of seeds. *Thos. Coomber, Hendra Gardens, Monmouth, Oct. 18.*

Phytolacca decandra.—Before your readers indulge in the luxury of eating the berries of *Phytolacca decandra*, as some may feel at liberty to do after the remarks made in your issue of October 9, p. 464, permit me to offer the following quotations regarding the properties of the plant from Stillé and Maich's *National Dispensary*, p. 1082:—"Vomiting and purging are said to have followed eating the flesh of pigeons that had fed upon the berries; but it is well known that pigeons and other birds which feed on these berries are eaten without harm. The young shoots are eaten boiled like Asparagus and Cabbage sprouts. The powdered root is emetic and purgative in the dose of one or two drachms, and two teaspoonfuls of the juice have produced similar effects. In an overdose, besides vomiting and purging and intense thirst, with epigastric distress, it affects the nervous system, causing great prostration, coldness of the skin, and even a cyanotic discoloration, feebleness of the pulse, drowsiness, vertigo, dimness of vision, coma, and sometimes convulsions." In Wood and Bache's *United States Dispensary*, 14th ed., p. 703, the plant is stated to be "Emetic, purgative, and somewhat narcotic. As an emetic it is very slow in its operation, frequently not beginning to cause vomiting in less than one or two hours after it has been taken, and then continuing to act for a long time upon both the stomach and bowels. A case is recorded in the *Stethoscope* for March, 1852 (ii., 134), by Dr. George F. Terrill, in which death was produced in a woman by eating a double handful of the berries." It will be seen from the above quotations that *Phytolacca decandra* may be classed as a suspicious, and, to certain temperaments, a very dangerous plant. Doubtless the boiling of the sprouts in water removes in great measure their deleterious principle; but the berries, which present a very tempting appearance from their resemblance in colour, &c., to Blackberries, should by no means be eaten freely. *E. M. Holmes.*

Champion Potatoes in Ireland.—The Champions here (Kilkenny), and I believe in other parts of Ireland, although a splendid crop, did not escape the disease; there was about one-fifteenth part of the tubers black, and the stacks of all had been struck with the disease. Champions, however, resisted the disease longer than other varieties. *James Graves.*

American Tuberose The Pearl.—In the well-kept nurseries of Mr. Vertegans, Chad Valley, Edgbaston, Birmingham, are to be seen at the present time some fine examples of this beautiful Tuberose. They are grown in small pots, one bulb in a pot, and attain the height of about 2 feet with from twenty to twenty-four flowers on a spike. The flowers are double, a beautiful waxy-white, and very fragrant. They are most useful for button-holes and bouquets, or for grouping with other plants for decorative purposes. Mr. Vertegans informed me that he would have a succession nearly all the winter through. *A. O.*

Reports of Societies.

Exhibition of Apples and Pears at Hereford.—The Woolhope Naturalists' Field Club do not confine their labours to the study of fungi, but, as most of our readers know, they have for some years been collecting information on the subject of Apples and Pears, and have enriched the literature of our country by three annual parts of an important publication, to which we have frequently referred—the *Herefordshire Pomona*. Since the issue of the first part the scope of the undertaking has been greatly enlarged, and instead of merely illustrating the local fruits of their own county, the Club has now undertaken the much greater work of figuring and describing the principal Apples and Pears which are grown in various parts of the country. To help them in this work they have of late years held an exhibition of these fruits in the autumn, and have availed themselves on these occasions of the typical specimens of Apples and Pears, brought together in competition for prizes for the purposes of their *magnus opus*. The exhibition for the current year took place at Hereford on Wednesday last, the 27th inst. Nearly 2000 dishes of fruit were exhibited, and the greater portion of the exhibits were of the highest possible excellence.

The prize-list was divided into several classes. Division I. was set apart for "professional" exhibitors, and was "open to all, and from anywhere." Class I was for a collection of dessert Apples. The prizes were awarded as under:—1st, Mr. Lewis Killick, Maidstone; 2d, Mr. John Watkins, Wisterton; 3d, Mr. J. Griffiths, Tillington. Mr. Killick's collection consisted of twenty-eight dishes, all good, several handsome and highly coloured, and the whole as good an exposition of the dessert resources of our best orchards as any one need wish to see. The following were the kinds in this collection:—Duchess of Oldenburg, Worcester Pearmain, Blenheim Orange, Golden Knob, Mabbott's Pearmain, Aromatic Russet, Cox's Orange Pippin, Yellow Ingestre, Borden Pippin, Hubbard's Pearmain, Ribston Pippin, King of the Pippins, Dungan, Sturmer Pippin, Duchess of Gloucester, Golden Russet, Royal Russet, Court Pendu Plat, Wyken Pippin, Wanstell, Mannington Pearmain, Lady Derby, Bordeaux Reinette, Sharp's Pippin, Scarlet Nonpareil, Margil, Court of Wick, and Fearnie's Pippin. Among other Apples shown in this class there were good dishes of Peasgood's Nonsuch, Summer Queening, Summer Strawberry, Downton Pippin, Scarlet Crofton, and Cornish Aromatic.

Class 2 was for a collection of culinary Apples. Mr. Killick was 1st with thirty-four dishes, all large, handsome, excellent fruits. The kinds were:—Northern Greening, French Crab, Wellington, Seeley, Tower of Glamis, Ecklinville Seedling, Yorkshire Greening, Cox's Pomona, Lord Derby, Woodcock, Lord Suffield, Royal Russet, Golden Noble, King of the Pippins, White Apple, Lucombe Seedling, Hoary Morning, Bedfordshire Foundling, Lodington Seedling, Blenheim Orange, Golden Spire, Winter Queening, French Royal, Hanwell Souring, Beauty of Kent, Mère du Ménage, Warner's King, Queen Charlotte, Cullen, Graham Gooseberry Pippin, Norfolk Boefing, New Hawthornden, and Winter Monarch. Mr. Watkins was 2d, and Mr. John Barnes, of Gloucester, 3d.

Class 3 was for a collection of dessert Pears. The 1st prize was awarded to M. Benoit, Havre, for fifty-two varieties, all well-grown specimens, large and handsome, and including many kinds not common in this country. Mr. H. Moorman, Cheltenham, was 2d, and Mr. J. Barnes 3d. In Class 4, collection of culinary Pears, Mr. Barnes was 1st.

Division II.—Classes 5 to 11 were for amateurs. Class 5, collection of dessert Apples.—1st, Sir Henry Scudamore Stanhope, Bart., Holm Lacy; 2d, Mr. J. Pitt, Bosbury; 3d, Mr. H. Jenkins, Canon Pyon. Class 6, culinary Apples.—1st, Sir H. S. Stanhope, Bart.; 2d, Mr. H. Ward, gr. to Lady Emily Foley, Stoke Edith; 3d, Mr. H. Higgins, Thinghill, Hereford. Classes 7 and 8, collections of Nonpareils and Russets respectively.—No exhibits. Class 9, collection of dessert Pears.—Sir H. S. Stanhope, Bart., 1st, with a superb collection of twenty-four dishes. Every fruit was a perfect typical specimen. This was, taken altogether, the most interesting collection in the exhibition. The whole of these Pears, we were informed, were grown on the cordon trees at Holm Lacy, of which an interesting account is given by Sir H. S. Stanhope in the second part of the *Herefordshire Pomona*. The following is a list of the kinds in this collection:—Doyenné Gris, Easter Beurré, Beurré Bachelier, Glou Morceau, Beurré d'Aremberg, Doyenné Blanc, Doyenné d'Alençon, Duchesse d'Angoulême, Beurré Diel, Triomphe de Jodoigne, Beurré Superfin, Beurré Sterckman, Van Mons, Zéphérin Grigoire, Beurré Clairgeau, Doyenné du Comice, Doyenné Boussoch, Columbia, Marie Louise, Duchesse d'Orléans, Monarch, Beurré Bosc, General Tolleben, Joséphine de Malines.

Class 10 was for smaller collections of dessert Pears.—1st, Sir H. S. Stanhope, Bart.; 2d, Mr. J. Parker, gr. to Mrs. Evans, Moreton; 3d, Rev. C. H. Bulmer, Credenhill.

Class 11, Collection of culinary Pears.—1st, Mr. F. Taylor, gr. to Mr. H. B. Strangeways, Sherington; 2d, Sir H. S. Stanhope, Bart.

Classes 12 to 29 constituted Division III., each being for single dishes of, in some instances named kinds, of Apples and Pears, which elicited an interesting competition, and others for Apples "for present flavour," Pears "for present flavour," culinary Apples and culinary Pears for size, weight, and quality. Cox's Orange Pippin and Margil were equal 1st for flavour; Thomson's, Seckle, and Fondante d'Automne being ranged in the order named for the like quality. The heaviest dish of five Apples (Warner's King) weighed 7 lb. 3 oz., the heaviest Apple (Gloria Mundi) 1 lb. 12 oz.; the heaviest dish of five Pears (Uvedale's St. Germain), 7 lb. 14 oz.; the heaviest Pear (one of the same kind) 1 lb. 12 oz.

Division IV. (vintage fruit) consisted of six classes, most of which were well filled, the cider Apples and perry Pears of the district being pronounced by the judges very good; those from Devonshire, though larger, were not regarded as of equal quality for making high-class cider and perry.

The cottagers' classes (36 to 39) constituted Division V., and were very fairly filled.

Dr. Hogg and Mr. A. F. Barron were the judges in all the classes save those in Division IV. (vintage fruit), the exhibits in which were adjudicated upon by the Rev. C. H. Bulmer, assisted by Mr. G. H. Piper, of Ledbury.

Messrs. Cranston & Co. (Limited) showed a very fine collection of Apples, &c., not for competition. Messrs. R. Smith & Co., Worcester, showed some highly coloured specimens of the Worcester Pearmain. Another collection of Apples, &c., not for competition, was exhibited by the Midland Counties Fruit, &c., Co. (Limited), Worcester. *Philanthos*.

Peebles Leek Club: October 21.—The thirty-fourth competition and exhibition of the Peebles Leek Club was held in the Chambers Institution Hall, Peebles. Leeks, the principal feature of the exhibition, were a splendid show in themselves, and in this department the competition was both close and keen. For the heaviest six Leeks, the 1st ticket was placed on the lot shown by Mr. John M'Cormick, Hay Lodge, Peebles. Last year Mr. M'Cormick occupied the same position, but while his half-dozen only weighed 13 lb. 10 oz. then, his weight on Thursday was 16 lb. 6 oz. Last year he came in a good 2d with his six blanched Leeks, but this year he deservedly was assigned the 1st place, and in addition to the money prize of 12s., wins the beautiful sugar vase, presented by Mr. James Crichton, Edinburgh. Mr. M'Cormick also came in 1st for the heaviest one Leek, which weighed 3 lb. 12 oz., the same prize having fallen to him last year, with a Leek which weighed 3 lb. 2 oz. Last year Mr. M'Cormick divided the 2d and 3d prizes for the heaviest six Onions, but this year he outstripped all the other competitors, his weight being 8 lb. 6 oz., while Mr. Thomas Robertson followed with a lot which weighed 7 lb. 4 oz. The 1st place for the one heaviest late Cabbage was gained by Mr. George Brown, Merindale, the weight being 22 lb. 8 oz. Last year this prize was won with a Cabbage which weighed 14 lb. 15 oz. Turnips, Cabbages, Greens, Celery, and Brussels Sprouts were all well represented, while there was a capital show of Cauliflower, which was introduced for the first time, the front place being assigned to two heads shown by Mr. John Currie, Mayfield.

Taken as a whole, the quality of the exhibits was very much superior to that of last year, and was decidedly above the average. The arrangements made by Mr. Archibald Donaldson, the secretary, were most complete, and proved thoroughly satisfactory. The change of place from the Tontine Hotel Assembly Room to the Chambers Institution Hall, was felt to be a step in the right direction, as it afforded ample accommodation for the display of the exhibits, and gave greater facilities for their being properly seen and inspected by the visitors, of whom there was a goodly number in the afternoon. The judges were Mr. Downie, Edinburgh; Mr. Lockhart, Boroughmuirhead, Edinburgh; Mr. J. M'Donald, Darnhall; and Mr. J. Spalding, Peebles, who awarded the prizes, as follows, in the class for the six heaviest Leeks, entire, blanched not less than 6 inches:—1st, J. M'Cormick, Hay Lodge, 16 lb. 6 oz.; 2d, John Johnston, Bridgend, Peebles, 16 lb. 5 oz.; 3d, George Ballantyne, Kingsmuir Hall, Peebles, 15 lb. 9 oz.; 4th, John Elder, St. Mary's Mount, 15 lb. 13 oz.; 5th, Alex. Wood, Neidpath, 14 lb. 8 oz.; 6th, D. M'Farlane, Kingsmeadows, 13 lb. 14 oz.; 7th, Robert Johnston, Springwood, 12 lb. 13 oz.; 8th, George Steele, Barns, 12 lb. 2 oz.; 9th, George Brown, Merindale, 11 lb. 9 oz.; 10th, Alex. Walker, Peebles, 11 lb. 7 oz. *Peebleshire Advertiser*.

Innerleithen and Traquair Leek Association: Oct. 16.—The annual competition of the Innerleithen and Traquair Leek Association took place in the Volunteer Hall, Innerleithen, and in every respect proved the best exhibition that the Society has yet had. Not only was the number of exhibits much larger than that of any former year, but there was also a considerable increase in the number of competitors. The size and quality of

the different articles which won prizes were also above the average. The principal prize in the competition was a handsome silver tea-pot subscribed for by several of the prize-winners last year, and the successful competitor was Mr. M'Intyre, gr. to Charles Tennant, Esq., M.P., The Glen. During the evening a very large number of visitors attended the show. The judges were Mr. Collins, Stonehill; Mr. M'Farlane, King's Meadows, Peebles; and Mr. Brown, Kailzie. *Ibid.*

Obituary.

THE death of Mr. ROBERT COOK, Grange Road, Ealing, at the age of sixty-six, a few days ago, removes from our midst one who, in addition to the possession of a great love for gardening, was much respected and esteemed by all who knew him. For some years Mr. Cook was gardener to Mr. Boothby, at Twyford Abbey, between Acton and Ealing, but eventually took the farm attached to that estate, and held it for some years, and was highly successful. When he gave up the farm he built himself a house in the Grange Road, and planted a garden which, while small in extent, was one of the most complete and well-managed in the neighbourhood. He was a constant exhibitor at the exhibitions of the Ealing, Acton, and Hanwell Horticultural Society, and was an active member of the committee, and a judge of the cottage and allotment gardens. His quiet and unassuming manners and solid good sense made him a large number of friends, by whom he is sincerely regretted.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, OCT. 27, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Bar. at 3 P.M.	Day.	Mean from 6 A.M. to 6 P.M.	Range.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.		
Oct. 21	29.67	—0.04	45.5	29.1	16.4	37.0	—12.0	34.4	95	N.W. 0.00
22	29.51	—0.21	45.0	36.0	0.0	40.2	—8.5	35.2	83	N.E. 0.27
23	29.76	—0.05	45.2	35.0	9.3	33.0	—8.4	33.2	77	N.E. 0.32
24	30.17	—0.36	40.0	12.0	14.0	38.8	—9.1	31.9	77	W.N.W. 0.00
25	29.92	—0.20	49.0	12.0	17.0	40.5	—7.0	36.4	86	N.W. 0.00
26	29.36	—0.36	43.5	35.9	6.6	39.0	—7.6	38.2	95	W.N.W. 0.64
27	29.07	—0.66	57.5	38.5	19.0	47.6	—0.7	46.3	96	N.E. 0.54
Mean	29.62	—0.09	47.4	34.3	13.1	40.5	—7.4	35.5	86	Variable. 1.77

- Oct. 21.—A fine bright day. Very cold. Overcast at night.
 22.—A dull, cold day. Rain fell till 9 A.M., for a short time at 1 P.M., and continuously after 8 P.M.
 23.—Dull and wet till 11 A.M., fine and bright afterwards. Very cold. Windy.
 24.—A fine day. Cold. Dull at times. Generally foggy or hazy.
 25.—A fine day, partially cloudy. Cold. Dull, with frequent drops of rain, after 8 P.M.
 26.—Overcast, dull, cold day. Rain fell throughout. Wet and miserable.
 27.—Somewhat fine at times, but generally dull. Heavy rain in early morning, and frequent showers throughout the day. Much milder. A sudden squall at 10.30 P.M., and a gale of wind at night. At midnight the reading of the barometer was 28.85, and still decreasing. Up to this date (27th) the fall of rain since October 1 is nearly 7½ inches, being more in this locality than in any month back to the year 1815; the nearest approach to this amount was in July, 1828, when 7 inches fell.

LONDON: Barometer.—During the week ending Saturday, October 23, in the suburbs of London the reading of the barometer at the level of the sea increased from 30.08 inches at the beginning of the week to 30.12 inches by the evening of the 17th, decreased to 30.01 inches by the evening of the 18th, increased to 30.08 inches by the morning of the 19th, decreased to 29.56 inches by the afternoon of the 20th, increased to 29.90 inches by the morning of the 21st, decreased to 29.64 inches by the evening of the 22d, and increased to 30.09 inches by the end of the week. The mean reading for the week at sea level was 29.90 inches, being 0.31 inch below that of the preceding week, and the same as the average.

Temperature.—The highest temperatures of the air observed by day varied from 58½° on the 18th to

35° on the 20th; the mean value for the week was 47½°. The lowest temperatures of the air observed by night varied from 29½° on the 20th and 21st, to 47½° on the 17th; the mean value for the week was 37½°. The mean daily range of temperature in the week was 10½°, the greatest range in the day being 16½° on the 21st, and the least, 6½°, on the 17th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—17th, 50°·6, +0·8; 18th, 50°, +0·3; 19th, 44°, -5·5; 20th, 33°·4, -15·9; 21st, 37°, -12°; 22nd, 40°·2, -8·5; 23rd, 39°·9, -8·4°. The mean temperature of the air for the week was 42°·2, being 7° below the average of sixty years' observations, and 7° below the value for the corresponding week in 1879.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 96° on the 18th, 84° on the 21st, and 78° on the 23d; on the 17th and 20th the readings did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 26° on the 21st, 28° on the 20th, and 29½° on the 23d; the mean of the seven lowest readings was 35°.

Wind.—The direction of the wind was variable, and its strength generally strong.

The weather during the week was dull and cloudy, and very cold, except on the 17th and 18th. Snow fell on the 20th, and fog prevailed on the 17th.

Rain fell on four days during the week; the amount measured was 1·46 inch.

ENGLAND: Temperature.—During the week ending Saturday, October 23, the highest temperatures of the air observed by day were above 60° at Truro and Sunderland, and below 56° at Wolverhampton and Liverpool, Hull and Bradford; the mean value from all stations was 57½°. The lowest temperatures of the air observed by night were below 28° at Bristol, Wolverhampton, Nottingham, Hull, Bradford, and Leeds, and above 33° at Truro, Plymouth, and Norwich; the general mean from all places was 29½°. The extreme range of temperature in the week was more than 30° at Bristol, Wolverhampton, Nottingham, and Leeds, and less than 25° at Plymouth and Norwich; the mean range of temperature from all stations was 28½°.

The mean of the seven high day temperatures was above 51° at Truro, Plymouth, and Cambridge, and below 48° at Blackheath (London), Wolverhampton and Liverpool; the mean from all places was 49°. The mean of the seven low night temperatures was below 35° at Wolverhampton, Nottingham, and Hull, and above 39° at Plymouth and Norwich; the mean from all stations was 36½°. The mean daily range of temperature in the week was more than 14° at Wolverhampton, Nottingham, and Hull, and less than 10° at Brighton and Norwich; and the mean daily range from all places was 12½°.

The mean temperature of the air for the week from all stations was 42°, being 7½° lower than the value for the corresponding week in 1879. The mean temperature was above 44° at Plymouth and Norwich, and below 41° at Wolverhampton, Nottingham, Hull, and Bradford.

Rain.—The heaviest falls of rain in the week were at Truro, 1·86 inch; Blackheath (London), 1·46 inch; Plymouth, 1·12; and Brighton, 1·10 inch; and the least falls were at Wolverhampton, 0·06 inch; Liverpool, 0·11 inch; Bradford, 0·14; and Leeds, 0·18 inch. The average fall over the country was 0·60 inch. The weather during the week was generally dull and cold.

Snow fell at many places on the 19th and 20th, and at Sunderland on the 20th the depth was 2 inches. Hail also fell occasionally.

SCOTLAND: Temperature.—During the week ending Saturday, October 23, the highest temperatures of the air varied from 58½° at Aberdeen to 56° at Paisley; the mean value from all places was 57°. The lowest temperatures of the air were 18° at Paisley, 19½° at Glasgow, and 19½° at Perth; at Greenock and Leith the lowest temperatures were between 26° and 27°; the mean value from all stations was 23°. The mean range of temperature in the week from all places was 34°.

The mean temperature of the air for the week from all stations was 39½°, being 8½° lower than the value for the corresponding week in 1879. The mean temperature was above 40° at Greenock and Leith, and below 37° at Paisley.

Rain.—The falls of rain during the week varied in amount from 1·17 inch at Edinburgh, and 0·84 inch at Leith to 0·04 inch at Perth. At Glasgow and Paisley no rain was measured; the average fall over the country was 0·40 inch.

The weather during the week was cold, and the minimum temperatures were unusually low for the time of year.

DUBLIN.—The highest temperature of the air was 57½°, the lowest 23½°, the extreme range 34½°, the mean 40½°, and the fall of rain 0·10 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

MR. KYLE.—A correspondent is anxious to obtain the present address of Mr. Kyle, who in 1848 was a gardener at Leyton, and who was one of the first to succeed with the application of sulphur in killing the Vine mildew. Can any of our readers help us in the matter?

SOFT WATER SUPPLY FOR GARDEN.—Will some of your readers kindly give me instructions how to store from 5000 to 10,000 gallons of water in the cheapest way? Would clay and bricks be sufficient, or must it be cemented? If so, which way is best? *T. inez.*

Answers to Correspondents.

BOOKS: T. K. The book you enquire for is the *Famous Parks and Gardens of the World* (Nelson & Sons).

CHINESE PRIMULAS WITH LEAFY CALYX. *J. H. E.* Such cases are not uncommon, but yours is an exceptionally good illustration. They would make good button-hole flowers. See p. 729, vol. xii., 1879.

EXHIBITION CHRYSANTHEMUMS: Amateur. Mr. Cannell, of Swanley, informs us that he can supply the wooden supports you inquired about last week.

"HEREFORDSHIRE POMONA." *C. Palmer.* Published by Bogue, 3, St. Martin's Place, Trafalgar Square; and Jakeman & Carver, High Town, Hereford. Price 21s. per part.

INSECTS: J. B. & S. The very minute insects sent, found spinning fine threads on the trunk of an Elm tree, are the well-known *Acarus telarius*, or web-spinning mite, which sometimes envelops the branches and twigs with its webs. *I. O. W.*

JAPANESE ELM: C. P. We suspect this is *Ulmus Keaki*, *alias* *Planera acuminata*. We are glad of the information you give us, which we shall publish next week.

MOSSSES: H. S. *The British Moss Flora*, by Dr. Braithwaite, 303, Clapham Road, S.W., now appearing in 2s. parts. Published by the author.

NAMES OF PLANTS: F. Hannaford. *Gloriosa superba.*—*J. H. L.* Your climber is *Bomarea Carderi*; a greenhouse plant with thick fleshy roots, which should be kept fairly dry during winter, and have liberal treatment through the growing season.—*J. Thomas.* *Acer rubrum.*—*J. P. G. Smith.* *Correa alba.*—*W. P. Epping.* *Hippocrepis rhomboides.*—*Campylo.* *Acacia longifolia.*—*H. A.* *Erica stricta.*—*C. W. D.* 1. *Aster cordifolius*; 2. a form of *A. miser*; 3. not *A. prealtus*, but one of the forms of *A. laxiflorus.*—*J. H., Bath.* *Cattleya Harrisoniae.*—*G. M., Ely.* Send better specimens, laid flat, and we will try what we can do with them, but we cannot deal with specimens rolled up as these are, like wisps of hay.—*W. H.* 1, 2, and 3, are *Asters*, which require better materials for naming. Send larger pieces, pressed flat, so that they do not curl. 4, is an *Acacia*, probably *A. Riceana*, but not in bloom; 5, *Epiphyllum truncatum*; 6, *Ceanothus hirta*; 7, *Pteris longifolia.*—*J. C.* We do not recognise the Orchid bulbs; there is nothing characteristic in the young growth.—*R. Lloyd.* *Lastrea laserpitillifolia, alias* *L. Standishii*; *Hippastrum reticulatum.*—*J. R.* 1, *Saxifraga cernitophylla*; 2, *Thymus lanuginosa*; 3, *Herniaria glabra.*

PRIMULAS: H. Cannell. A fine and exceedingly varied selection of flowers, containing several high-coloured ones of great beauty, which we shall expect to hear more about later on.

PIRUS JAPONICA: J. A. C. You will find it in *Paxton*, under *Cydonia*.

TURT UNDER TREES: J. N. It is hopeless to wish to preserve turf under the drip of a large Beech tree, in a green velvety condition. We should recommend the use of the small-leaved green Ivy, which might be kept quite close and even, and would also be an appropriate covering for a grave.

VINE DISEASE: J. R. P. Yes; a bad case of *Phylloxera*.

WORMS IN LAWNS: W. B. There is nothing better than clear lime-water.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this journal.

CATALOGUES RECEIVED.—J. M. Thorburn & Co. (15, John Street, New York), Wholesale List of American Seeds.—J. Cheal & Sons (Crawley Sussex), Catalogue of Ornamental Trees and Shrubs, Fruit Trees, &c.—L. Späth (Köpenickerstrasse, 154, Berlin), Wholesale Catalogue of Trees and Shrubs.—James Veitch & Sons (Chelsea), Catalogue of Roses.—Charles Turner (Royal Nurseries, Slough), Catalogue of Roses, Fruit Trees, Hardy Ferns and Shrubs, &c.—Ormonist & Renwick (Melrose), General Catalogue of Forest and Ornamental Trees and Shrubs, Roses, Fruit Trees, &c.

COMMUNICATIONS RECEIVED.—J. D.—A. M.—C. P.—A. S. W.—E. W. B.—W. N.—J. W.—W. G. S.—D. N.—R. C.—R. D.—E. T.—F. R.—H. H. C.—A. D.—J. B. T.—B. G.—D. T. F.—A. O. W.—C. F.—W. C.

Markets.

COVENT GARDEN, October 28.

We have no alteration to quote this week. Business is very quiet, with large quantities of American Apples on hand; prices low. Kent Cobs in good demand at increased value. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0 5 0	Peaches, per doz.	9 0 18 0
Cobs, per lb.	1 0 10 0	Pears, per dozen	1 6 2 6
Grapes, per lb.	1 0 4 0	Pine-apples, per lb.	2 0 5 0
Lemons, per 100	6 10 0	Plums, ½-sieve	2 0 4 6
Melons, each	2 0 3 0		

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	3 0 4 0	Horse Radish, p. bun.	4 0 7 0
per doz.	3 0 4 0	Lettuces, Cabbage,	0 6 1 6
Aubergines, per doz.	3 0 1 0	per doz.	0 6 1 6
Beans, French, p. lb.	0 6 1 0	Mint, green, bunch.	0 4 1 0
Beet, per doz.	1 6 2 0	Mushrooms, p. bask.	1 6 2 0
Cabbages, per doz.	1 0 2 0	Onions, per bushel.	5 0 1 0
Carrots, per bunch.	0 4 0 6	Spring, per bush.	0 6 1 0
Cauliflowers, Eng-	3 0 6 0	Radishes, per bunch.	0 4 1 0
lish, each	3 0 6 0	Small salad, pun.	4 0 1 0
Celery, per bundle	1 6 2 0	Spinach, per bushel	2 6 1 0
Chilis, per 100	3 0 1 0	Tomatoes, per lb.	0 9 1 0
Cucumbers, per doz.	6 0 9 0	Turnips, new, bunch.	0 4 1 0
Endive, per doz.	1 0 1 6	Vegt. Marrows, doz.	2 0 1 0
Garlic, per lb.	1 0 1 0		
Herbs, per bunch	0 2 0 4		

POTATOS:—Kent Regents, 8s. to 10s.; Champions, 8s. to 9s.; Early Rose 6s. to 8s.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	6 0 9 0	Euonymus, various,	6 0 18 0
Begonias, per doz.	4 0 12 0	per dozen	6 0 18 0
Bouvardias, per doz.	12 0 24 0	Evergreens, in var.,	4 0 18 0
Chrysanthemums, p.	6 0 12 0	per dozen	4 0 18 0
dozen	6 0 12 0	Ferns, in variety, doz.	4 0 18 0
Coleus, per dozen	3 0 9 0	Ficus elastica, each	1 6 7 6
Cyperus, per dozen	6 0 12 0	Foliage Plants, vari-	0 10 6 0
Dracena terminalis	30 60 0	ous, each	2 0 10 6 0
—viridis, per doz.	12 0 24 0	Fuchsias, per dozen	9 0 12 0
Erica gracilis, dozen	9 0 18 0	Myrtles, per doz.	6 0 12 0
—caltra, per doz.	8 0 12 0	Palms in var., each	2 6 2 0
—hyemalis	12 0 36 0	Solanums, per dozen	6 0 18 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Mignonette, 12 bun.	4 0 9 0
Asters, 12 bunches	9 0 12 0	Narcissus, Paper-	4 0 6 0
Bouvardias, per bun.	1 0 3 0	White, 12 sprays.	4 0 6 0
Camellias, per dozen	4 0 9 0	Pelargoniums, 12	1 0 1 6
Carnations, 12 blms.	1 0 2 0	sprays	1 0 1 6
Chrysanth., 12 bun.	6 0 12 0	—zonal, 12 sprays	6 0 9 0
—12 blooms	6 0 3 0	Primula, double, per	1 0 1 6
Eucharis, per doz.	4 0 9 0	bunch	1 0 1 6
Feverfew, 12 bun.	4 0 6 0	Roses (indoor), doz.	1 0 6 0
Gardenias, 12 blms.	6 0 12 0	—outdoor, 12 bun.	9 0 18 0
Gladioli, 12 spikes	2 0 4 0	Stephanotis, 12 spr.	9 0 15 0
Heliotropes, 12 sp.	0 6 1 0	Tropaeolum, 12 bun.	1 0 3 0
Hyacin., Rom., 12 sp.	3 0 4 0	Tuberose, per dozen	1 0 2 0
Lilac, Fr., per bunch	8 0 12 0	Violets, 12 bunches.	1 0 2 0

SEEDS.

LONDON: Oct. 27.—A quiet feeling still characterises the trade for farm seeds. A small quantity of choice new English red Clover seed has this week been shown on Mark Lane, for which long prices were asked. As regards American and Continental parcels there is no change. Fine Trefoils are somewhat firmer. It is worth noting that perennial Ryegrasses are now offering from New Zealand, which is quite a reversal of the ordinary course of things. For winter Tares there is less inquiry. Good Rye finds buyers on recent terms. Higher rates are obtainable for blue Peas. A small supply has just come to hand of new Haricot Beans, for which moderate figures are accepted. Fine new French Millet for birds realises 52s. per quarter. The new French Buckwheat, being satisfactory in quality and low in price, meets with favour. More money is asked for both English and Dutch Linseed. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

POTATOS.

From the Borough and Spitalfields Markets reports we learn that supplies have been large, and trade throughout the week has remained dull. Scotch Regents, 80s. to 90s.; do. Victorias, 90s. to 95s.; Essex Regents, 80s.; Kent Regents, 90s. to 100s. per ton; German reds, 4s. 3d. to 5s.; do. Snowflakes, 4s. per bag.

COALS.

The following are the prices current at market during the week:—East Wylam, 10s. 6d.; Ravensworth West Hartley, 11s. 9d.; Bebside West Hartley, 11s. 9d.; Walls End—Hetton, 18s. 6d.; Hetton Lyons, 16s. 6d. and 17s.; Lambton, 18s.; Original Hartlepool, 18s. 6d.; Wear, 17s.; Tunstall, 16s. 6d. and 17s.; Thornley, 17s. 9d.; Hawthorns, 16s. 9d.; South Hetton, 18s. 6d.; Tees, 18s. 3d.; Radford Navigation, 16s.

Government Stock.—The closing prices of Consols on Monday were, for delivery, 99½ to 99¾, and 99½ to 99¾ for the account. On Tuesday the final quotations for both delivery and the account were 99½ to 99¾. Consols for delivery closed on Wednesday at 99½ to 99¾, and for the account at 99½ to 99¾; and on Thursday the figures were 99½ to 99¾ for both account and delivery.

IMPORTANT NOTICE.

THE
GARDEN ANNUAL,

ALMANAC, and ADDRESS BOOK

For 1881.

THIS will be the most complete and accurate Yearly Reference Book for the use of all interested in Gardens yet published. In addition to the usual information embodied in books of this class, appearing yearly, this work will contain a full and accurate List of the Horticultural Trade in the United Kingdom, and also the principal houses abroad. THE GARDEN ANNUAL, ALMANAC, and ADDRESS BOOK also contains the largest List of Country Seats and Gardens, with the names of their owners and gardeners, that has yet been prepared. THE GARDEN ANNUAL may be ordered through all Booksellers, and will be on sale by the Nursery and Seed Trade at 1s. per copy. It contains among other matters, the following, viz. :—

ALMANAC for the Year 1881.

CONCISE CALENDAR of GARDEN OPERATIONS for each Month.

FLOWERS, FRUITS, and VEGETABLES procurable each Month.

A Carefully-compiled ALPHABETICAL LIST of NURSEY-MEN and SEEDSMEN, FLORISTS, HORTICULTURAL BUILDERS, ENGINEERS, and of the HORTICULTURAL TRADE generally.

NAMES of the Principal COUNTRY SEATS and GARDENS in the United Kingdom, with those of their OWNERS, HEAD GARDENERS, Nearest POST TOWN, and COUNTY.

ALPHABETICAL LIST of GARDENERS in the United Kingdom.

NEW PLANTS, which have received Certificates from the Royal Horticultural and Royal Botanic Societies.

The NEW PLANTS and other NOVELTIES of the year, offered by the Leading Houses.

PLANTERS' TABLES: Full and Practical.

TABLES of SEEDS and for SEED SOWING.

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HOT-WATER PIPES, their Contents and Weight, and Calculated Heating Power.

WEIGHTS and MEASURES—English, and their Foreign Equivalents.

MONEY—Ready Reckoning, Wages, and Calculating Tables.

PRICES of CONTRACT WORK—Fencing, Draining, and Well-sinking Tables.

WEATHER TABLES and WARNINGS, REPORTS, RAINFALL, and TEMPERATURE.

POSTAL GUIDE.

HORTICULTURAL SOCIETIES and their Secretaries, and Dates of the Principal Shows for 1881.

OBITUARY.

Advertisers are requested to send their Orders immediately.

OFFICE:

37, SOUTHAMPTON STREET,
COVENT GARDEN, W.C.

RHUBARB STOOLS.—Must be Sold, several thousands, excellent Roots, about 6 to 9 inches diameter, two years from division. Also larger Stools and divided Roots for Planting and Forcing.
FREEMAN and FREEMAN, Seed Merchants, Norwich.

FOR SALE, Cheap.—Twenty PINE PLANTS: three ditto, Variegated. Large specimens of the following Plants:—*IMATOPHYLLUM*, *CROTON INTERRUPTUM*, *UNDULATUM*, *LONGIFOLIA*: two *ANTHURIUM SCHERZERIANUM*, two *DRACENA FRASERI*, *ARALIA VEITCHII*, *PANDANUS VEITCHII*, *ALLAMANDA HENDERSONI*. Apply to
J. WILLIS, The Gardens, Nash Court, near Tenbury.

To Nurserymen and Others.
FOR SALE, in place, from 300 to 400 yards of BOX EDGING, averaging 1 foot in height and 9 inches in breadth. One mile from Railway Station. For price apply,
GEO. PURNELL, Manor House, Stratton-on-the-Fosse, Bath.

GLADIOLUS, "The Bride."—The finest white flower for cutting purposes in cultivation, quite hardy and easily grown, and blooms at a time when flowers are scarce. Also *MONTBRETIA POTTSII*, fine flowering bulbs. Prices on application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

A. M. C. JONGKINDT CONINCK has to offer large quantities of the following Hardy Plants, at very low prices:—

<i>Saxifraga granulata</i> , fl.-pl.	<i>Tradescantia virginica</i> alba.
<i>Selaginella helvetica</i> .	" " cerulea.
<i>Spiraea Aruncus</i> .	" " rosea.
" <i>filipedula</i> , fl.-pl.	" " rubra.
" <i>palmaria elegans</i> .	" " violacea.

Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

ANTHURIUM ANDREANUM, small seedling plants, four to five leaves, well rooted, 12s. each, 4s. for 10, 4s. for 100; price per 200 on application. **MAXILARIA LEHMANNI**, *ODONTOGLOSSUM ALEXANDRE*, *Lehm.*, *MESOPHIDIUM ROSEUM*, *ONCHIDIUM ROSSI*, *MAIUS*, *ODONTOGLOSSUM CIRRHOSUM*, *EPIDENDRUM VITELLINUM*, *MESOPHIDIUM SANGUINEUM*, *TRIGLOCH MARGINATA*, 5s. each. Price per dozen or 100 pieces of all sorts, on application. All Orchids imported April, 1880.

E. POLKO, Nurseryman, Bitterfeld, Germany.

200,000 Lily of the Valley and 30,000 Palms.
TO THE TRADE.—Strong Crowns, (3 yr.), for forcing, of the **GIANT LILY OF THE VALLEY**, at 42s. per 1000; extra strong clumps, 12s. and 15s. per dozen.

PALMS.—*Lantania borbonica*, *Corypha australis*, *Phoenix reclinata* (true), at 25s. per 100. In stores, per 100, *Phoenix reclinata*, 12s.; *Scaevola elegans*, 16s.; *Chamaecyparis excelsa*, 8s.; and *Corypha australis*, 14s. Also many best kinds of Market FERNS at 20s. per 100, 140s. per 1000.

Post-office Order with order. Packing free.

WILLIAM ICETON, Nurseryman and Florist, Barnes, S.W.

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EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

Descriptive Priced CATALOGUE, free on application.

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KING'S ACRE, HEREFORD.

TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

Trade terms on application.

MAIRIS and CO., Weston-in-Gordano, Bristol.

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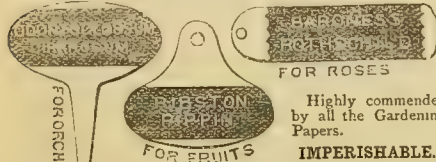
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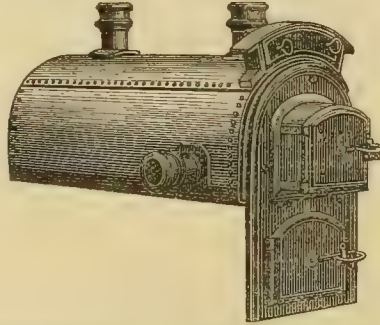


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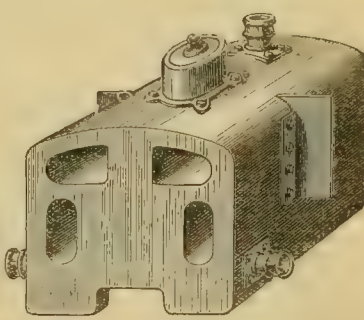
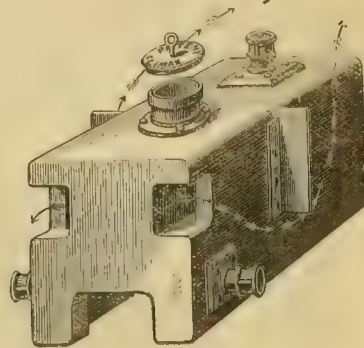
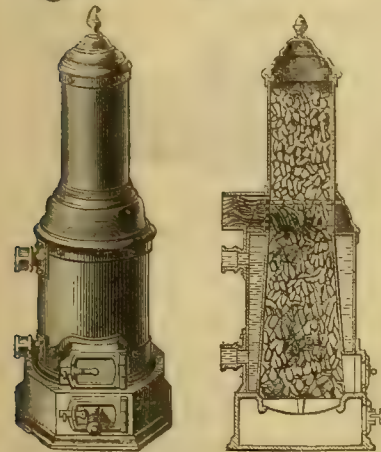
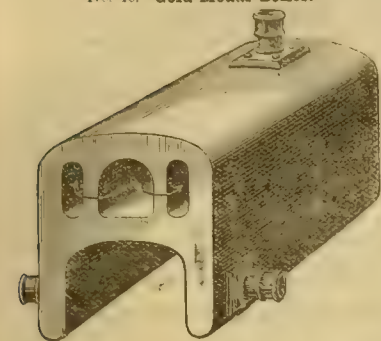
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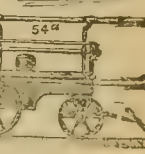
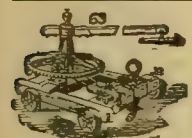
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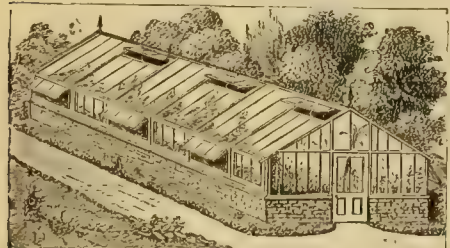
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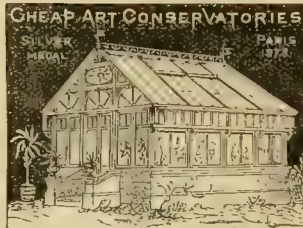
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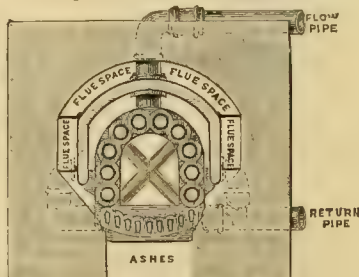
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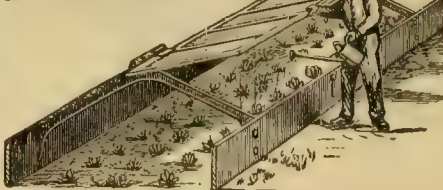
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12 feet long, 3 feet wide	3	8	6	8	6
12 feet long, 4 feet wide	2	9	6	8	6
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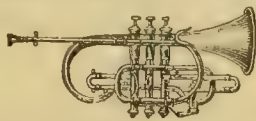
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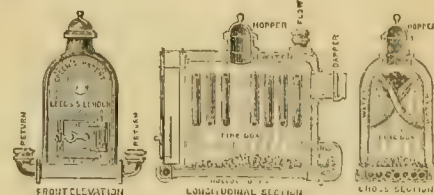
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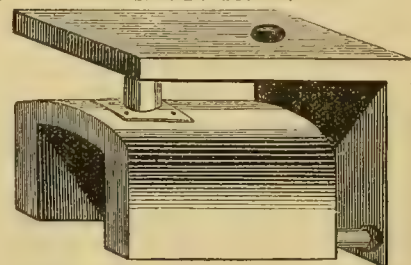
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Of the Choicest TREES in Cultivation, from 12 to 20 years old. All are straight, well-grown, and calculated to Transplant with certain Success. They are suitable for Avenues or for Planting Singly in the most Conspicuous Places.

STANDARD ORNAMENTAL TREES.

	18 to 20 feet high. Each.		Doz.		100.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
ACACIA, thorn	5s. to	7 6	..	..	..	..
ALANTUS glandulosa ..	5s. to	7 6	..	..	..	..
ASH, common	..	..	24 0	..	..	..
.. extra strong	..	..	30 0	..	..	..
.. cucullata	..	..	3 6	..	..	..
.. monophylla	3s. 6d. to	5 0	..	..	..	..
BIRCH, silver	..	..	48 60	..	..	..
ELM, English and Huntingdon ..	..	..	72 0	..	..	..
.. suberosa	5s. to	7 6	..	..	..	..
LIME, latifolia alba	..	10 6	..	..	..	..
MAPLE, colchicum rubrum ..	..	7 6	..	..	..	..
.. Norway	..	7 6	..	..	..	..
OAK, scarlet	5s. to	7 6	..	..	..	..
POPLAR, canadensis nova ..	5s. to	7 6	..	..	..	..
.. silver-leaved	..	5 0	..	..	..	..
SYCAMORE, common	..	..	48 60	..	..	..
.. purple	5s. to	7 6	..	..	..	..

15 to 18 feet high.

ASH, common	..	13 0	..	..	..	..
.. aucubifolia	..	30 0	..	..	..	..
.. cucullata	..	30 0	..	..	..	..
.. juglandifolia	..	30 0	..	..	..	..
.. monophylla	..	30 0	..	..	..	..
.. salicifolia	..	30 0	..	..	..	..
.. silver-striped	..	30 0	..	..	..	..
ALDER, incana	3 6	30 0	..	..	..	..
.. macrophylla	..	2 6	..	..	..	..
BIRCH, Fern-leaved	..	48 0	..	..	..	..
ELM, English	..	36 42	..	..	..	..
.. Huntingdon	..	36 42	..	..	..	..
.. suberosa	2s. 6d. to	3 6	..	..	..	..
HORNBEAM	3s. 6d. to	5 0	..	..	..	..
HORSE CHESTNUT, white	..	30 0	230 0	..	..	..
.. extra strong	5s. to	7 6	48 60	..	..	..
.. double red	..	30 36	..	..	..	..
.. ohioensis	..	30 36	..	..	..	..
HORSE CHESTNUT, scarlet ..	..	42 48	..	..	..	..
.. extra strong	..	60 72	..	..	..	..
LARCH, common	..	18 24	..	..	..	..
.. japonica	..	24 30	..	..	..	..
LIME, dasystyla	5s. to	7 6	..	..	..	..
.. latifolia alba	..	60 0	..	..	..	..
.. red twigged	..	60 0	..	..	..	..
MAPLE, Norway	..	3 6	36 0	..	..	..
.. laciniata	..	3 6	..	..	..	..
.. Schwedleri	..	36 0	..	..	..	..
.. virginicum rubrum	5s. to	7 6	..	..	..	..
OAK, scarlet	..	42 0	..	..	..	..
.. Turkey	..	36 0	..	..	..	..
PLANE, occidentalis (London Plane) ..	..	60 0	..	..	..	..
POPLAR, Black Italian, canadensis ..	..	..	..	..	..	..
.. nova and silver-leaved	..	24 0	..	..	..	..
.. White Egyptian	2s. to	2 6	..	..	..	..
PYRUS aria (White Beam)	..	30 0	..	..	..	..
SYCAMORE, common	..	3 6	33 0	..	..	..
.. purple	..	3 6	33 0	..	..	..
.. variegated	..	5 0	..	..	..	..

12 to 15 feet high.

ACACIA crista	..	2 6	..	..	..	..
.. Decasneana (pink)	..	24 36	..	..	..	..
.. monophylla	2s. 6d. to	3 6	..	..	..	..
ALDER, incana laciniata	..	3 6	..	..	..	..
.. quercifolia	..	24 0	..	..	..	..
.. rubro nervia	..	2 6	..	..	..	..
ASH, aucubifolia	..	18 24	..	..	..	..
.. juglandifolia	..	18 24	..	..	..	..
.. monophylla	..	18 24	..	..	..	..
.. orange-barked	..	18 24	..	..	..	..
.. salicifolia	..	18 24	..	..	..	..
.. silver-striped	..	18 24	..	..	..	..
.. mountain	..	24 0	150 0	..	..	..
.. yellow-berried	..	30 0	..	..	..	..
.. large-berried	..	30 0	..	..	..	..
CHESTNUT, Spanish	..	3 0	30 0	..	..	..
.. extra strong	3s. 6d. to	5 0	..	..	..	..
ELM, Dampieri	2s. 6d. and	3 6	..	..	..	..
.. English and Huntingdon	..	30 0	200 0	..	..	..
.. silver-striped	..	18 24	..	..	..	..
HORSE CHESTNUT, single white ..	..	24 0	150 0	..	..	..
.. double white	..	3 0	30 0	..	..	..
.. glabra pallida	..	3 0	30 0	..	..	..
.. neglecta	..	3 0	..	..	..	..
.. scarlet	..	3 0	36 36	..	..	..
LIME, latifolia alba	..	30 42	..	..	..	..
.. red-twigged	..	36 42	..	..	..	..
MAPLE, English	..	18 0	..	..	..	..
.. laciniata	..	2 6	..	..	..	..
.. Schwedleri	..	30 0	..	..	..	..
.. virginicum rubrum	..	30 0	..	..	..	..
OAK, Turkey and scarlet	..	3 0	30 0	..	..	..
PLANE, occidentalis (London Plane) ..	..	48 0	..	..	..	..
POPLAR, Black Italian	..	..	100 0	..	..	..
.. canadensis aurea	..	18 0	..	..	..	..
.. nova	..	18 0	..	..	..	..
.. silver-leaved	..	18 0	..	..	..	..
.. White Egyptian	..	18 0	..	..	..	..
PYRUS aria (White Beam)	..	24 0	..	..	..	..
SUMACH (Stag's-horn)	..	3 6	..	..	..	..
SORBUS hybrida	..	21 6	..	..	..	..
SNOWY MESPIUS, florida	..	2 6	..	..	..	..
.. ovata	..	2 6	..	..	..	..
SYCAMORE, purple-leaved	..	3 0	30 0	..	..	..
.. variegated	..	3 0	30 0	..	..	..
TULIP TREE	5s. to	7 6	..	..	..	..

10 to 12 feet high.

ACACIA, Thorn	..	18 0	..	..	..	..
.. Bessoniana	..	5 0	..	..	..	..
ALANTUS glandulosa	..	18 0	..	..	..	..
ASH, mountain	..	18 0	125 0	..	..	..
.. yellow-berried	..	24 0	..	..	..	..
.. large-berried	..	24 0	..	..	..	..
.. flowering	..	18 0	..	..	..	..
ALMOND, flowering	..	30 0	..	..	..	..

	10 to 12 feet high. Each.		Doz.		100.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
BEECH	..	2 6	24 0	..	..	..
.. purple-leaved	..	..	48 0	..	..	..
BIRD CHERRY	..	..	18 0	..	..	..
.. Virginian	..	1 6	..	..	..	..
BIRCH, silver-barked, weeping ..	..	..	18 0	..	..	..
.. Fern-leaved, weeping	..	3 0	30 0	..	..	..
.. new purple-leaved, weeping ..	..	5 0	..	..	..	..
.. pyramidalis	2s. 6d. to	3 6	..	..	..	..
CHERRY, double blossomed	..	3 6	30 0	..	..	..
CHESTNUT, Spanish	..	2 6	24 0	..	..	..
COTONEASTER frigida	..	..	24 0	..	..	..
ELM, emarginata	..	..	24 0	..	..	..
.. English	..	..	21 0	150 0	..	..
.. Huntingdon	..	..	21 0	150 0	..	..
.. myrtifolia	..	..	24 0	..	..	..
.. plumosa	..	..	24 0	..	..	..
.. Webbiana	..	..	24 0	..	..	..
.. Wheatley's	..	..	24 36	..	..	..
HORNBEAM, cut-leaved	..	2 6	..	..	..	..
HORSE CHESTNUT, scarlet	..	..	24 0	..	..	..
.. yellow-flowered	..	..	24 0	..	..	..
.. glabra	..	..	24 0	..	..	..
.. discolor	..	2 6	..	..	..	..
.. aurea variegata	..	..	24 0	..	..	..
LABURNUM, English, purple-flowered ..	..	..	24 0	..	..	..
.. and Scotch	..	..	24 0	..	..	..
LIME, red-twigged	..	..	30 0	..	..	..
MAGNOLIA acuminata	..	5 0	48 0	..	..	..
MAPLE, colchicum rubrum	..	..	30 0	..	..	..
.. monspeliensis	..	..	18 0	..	..	..
.. pennsylvanicum rubrum	..	..	18 0	..	..	..
.. Negundo variegata	..	..	24 0	175 0	..	..
.. Norway	..	..	18 0	125 0	..	..
.. virginicum rubrum	..	..	24 0	..	..	..
.. Schwedleri	..	..	24 0	..	..	..
OAK, scarlet and Turkey	..	..	24 0	..	..	..
PLANE, occidentalis (true London Plane) ..	..	..	42 0	..	..	..
PIELIA trifoliata (Hop tree)	..	..	24 0	..	..	..
POPLAR, Black Italian	..	..	12 0	75 0	..	..
.. canadensis, golden	..	..	24 0	..	..	..
.. Lombardy	..	..	18 0	..	..	..
PYRUS aria (White Beam)	..	..	18 0	..	..	..
.. nova	..	..	18 0	..	..	..
RHAMNUS frangula	..	..	18 0	..	..	..
SUMACH (Stag's-horn)	..	..	24 0	..	..	..
SNOWY MESPIUS	..	1s. 6d. to	2 6	..	..	..
SYCAMORE	..	..	18 0	125 0	..	..
.. purple-leaved	..	..	24 0	..	..	..
.. variegated	..	..	24 0	..	..	..
THORN, double pink	..	..	30 0	..	..	..
WILLOW, cœrulea	..	..	18 0	..	..	..
.. Salomon, weeping	..	..	18 0	..	..	..

8 to 10 feet high.

ACACIA, Bessiana	..	..	30	0	..
inermis	3s. 6d. to	5 0	..	..	..
AILANTUS glandulosa	..	..	15	0	..
ALMOND, flowering	..	..	24	0	..
BEECH, cut-leaved	..	3 6	30	0	..
purple	..	..	36	0	..
BIRCH, Fern-leaved, weeping	..	..	24	0	..
new purple-leaved, weeping	..	3 6	36	0	..
CATALPA, Kämpferi	..	2 6	..	..	..
syringifolia	..	2 6	..	..	..
CHEEK, double-blossomed	..	2 6	24	0	..
hortensis rose	..	2 6	24	0	..
COTONEASTER frigida	..	2 0	18	0	..
DOGWOOD, mascula variegata	..	2 6	24	0	..
ELM, Berardii	2s. 6d. to	3 6	..	..	..
betulaefolia	..	2 6	..	..	..
English	..	..	15	0	100
Huntingdon	..	..	15	0	100
filicifolia	..	..	24	0	..
golden	..	..	24	0	..
monumentalis	..	..	24	0	..
purple	..	..	24	0	..
plumosa	..	..	18	0	..
viminalis nivea fol. variegata	..	..	24	0	..
GLEDITSCHIA acanthos	..	2 6	..	..	..
HORSE CHESTNUT, scarlet	..	..	18	0	..
KOLREUTERIA paniculata	..	2 6	24	0	..
LABURNUM, English	..	..	18	0	..
golden	..	..	24	0	..
monstrosa	..	2 6	..	..	..
LABURNUM, purple-flowered	..	..	18	0	..
quercifolia	..	2 6	..	..	..
Scotch	..	..	18	0	..
Parkesii	..	2 0	..	..	..
MAPLE, colchicum rubrum	..	..	24	0	..
Negundo variegata	..	..	18	0	..
Eagle's-claw	..	2 0	..	..	..
virginicum rubrum	..	..	18	0	..
Schwedleri, variegated	..	..	18	0	..
MAGNOLIA acuminata	..	3 6	36	0	..
OAK, scarlet	..	..	18	0	..
PLANE, occidentalis (true London Plane)	..	..	30	0	..
POPLAR, Black Italian	..	..	9	0	60
canadensis nova	..	..	12	0	..
Ontario	..	..	12	0	..
silver-leaved	..	..	12	0	..
PIELIA trifoliata (Hop tree)	..	..	18	0	..
PYRUS aria (White Beam)	..	..	15	0	..
malus imperialis	..	..	24	0	..
spectabilis	..	..	24	0	..
SNOWY MESPIUS and grandiflora	..	..	24	0	..
SORBUS edulis	..	2 6	..	..	..
hybrida	..	..	15	0	..
SYCAMORE, purple and variegated	..	..	18	0	..
THORN, double crimson	..	..	24	0	..
single scarlet	..	..	24	0	..
in named varieties	..	..	24	0	..
TULIP TREE	..	..	30	0	..

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

INTERNATIONAL HORTICULTURAL EXHIBITION AT MANCHESTER, 1881.

A MEETING of the GENERAL COMMITTEE will be held in the Mayor's Parlour, Town Hall, Manchester, on TUESDAY AFTERNOON, the 16th instant, at 3 o'clock. The Mayor of Manchester will preside.

BRUCE FINDLAY, Secretary.
Royal Botanic Gardens, Manchester.

THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.

The THIRD GRAND COMBINED EXHIBITION of CHRYSANTHEMUMS, FRUIT, &c., and CAGE BIRDS, will be held on NOVEMBER 16 and 17. Entries close November 9. Schedules and Entry Forms may be obtained of C. S. FUIDGE, Secretary.

39, York Street, Lower Avenue.

ROYAL AQUARIUM, WESTMINSTER.

GRAND EXHIBITION of CHRYSANTHEMUMS, FRUIT, and VEGETABLES (Competition open to all England), on WEDNESDAY and THURSDAY, November 17 and 18. Five Valuable SILVER CUPS, and a liberal scale of Money Prizes will be awarded. Entries close on Saturday, November 13. Schedules and all information of WILLIAM HOLMES, Frampton Park Nursery, Hackney, N.E.

KINGSTON AND SURBITON CHRYSANTHEMUM SOCIETY.

The FOURTH ANNUAL EXHIBITION of the above Society will be held in the Drill Hall, Kingston, on THURSDAY and FRIDAY, November 18 and 20, when in addition to other valuable Prizes, the CHAMPION CHALLENGE VASE, value 25 Guineas, will be competed for. Entries close November 13. For Schedules and other information apply to T. JACKSON, Hon. Sec.

Fife Road, Kingston-on-Thames.

NORTHAMPTONSHIRE CHRYSANTHEMUM SOCIETY.

The NINTH ANNUAL SHOW of CHRYSANTHEMUMS, FRUIT, and VEGETABLES will be held at the Corn Exchange, Northampton, on TUESDAY and WEDNESDAY, November 23 and 24. FOUR SILVER CUPS are offered for Competition, in addition to other Prizes.

For Schedules apply to the Hon. Secretary,

Mr. E. DRAPER, 2, Primrose Hill, Northampton.

ROYAL BOTANICAL AND HORTICULTURAL SOCIETY OF MANCHESTER.

An EXHIBITION of CHRYSANTHEMUMS, &c., will be held in the Town Hall, Manchester, on TUESDAY and WEDNESDAY, the 23rd and 24th instant. For particulars apply to the undersigned.

BRUCE FINDLAY.

Royal Botanic Gardens, Manchester.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY.

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have a magnificent stock of the above plants to offer.

They may be had in all sizes from 24s. per dozen to 21s. each,

mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.

Royal Nurseries, Ascot, Berks.

To the Trade.

J. NOBLE begs to offer the above in various

sizes, by the dozen, 100, or 1000.

The Nurseries, Pond Lane, Lower Clapton, E.

ALL OUR VIOLAS, PANSIES, HARDY

PERENNIALS and HERBACEOUS PLANTS are

offered at 1s. per dozen (transplanted stock), the ground being

sold to the New Railway Company. CATALOGUES free.

DAISIES and TULIPS, 5s. per 100.

JOHN PIRIE AND CO., Stechford.

THE DESCRIPTIVE CATALOGUE of

FRUIT TREES is now ready and will be forwarded,

free by post, on receipt of three penny stamps.

CATALOGUES of ROSES and ORCHARD HOUSE

TREES, post-free, on application.

THOMAS RIVERS AND SON, Nurseries, Sawbridgeworth, Herts.

Continental Seeds.

O. KNOPFF AND CO., Erfurt (Established

1832), offer their well known FLOWER SEEDS to the

Trade. For CATALOGUES, &c., apply to

BECK AND POLLITZER, 211, Upper Thames Street, E.C.

To the Trade.

ACORNS for Sale.—Price on appli-

cation to

THOS. BEAUCHAMP, Woodfalls Cross, Downton, Salisbury.

100,000 Raspberry Canes.

CARTER'S PROLIFIC and NORTHUM-

BERLAND FILLBASKET. For price, &c., apply early to

C. BLUNDELL, Jun., Halstead, near Sevenoaks, Kent.

STRAWBERRIES.—The fact of my

being located in the midst of hundreds of acres of all the

best Strawberries and Raspberries, enables me to supply them

both cheap, good and correct to name; and all requiring Runners

should order at once.

CATALOGUE post-free. Special Prices for large quantities.

H. CANNELL, Swanley.

STRAWBERRIES.—A large quantity of

splendid Garibaldi Runners to be disposed of cheap.

LITTLE AND BALLANTYNE, Knowfield Nurseries, Carlisle.

Strawberries.

CHARLES TURNER'S Descriptive Select

LIST is now ready. Strong Plants that will fruit next

season may be had at the shortest notice.

The Royal Nurseries, Slough.

FRUITING PLANTS

of PEACHES, NECTARINES, APRICOTS, and

GRAPE VINES, a large and fine stock, now offered for Sale.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

VINES—VINES—VINES.

B. S. W. has much pleasure in announcing that his Stock

of VINES is this year unusually fine, and comprises all the leading

kinds including ALNICK SEEDLING. For descriptions

and prices, see B. S. W.'s Bulb CATALOGUE for this year.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper

Holloway, N.

SEAKALE for Sale—strong selected

Crowns for Forcing, now ready. None superior now

growing. Land specially adapted for its growth. Apply to

T. BROSAN, Market Gardener, Norman Farm, Fulham, W.

ALFRED ATWOOD, MARKET GARDENER,
12, Chaldon Road, Fulham Fields, S.W.
Price on application.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

„ **Golden**, many thousands, 3, 4, 5 to 10 feet high.

„ **Irish**, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

„ **laurifolia, myrtifolia**, *Scottica*, *Hodgen's*, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

„ **Variegated**, many thousands, 5, 6, 7, 8 to 10 feet high.

„ **Golden Queen**, 4, 5, 6 to 10 feet high.

„ **Silver**, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNCIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

„ **ARGENTEA**, 4 and 5 feet.

LIROCEDRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

„ **DOLABRATA**, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

„ **SEMPER-AUREA**, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high. The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

SPECIAL CHEAP OFFER OF TULIPS for Bedding.

Double Scarlet *REX RUBRORUM*,
„ *White LA CANDEUR*,
„ *Red and Yellow VAN THOLL*,
Single *White QUEEN VICTORIA*,
„ *Yellow GOLD PRINCE*,
„ *Scarlet ROI CRAMOISE*,
„ *Red and Yellow DUCHESS OF PARMA*,
4s. 6d. per 100, or 40s. per 1000.

„ *in value delivered carriage free. Smaller orders will have Bulbs added free.*

JNO. JEFFERIES and SONS, Cirencester, Gloucestershire.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this."

Two Cuttings, post-free, for 1s. 2d.

One Plant, post-free, 1s. 6d.

The Home for Flowers, Swanley, Kent.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.

Descriptive Price List on application.

RICHARD SMITH and CO., Nurserymen, Worcester.

To the Trade Only.

DOUBLE FRENCH RANUNCULUS.

LEONARD ROOZEN and SONS

superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)

LEONARD ROOZEN and SONS, Bulb Growers, Overveen, near Haarlem, Holland.

STRAWBERRIES.

Strong Roots for Fruiting next year, 4s. per 100.

Descriptive LIST on application.

RICHARD SMITH and CO., Nurserymen, Worcester.

Illustrated Catalogue of Ferns.

W. and J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNs for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNs," free on application.

Blooming Rhododendrons.

H. LANE and SON, Nurseries, Berkhamstead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.

MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD and SON, 25, Savage Gardens, London, E.C.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, 45s. per 100.

RICHARD SMITH and CO., Nurserymen, Worcester.

300,000 Lily of the Valley and 30,000 Palms.

TO THE TRADE.—Strong Crowns, (3 yr.), for forcing, of the **GIANT LILY OF THE VALLEY**, at 42s. per 1000; extra strong clumps, 12s. and 15s. per dozen.

PALMS.—*Latania borbonica*, *Corypha australis*, *Phoenix reclinata* (true), at 25s. per 100. In stores, per 100, *Phoenix reclinata*, 12s.; *Scutellaria elegans*, 16s.; *Chamaerops excelsa*, 8s.; and *Corypha australis*, 14s. Also many best kinds of Market FERNS at 20s. per 100, 140s. per 1000.

Post-office Order with order. Packing free.

WILLIAM ICETON, Nurseryman and Florist, Barnes, S.W.

ANTHURUM ANDREANUM, small seedling plants, four to five leaves, well rooted, 12s. each, 4s. for 10, 4s. 6d. per 100; price per 200 on application. **MAXILLARIA LEHMANNI**, **ODONTOGLOSSUM ALEXANDREI**, **LEHM.**, **MESOPHIDIUM ROSEUM**, **ODCIDIUM ROSSI**, **MAJUS**, **ODONTOGLOSSUM CIRRHOSUM**, **EPIDENDRUM VITELLINUM**, **MESOPHIDIUM SANGUINEUM**, **TRIGOBOLIA MARGINATA**, 5s. each. Price per dozen or 100 pieces of all sorts, on application.

All Orchids imported April, 1880.

E. POLKO, Nurseryman, Bitterfeld, Germany.

A. M. C. JONGKINDT CONINCK has to offer large quantities of the following Hardy Plants, at very low prices:—

<i>Saxifraga granulata</i> , fl.-pl.	<i>Tradescantia virginica</i> alba.
<i>Salix glauca</i> helvetica.	„ „ „ <i>corulea</i> .
<i>Spiraea Aruncus</i> .	„ „ „ <i>rosea</i> .
„ <i>filipendula</i> , fl.-pl.	„ „ „ <i>rubra</i> .
„ <i>palmaria</i> elegans.	„ „ „ <i>violacea</i> .

Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.

RICHARD SMITH and CO., Nurserymen, Worcester.

Grape Vines and Forest Trees.

EDWARD MORSE begs to offer Fruiting and Planting Canes of the following kinds:—Black Hamburg, Foster's Seedling, Black Alicante and Lady Downe's Seedling. Price, from 30s. to 60s. per dozen.

E. M. has also to offer splendidly grown trees of Horse Chestnuts, Sycamores, Norway Maples, Limes, Walnuts, and Elms, fit for General and Avenue Planting.

Original Nurseries, Epsom.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.

JAMES DICKSON & SONS, NEWTON Nurseries, CHESTER.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quicks in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.

Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

RICHARD SMITH and CO., Nurserymen, Worcester.

Flowers for Cutting.

PANCRATIUM ROTATUM.—A most useful plant for cutting for bouquets, or any other decoration. It produces snowy-white flowers, in clusters of nine to twelve, on stiff, erect spikes, deliciously fragrant and extremely elegant. Two guineas per dozen.

PANCRATIUM AMOMUM.—White flowers, very useful for cutting, and deliciously fragrant. Two guineas per dozen.

PANCRATIUM FRAGRANS.—White and fragrant. Not only good for cutting, but one of the handsomest flowering plants known. Four guineas per dozen.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

To the Trade and Large Buyers.

EWING and CO. offer large quantities of the following, viz., **BLACK CURRANT BUSHES**, **NUT and FILBERT BUSHES**; **ELMS** of many sorts, large and small trees; **POPLARS**, ditto; **RED-TWIGGED LIMES**, **WILLOWS**, and **HORSE CHESTNUTS**, large and small trees, **MYROBELLA** (*PRUNUS MYROBALANA*), for fencing, &c.

The Royal Norfolk Nurseries, Eaton, near Norwich.

GLADIOLUS, "The Bride."—The finest white flower for cutting purposes in cultivation, quite hardy and easily grown, and blooms at a time when flowers are scarce. Also **MONTBRETIA POTTSII**, fine flowering bulbs. Prices on application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

Special Offer.

RHODODENDRONS, Hybrid, 12 to 15 in., 170s.; 15 to 18 inches, 200s. per 1000.

ASH, Common, 2 to 3½ feet, 20s.; 12 to 18 inches, 8s. per 1000.

PRIVET, Oval-leaved, 1½ to 2 feet, 30s.; 2 to 3 feet, 40s. per 1000.

PINE, Austrian, 1½ to 2 feet, 50s. per 1000.

„ **Coriscan**, 1½ to 2 feet, 60s. per 1000.

QUICK THORN, 1½ to 2 ft., 18s.; 2 to 3 ft., 25s. per 1000.

A large quantity of other Nursery Stock. CATALOGUES free.

HENRY DERBYSHIRE, Darley Hillside Nursery, near Matlock, Derbyshire.

GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, and warranted free from Phylloxera, Oidium, and all Diseases. Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. **ORCHARD-HOUSE TREES**, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.

Descriptive Price LIST for 1d. stamp.

RICHARD SMITH and CO., Nurserymen, Worcester.

Roses.

CHARLES TURNER'S Descriptive CATALOGUE of his extensive collection is now ready.

Fruit Trees.

CHARLES TURNER'S Select LIST of the above is also ready. The Trees have made an excellent growth, and are very healthy.

Ornamental Trees, Shrubs, &c.

CHARLES TURNER'S CATALOGUE can be had on application.

The Royal Nurseries, Slough.

ONE HUNDRED THOUSAND HARDY HEATHS, in 42 varieties, at 4s. per dozen, 25s. per 100, or £10 per 1000. This is now a proper time to plant these fine plants, which are suitable for covering mounds or banks, or for rockwork. Fine plants can be ensured.

JAMES SMITH, Darley Dale Nurseries, near Matlock.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.

H. and F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of **GARDEN and FIELD SEEDS** of 1880 growth, carefully grown on their own Farms, and of the finest quality. Seed Growing Establishment, Wisbech.

CLEMATIS for BEDDING and CLIMBING.—**JACKMANNI**, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application.

RICHARD SMITH and CO., Nurserymen, Worcester.

Seakale—Seakale.

RHUBARB and ASPARAGUS for Forcing. The best house in the Trade. Also **DUTCH BULBS and FLOWER ROOTS.**

H. THORNTON and CO. (late A. Dancer), NURSERYMEN and SEEDSMEN, Fulham, London, S.W. **HYACINTHS, TULIPS, CROCUS**, and other **BULBS** of the very best quality. Priced CATALOGUES free on application.

N.B. We make the Growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can possibly be procured in the Trade.

To insure their being supplied, we beg that our Customers may give their orders early, to prevent disappointment, as we are continually receiving orders from all parts, which will be strictly executed in rotation.

Best **MILLTRACK MUSHROOM SPAWN**.

MATS, very good for covering Mushroom Beds, 25s. per 100.

Dancer's Nurseries, Fulham, S.W.

Note Prices.

FOR AUTUMN PLANTING.

CABBAGE PLANTS Warranted free from Club-root.

Early Enfield Market	Wheel's Imperial
Early Nonpareil	Robinson's Champion
Early (Dwarf) York	Robinson's Drumhead
Early Battersea	Imperial Oxheart
Sugarloaf	Early Rainham
Thousand-head	Red Pickling
East Ham	

At 3s. per 1000.

LETTUCE PLANTS.—Hardy Hammersmith, Hicks' Hardy White Cos, Giant Brown Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.

Testimonials and samples on application.

EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming. N.B.—Above Plants are from M. de S. Gibbs' Seed, and Purchasers may depend on good Plants, and true to name.

E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford. Extra Plants to compensate Carriage.

FLOWERING SHRUBS in great variety, such as **HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS**, **Double CHERRY**, **Scarlet HAWTHORNS**, &c., 8s. per dozen, 50s. per 1000.

Descriptive LIST on application.

RICHARD SMITH and CO., Nurserymen, Worcester.

NEW CATALOGUE for AUTUMN, 1880, post-free, of the finest and cheapest **DUTCH, FRENCH**, and other **FLOWERING BULBS**. For prices, see last week's large Advertisement.

SPRING FLOWERING PLANTS, 100,000 fine plants, now ready.

HARDY FLORIST FLOWERS, and the choicest **HERBACEOUS PLANTS** for Garden Decoration. See CATALOGUE and last week's large Advertisement.

WINTER FLOWERING PLANTS for Indoors. A fine stock of the best sorts, well set with bloom. See CATALOGUE.

PLANTS and ROOTS for forcing, very fine.

DWARF ROSES, well rooted, strong good plants.

FRUIT TREES, STRAWBERRY PLANTS, EVERGREEN and DECIDUOUS TREES and SHRUBS, &c. For prices, List of sorts, and descriptions, see CATALOGUE.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

FOR SALE, 200,000 of the celebrated **CARTER'S PROLIFIC RASPBERRY CANES**, loaded on South-Eastern or London, Chatham and Dover Railways. For particulars, apply to

A. and E. BATH, Colgate's Farm, Sevenoaks, Kent.

Bulbs, Orchids, &c.

THE NEW PLANT and BULB COMPANY

beg to announce that their New Autumn CATALOGUE of **BULBS of ALL KINDS, ORCHIDS**, &c., has now been issued to their Customers. Also post-free, on application.

Lion Walk, Colchester.

Fruiting Trees of APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds.

Priced LIST on application to

J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss, 10s. per bushel, 6s. per half bushel, 3s. 6d. per peck; also **Double White Narciss**, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Walton-on-Thames.—**J. E. ALDERSON**, Bell Farm, Hersham, near Walton-on-Thames, Surrey.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—White Garden LILIES, 12s. 6d. per 100; Winter ACONITES, 12s. 6d. per 1000; ANEMONE FULGENS, 16s. per 100; single French ANEMONES, 30s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to

SANDER and CO., Seed Growers, St. Albans.

STRAWBERRIES in POTS.

Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

H. CANNELL, Swanley, Kent.

DANIELS' CHOICE FLOWER ROOTS.



OUR GUINEA BOX

Choice Hardy Flower Roots for Outdoor Planting

Contains the following liberal assortment, all in sound picked bulbs, with full instructions for Cultivation. Case, packing, and carriage free to any Railway Station in England or Wales:—

- 25 Hyacinths, choice mixed
- 200 Crocus, in variety
- 12 Tulip, Rex Rubrum
- 12 " La Reine
- 12 " Double, mixed
- 12 " Single, mixed
- 12 " Parrot, mixed
- 25 Anemones, double, mixed
- 12 " scarlet
- 25 " Single, mixed
- 12 Polyanthus Narcissus, mixed
- 12 Double White Narcissus
- 12 Pheasant-eyed Narcissus
- 6 Campernelle Jonquils
- 25 Ranunculi, Scarlet Turban
- 25 " mixed Turban
- 25 Snowdrops
- 50 Winter Aconites
- 12 Spanish Iris
- 6 Triteila uniflora
- 2 Lilies.

559 Roots in all.

Half the Quantity, 12s. 6d.

Other Collections for Greenhouse and Conservatory, Window Boxes, &c., 12s. 6d., 21s., 42s., 63s. and 84s.

Beautifully illustrated CATALOGUE post-free on application. From R. MORRIS, Esq., *Ruabon, April 6, 1880*—"I am highly pleased with the box of bulbs sent. The Hyacinths and Tulips are really splendid, and quite a show in our neighbourhood."

DANIELS BROS.,

The Royal Norfolk Seed Establishment, Norwich.

PLANT FRUIT TREES EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite Inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

Descriptive Priced CATALOGUE, free on application.

CRANSTON'S NURSERY & SEED CO.

(LIMITED),

KING'S ACRE, HEREFORD.



Paul's Nurseries and Seed Warehouse, WALTHAM CROSS, HERTS.

WM. PAUL & SON

invite attention to the following articles, which they continue to make objects of special care and attention:—

- A. ROSES.
- B. EVERGREEN, CONIFERS, ORNAMENTAL TREES, CLIMBING PLANTS, &c.
- C. FRUIT TREES, including GRAPE VINES, and STRAWBERRIES.
- D. HYACINTHS, TULIPS, &c., CAMELIAS, &c.
- E. Special List of the above for large Buyers.
- F. NEW ROSES, GERANIUMS, PHLOXES, DAHLIAS, &c.
- G. SEEDS, and every Garden Requisite.

Priced Descriptive Catalogues free by post.

Important: Observe the Christian Name and Address,

WM. PAUL & SON,
WALTHAM CROSS, HERTS.

STANDARD PEAR TREES.

All the leading kinds of Hardy Pears—Grand Trees.

Prices, with Sample, on application to

CRANSTON'S NURSERY and SEED CO.
(LIMITED),
KING'S ACRE, HEREFORD.

BROAD-LEAVED ELMS,

12 to 14 feet, 50s. per 100. First-class roots.

W. AND J. BROWN, Stamford.

Established 1855.

EUONYMUS, Golden, Silver, and Green, 6

to 12 inches high, well rooted, 8s. per 100; 70s. per 1000.

Cash with order.

RICHARD ILLMAN, The Nurseries, Strood, Kent.

For Seaside Planting.

SPECIAL OFFER for CASH. 50,000 EUONYMUS, various sizes; 50,000 TAMARISK, 3 to 4 feet, and a quantity of VERONICAS, in sorts. All transplanted last year. To be sold cheap, the ground being required for building purposes. For particulars apply to T. A. MORRIS, 75, Blatchington Road, Hove.

GROS MAROC GRAPE, price 10s. 6d. to 15s.

This variety has been for many years in this nursery. Berries, very large; colour, a deep purplish-black; flavour, rich and sprightly; a late keeper. Received a First-class Certificate from the Royal Horticultural Society.

THOMAS RIVERS and SON, The Nurseries, Sawbridge-worth, Herts.

CABBAGE PLANTS.—Very fine stocks of

Robinson's Champion, Enfield Market and Rainham. Apply to Mr. T. DAVIES, Tangley, near Guildford.

LARCH and QUICKWOOD PLANTS for

Sale.—2,000,000 Larch, 1 to 2 and 2 to 3 feet. 2,000,000 Quickwood, 1 to 2 and 2 to 3 feet; also a quantity of SPRUCE, SCOTCH FIR, and BEECH, all transplanted, at greatly reduced prices. For particulars apply to FRANCIS BELL, Nurseryman, Easingwold.

To Planters on a Large Scale.

FOR SALE, to effect a clearance, thousands of CONIFERÆ in many varieties, LURELS, YEWS, RHODODENDRONS, finest named, in largest specimens. They can be delivered to Great Northern Railway, or London and North-Western Railway, or Midland. Apply to Rev. J. B. NORMAN, Edgware, London.

A New Seedling Pear.

DR. HOGG, 10s. 6d. A seedling from Gansel's Bergamotte, small but very rich; colour, brilliant red and brown; very prolific. Received a First-class Certificate from the Royal Horticultural Society.

THOMAS RIVERS and SON, Nurseries, Sawbridge-worth, Herts.

GEO. JACKMAN & SON,

(ESTABLISHED 1810.)

Cultivators of

FRUIT and FOREST TREES,

Evergreen and Flowering

TREES and SHRUBS,

ROSES, RHODODENDRONS,

Conifers and Hardy Climbers.

THE CLEMATIS

A SPECIALITY.



Descriptive Priced Catalogues free.

WOKING NURSERY, SURREY.

TO THE TRADE.—Named HYACINTHS,

Double DAFFODILS, NARCISSUS, Double White and POETICUS; LILY of the VALLEY, and SPIRÆA JAPONICA (strong clumps for forcing). Special low offer on application.

GEORGE REID, Seed Merchant, 20, Castle Street, Long Acre, London, W.C.

Planting Season.

100 Acres to Select from.

FOREST TREES, of all sizes, consisting of

Larch, Scotch and Spruce Firs, Ash, Spanish Chestnut, Alder, Quicks, &c. Also Descriptive Priced CATALOGUES are now ready of Ornamental Trees, American Plants, Coniferæ, Roses, Fruit Trees, &c.

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MR. J. C. STEVENS has received instructions from the NEW PLANT AND BULB COMPANY of Colchester to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 11, a splendid Collection of LILIES, comprising all the rare and beautiful species, such as *L. PARRYI*, *L. POLYPHYLLUM*, *L. WALLACEI*, *L. WASHINGTONIANUM*, &c. Also a fine Importation from Japan, in splendid health, of such choice LILIES as *L. CORDIFOLIUM*, *L. HANSONI*, *L. AVENACEUM*, *L. LEICHTLINI*, &c.; a fine Collection of rare and beautiful Bulbous and other Plants, *IRIS KÆMPFERI* varieties, &c.; also *CYPRIPEDIUMS*, *HABENARIA*, *ORCHIS*, &c., in finest varieties.

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VALUABLE IMPORTED ORCHIDS.

(Sale, No. 5731.)

MR. J. C. STEVENS has received instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 18, at half-past 12 o'Clock precisely, a magnificent Importation of MADAGASCAR ORCHIDS, among which is *ANGRÆCUM SESQUIPEDALE*, *A. ELLISII*, *PHAIUS TUBERCULOSUS*, flowers white, beautifully crimson-spotted, lip also crimson-spotted and finely fringed; *ANGRÆCUM EBURNEUM*, *GRAMMATOPHYLLUM ELLISII*, *OUVIRANDRA FENESTRALIS*, and the quite new species, *GRAMMATOPHYLLUM REMPLERIANUM*, of which the celebrated Professor Reichenbach says, in the *Gardeners' Chronicle* of February 24, 1877, No. 165, p. 240:—"Unexpected pleasures are the best ones. Would you have believed in a new large-flowered *Grammatophyllum*, with a lip resembling that of *Phaius tuberculosus*, but without its basilar fur? The flowers are larger than those of the favourite *Grammatophyllum Ellisii*, Lindl., scarcely smaller than those of the three heroes of the beautiful genus, *macranthum*, *speciosum*, *Wallisii*. The texture of the flowers, as far as I may judge of it from dry specimens, is unusually strong and firm. Sepals oblong; petals ovate; lip trifid, the side laciniae broad, angled—the middle laciniae protracted, narrower, emarginate. There are two grand obtuse-angled lamellæ, and a small one between before the base of column; three smaller angular lamellæ before the end of the lip, and both connected with emerging lines." These Orchids have been collected by Mr. Leon Humblot, and besides partly described by Professor Reichenbach in the *Gardeners' Chronicle* of September 14, 1878, No. 246, pp. 322 and 323.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

NOTICE—NOTICE.

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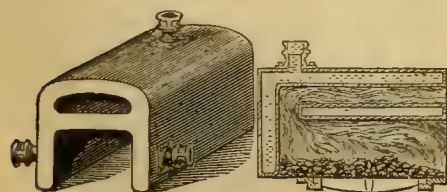
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THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 6, 1880.

ALNWICK CASTLE.

(Concluded from p. 524.)

ALL those faculties of the mind which inspire men with admiration for something nobler than the mere mechanical in life teach us to admire great names and illustrious families. It is quite impossible to disassociate the principal abode of the Percies from the history of a house whose name and fame imbue the very atmosphere of the place which they have owned for so many centuries. There is no older dust in Northumberland than that of the Percies. It finds out the imaginative man in any part of the county where he may wander, and, more particularly at Alnwick, or at Otterburn, enters his brain, and sets him dreaming of knight-errantry and of Harry Hotspur.

The first of the English Percies, a Norman and a descendant of Rollo, came over with the Conqueror, bringing with him an illustrious pedigree and the name of his Norman residence, the village of Percy between Granville and Avranches. In an age of knightly prowess he won as his reward a hundred lordships and knight's fees in several counties, some of them in the North, but none in Northumberland.

The first Lord Percy was knighted by Edward I., beneath the walls of Berwick, in 1294. This distinguished soldier led an army in the field five times as their commander-in-chief. He was the builder of a portion of the present castle, including the imposing gateway and barban. Great families in feudal times acquired their estates chiefly by the art of war and by marriage. The son of Field-Marshal Percy—to give him a modern designation—gained Warkworth (lordship and castle) as the reward of his military prowess, especially against the Scots. Another estate, the barony of Prudhoe, came to the great and growing family by the marriage of Hotspur's father with the heiress of the property; and so by war and marriage the house of Percy sometimes prospered and sometimes came to grief. Half-a-dozen times in the course of its history ruin has overwhelmed it. The reader will remember how the faithless Bolingbroke treated his great ally, Northumberland. He will remember the death of Hotspur at Shrewsbury and of the Earl, his father, at Bramham Moor in 1403. This was the first Earl of Northumberland, and one of the most remarkable of the long list of famous men of his house. Energy, degenerating sometimes into restlessness, was his leading characteristic, and after mentioning what he lost—i.e., his life—it may be well to notice that he gained during his career several additions to the family estate. He gained both by marriage and by politics.

It is exceedingly important, from a gardening and great household point of view, to trace the career of the first Earl of Northumberland. He was of royal birth. His grandfather, the fourth Lord Percy, had been the friend of the Black Prince, his champion at Halidon Hill and Neville's Cross. His father had been an equally distinguished soldier, conqueror of Scots, captor of their king, and husband of Mary Plantagenet, the granddaughter of Henry III. Keeping in view the

marrying of heiresses which has so frequently united great estates, the sixth Lord and first Earl married Margaret Neville to begin with, who brought him Hotspur and two other sons, and then Matilda Umfraville, a widow, who brought him the baronies of Cockermouth, Pyremont, Langley, and Prudhoe. By his politics the Earl reaped more than one great office in the state, besides the grant of the Isle of Man. He was banished early in life through political clashing between himself and John of Gaunt; restored to favour again, ruined and his estates confiscated previous to the battle of Shrewsbury, and again pardoned and restored. Once more his restlessness attacked him, and within a year his head was exposed on London Bridge, and his quarters over the gates of London, Lincoln, Berwick, and Newcastle, respectively.

After this striking illustration from the history of a great family, it is necessary to jump somewhat abruptly to our conclusion. The family honours and estates were restored by the son of Bolingbroke, Henry V., to the son of Hotspur (Henry, second Earl) on the entreaty of his aunt Westmoreland, the mother of Lady Eleanor Neville, his wife; for, like his grandfather, whose only fault was restlessness, which led him into several rebellions, he had married a daughter of the House of Neville.

Several of the Earls, and their sons in quick succession, fell in the Wars of the Roses—one at St. Alban's, one at Northampton, one at Hedgley Moor, one at Towton. Of two Percies who followed, one, who proved a better Catholic than subject, was beheaded, and the other imprisoned for opposing the Reformation. How many times the estates have been confiscated, first and last, the records tell. After one such occasion Queen Mary restored them to a seventh Earl. Then followed more beheading for the crime, Catholicism, and some petty plotting at Petworth House, in Sussex, where the family had large estates, acquired by judicious marriages. The tenth Earl was Lord High Admiral in the time of Charles I., the thirteenth Earl was created Duke in 1766, and our biography must end here. The visits of the early English kings to the Castle of Alnwick were frequent in days when their business brought them often into the North against the Scots. The Scottish kings have also been to Alnwick. William the Lion, besieging the Castle in 1174, was captured at a spot now marked by a stone cross. King Malcolm, on a similar errand, was killed in 1093 in what is now called the Long Plantation, where his descendant, a Duchess of Northumberland of the last century, erected a memorial.

Having now drifted 800 years down the stream of time, let us pass from history to forestry, and to the other features of the princely residence of the Percies.

It stands upon the River Aln, 5 miles from the sea, less than half a mile from the railway terminus at Alnwick, and rather less than ten hours from the Castle to Grosvenor Square. The Castle, like Arundel or Windsor Castles, stands in the town, or at its edge, and dominates its houses in a very stately manner (see p. 533.). You enter Alnwick by a street called Bondgate, and through a massive arched gateway supported by towers and bestriding the street. To the tourist this is novel, and he admires the old structure: the inhabitants may think it inconvenient. It was built by Hotspur's son, when he fortified the town by leave of Henry V. A former Alnwick Castle belonged to a Baron who was slain at Hastings, and during the restorations, commenced in 1854, when the Norman fortress was adapted, by the skill of Salvin, at the cost of half a million, to a modern residence, the fragments both of Roman and of Saxon architecture were found. The best popular description of the interior of the Castle is in "Murray." I shall neither copy nor imitate. The splendour of the interior pleased me

much—the marble stairs, the mosaic pavements, the Indian carpets, the chairs of state, the tables in marqueterie, and the painted ceilings; and yet I imagined there must be private rooms, boudoirs, and “own rooms,” better adapted for business and for common life than the splendid drawing-room and the noble library, with its gorgeous volumes and its marble busts.

There are the ruins of two abbeys in the park—Hulne Abbey and Alnwick Abbey—each now lending its assistance to the landscape gardener, and supplying him with two picturesque and interesting objects. Brislee Tower was built by Duke Hugh ninety-nine years ago, to commemorate the completion of his plantations. The estate is greatly indebted to Duke Hugh, not for his restorations and rebuildings at the Castle, which have since been removed, but for his plantations. He was probably the first great planter on the estate, the Percies having been previously too much occupied to spend their time in decoration of that kind. His woods in Hulne Park and elsewhere lie around Brislee Tower for miles, winding with the river, and following, as the turf does, its enriching stream. Hulne Abbey on its knoll is seen among the trees, or should be seen, for the Duke's gardener in that age of execrable taste, 100 years ago, must have been a Visigoth or Vandal, and he has obscured the Abbey by plantations which require amending with saw and axe. Instead of keeping the bold sweeps of riverside grass clear, he constantly intersected them with planting, filling up valleys when he ought to have deepened them by keeping the timber out of them, and planting the higher ground. These, however, are but specks upon the sun; the view from the top of the tower, though impaired, is still delightful; it includes the park of 2600 acres, with the Castle, and a wide prospect embracing moorland as well as cultivated fields.

A noble outside wall, 9 feet high, encloses Hulne Park, and secures its privacy. We drove through some herds of deer on the way to the tower, which is reached by a winding and climbing road through plantations of Scotch Fir. In descending we took another road, through Fir trees, and a beautiful little forest of Birch, in the midst of which is a Roman camp. The Birch trees are probably the successors of similar trees of the Roman period. The largest trees are on the river banks, where some Silver Firs rival those at Inverary, and stand much in need of thinning. A number of the largest Oaks are assembled in the same pasture, well named Wood Closes, and among them is the Trysting Tree, an enormous squat Oak. A Douglas Fir reaches 70 feet in height. A stranger admitted to these private grounds may wander among woods and shrubberies, like Peter the wild boy, for a month in complete seclusion. If he fears dukes and duchesses, and is shy like Peter and arboreal, he can climb a tree when they approach; but the space is ample, and he may not so much as see a gamekeeper or a gardener. If he admires pheasants, there they are in the season by hundreds; and if he admires flower shows, there they are in the season near the entrance by Alnwick Abbey. If he admires cricket, there it is on a piece of level turf, where the Alnwick Eleven and the townfolk show as much interest and zeal in the game as the men of Surrey or of Gloucestershire. If he admires a young noble engaged in the self-imposed duties of his high position, he will like to see Earl Percy, as Colonel of the Northumberland Militia, drilling his men in front of the Castle, where they encamp every year for a month, feeling probably, on such a site, that some of the English homes which they might be called on to defend are remarkable for their splendour. *H. E.*

New Garden Plants.

BULBOPHYLLUM BERENICIS, *n. sp.**

A delightful microscopic wonder, with a creeping rhizome, bearing distant nearly pear-shaped small bulbs, ligulate cuneate leaves, and short peduncles bearing miniature inflorescences like those of *Cirrhopetalum Medusæ*. Such a thing never flowered in Europe before, as far as printed intelligence and private information reach. Sir C. W. Strickland has been so lucky as to flower this lovely gem. It stands near *Bulbophyllum caudatum*, Lindl. (named “cordatum, Wall.” in some herbaria), but the leaves of this are much broader, the lateral sepals much shorter, and the lip also much narrower, distinctly three-lobed, and with two very prominent keels. Medusa having already given her hair to a *Bulbophylloïd*, I had to address *Berenice*, the possessor of the celebrated *Coma Berenice*. *H. G. Rehb. f.*

EPIDENDRUM AMABILE, Lind. et Rehb. f.†

This was published 1855, and for a quarter of a century did not come in my reach again. It was discovered by Ghiesbreght, and given me by Mr. Linden. Its panicle, with five flowers, produced on me then such an impression that I called it lovely (*amabile*). The nearly cruciform lip is golden-yellow, and has some mauve-purple spots. Sepals and petals are glaucoseminate outside, brown inside. Column mauve-purple with an orange anther. There was Ghiesbreght's statement: “*ies bulbes sont petits et aplatis.*” I am glad I did not take this assertion on my account, and was prudent enough to give it as belonging to the discoverer.

I was very pleased, when I obtained from my excellent correspondent, Mr. Jas. Backhouse, a well-grown tuft of bulbs bearing three racemes and one panicle of those flowers, which in general shape are something comparable to those of *Epidendrum Stamfordianum*. Now I saw for the first time the nice and brilliant flowers in a fresh state, and the nature of leaves and bulbs I had never seen before. The bulbs are oblong, rounded, and have two blunt ridges, so that they might be called digonous. I would avoid the expression “ancipitous,” since the angles are quite blunt. They stand very near one another, and reach the size of a common pigeon's egg. Leaves usually two on a bulb, lanceolate acute, 0.1 m. to 0.02 m. Bulbs as well as leaves are very glaucous, from a waxy bloom. It is said to grow on dwarf Oaks in the warm region. *H. G. Rehb. f.*

ANTHURIUM PARVUM, *N. E. Br.*

This is one of a large batch of Aroids sent from Rio Janeiro to the Royal Gardens, Kew, by Mr. Glaziov in the spring of this year. It has nothing to recommend it as a horticultural plant, but is interesting botanically from the small size of the leaves and inflorescence, in this respect somewhat approaching *Anthurium microphyllum*, but is very different from that species in its ascending stem and cordate leaves.

Stem ascending, about 2 inches high in the plant seen, with very crowded internodes, clothed with the dark brown remains of the sheathing scale-leaves, which, from a very broad dilated base are abruptly narrowed into a rather slender subulate point $\frac{1}{2}$ inch long. Petioles 3–7 inches long, 1 line thick, terete, slightly channelled down the face, green or purplish-green. Lamina ovate acute acuminate, usually cordate at base, but sometimes rounded or subcuneate, $3\frac{1}{2}$ –5 inches long, $2\frac{1}{2}$ inches broad, bright green; midrib about equally prominent on both sides, veins slightly depressed, very slightly prominent beneath; substance of the leaf about like that of parchment. Scape 6–9 inches long, slender, 1 line thick, terete. Spathe $\frac{3}{4}$ –1 inch long, $2\frac{1}{2}$ lines broad, lanceolate acute, dull purplish-brown. Spadix 6–7 lines long, $1\frac{1}{2}$ line thick, on a stipes 3 lines long; at first it is of a dark violet-brown, afterwards becoming dark sepia-brown. A native of Rio Janeiro. *N. E. Brown, Kew.*

* *Bulbophyllum Berenice*, *n. sp.*—Affine *Bulbophyllum caudatum* Lindl. Foliis angustioribus; capitulo denso; bracteis lanceis uninerviis; sepalis impari triangulo acuto trinerviis, sepalis lateralibus multoties longioribus caudatis porrectis; tepalibus ligulatis obtusis uninerviis, labello basi cordato transverse utrinque medio implicito subtrioblo, callis duobus rotundis uno ante alterum in disco; columnæ aristis brevibus. *H. G. Rehb. f.*

† *Epidendrum amabile*, Lind. et Rehb. f. (*Bomplandia*, iii. 210).—Pseudobulbis ovoidibus digonis, vulgo diphyllis, cum foliis lanceolatis acutis brevioribus glaucis; panicula seu racemo glauco pruinato distantifloro; sepalis tepalibus angustioribus; lineari ligulatis acutis; sepalis nunc ante apicem latioribus; labello trifido laciniis lateralibus divaricatis ligulatis obtusato retusis; lacinia media cuneato dilatata retusa; callo depresso prope obsolete in basi in lineolas ternas excurrente ante basin lacinie mediae. Mexico, Ghiesbreght! Butler., collector cl. Backhouse. *H. G. Rehb. f.*

LÆLIA MAJALIS (Lindl.) ALBA.

Mr. Petrasch, one of the numerous Roetzian nephews, has had the good fortune to gather a white form of *Lælia majalis*. If the plant should come into the hands of any one who can manage the shy flowers, then we may have cause to be well satisfied. Generally, one thinks that ventilation constitutes the secret of flowering this shy plant; it may be so, but I have no doubt that intensity of light is the one other requisite. I have seen beautiful flowers of a grand expansion only in England. I remember the glorious flowers seen in the Royal Exotic Nursery, Chelsea. Yet all those flowers had the most pallid colouring. My native grown dried flowers, though collected nearly forty years ago, show much brighter colour.

Thus, I am afraid, this is one of those species which offer to New York and Paris growers the uncommon opportunity of beating their English competitors. *H. G. Rehb. f.*

LONGFORD CASTLE.

ABOUT 3 miles to the south-east of the quaint old town of Salisbury, with its grand cathedral and historic name, lies Longford Castle, the lovely seat of the Earl of Radnor. The Castle is pleasantly situated in a fine park, which is densely wooded and watered by two fine streams—the Chalke and the Avon (not Shakespeare's Avon), and commands an extensive view of rich scenery and a large tract of country which has been famous in history from a very early date. The view of the park that struck me most is that from the principal front of the Castle, with the flower garden in front. There is a gentle elevation, which sweeps away as far as the eye can reach in irregular outline, having a bold belt of trees debouching towards the Castle till the group narrows into single file. On the breast of the hill are several single specimens, and the summit of a statue of some kind or other is just visible at one side of the group. The leaves, too, were beginning to change colour, and a gleam of sunshine from the far west reflects a faint glimmer through the distant trees as if to charm the eye of the spectator.

The flower garden is a sunk one, an oblong or parallelogram in shape, and a very fitting design for the situation. The garden is cut in two by a central walk, and upon either side of this walk is a series of geometrical designs, representative in character and presenting an opportunity to Mr. Ward (which he was not slow to make use of) to use a great variety of plants without in any way interfering with the unity and harmony of the whole arrangement. There are two rather striking, if not novel examples, of Yew hedges, closely trimmed, with arches cut through them, marvellously neat, on each side of the garden.

The carpet-beds, composed chiefly of dwarf hardy plants, were especially effective after the late storm of wind and rain; but as my notes are intended to be more practical than descriptive, I must hurry through the shaded walks, and leave the clear-flowing streams which adorn the grounds at Longford for that portion of the garden where the practical cultivator finds most to interest him. Before doing so, however, I must notice a noble deciduous Cypress, said to be one of the finest in England, which is over 100 feet high, and 7 feet 6 inches in circumference at 4 feet from the ground. Another tree worthy of mention is a good example of the Judas-tree (*Cercis Siliquastrum*), which is situated in a secluded corner of the grounds, where wild birds warble their sonnets in early spring,

“ Full many a flower is born to blush unseen,
And waste its sweetness on the desert air.”

Here, too, is the Weeping Willow by the side of a crystal running stream, and a shaded arbour is half hidden from view by the overhanging boughs of trees clad with the last shades of summer green and autumn gold, a place for the poet or the artist to pose in contemplation unseen and undisturbed by anything but the true charms of rural Nature—ininitely sublime!

From here I was taken at my own request to the fruit and plant houses, which I was eager to see while it was yet light. The first houses I entered were filled with Oranges and Camellias, the former bearing a handsome crop of highly coloured large fruits, and the latter bristling with healthy flower-buds, many of which will render good service early in the season. A Citron is also laden with very large fruits, and is in exceedingly vigorous condition. In the plant stove I noticed a batch of that useful autumn-flowering plant, *Scutellaria Moginiana*, and there are other plants

grown in limited numbers for table work, such as *Reidia glaucescens*, *Aralia filicifolia*, and other useful decorative subjects. I was next conducted to the new range of houses lately erected by Messrs. Weeks & Co., of Chelsea. They are strong, simple to work, well arranged, perfect in finish, and heated by one of Weeks' Patent Duplex Tubular Boilers. The centre house of the range (larger than the rest) is a show house, and is well stocked with plants of a miscellaneous description. A creeper on the roof (*Tacsonia exoniensis*), loosely trained and flowering freely, is quite a picture. It hangs from the roof in a natural way, but is not permitted to obscure the internal architecture of the house, and is beautifully clothed with its peculiarly shaped flowers. A plant of a foliage *Begonia* (Prince Wallenstein), with a crimson velvet leaf, in a young state, is another object of great beauty, and reminds one of the day when the handsome leaves of this charming class of plants were more in favour than they are now.

Fruit growing, however, is the principal feature in the glass department at Longford, and perhaps I may here mention that it is not forgotten out-of-doors either, the length of walls inclosing the seven compartments into which the garden is divided being close upon a mile. The vineries are seven in number, and other fruit-houses are in proportion. Young trees of Peaches and Nectarines are growing vigorously. In one house I noticed Mr. Ward is trying Vines and Peaches together, and so far the result is promising. I remember being at a place in the South of Scotland many years ago, where Grapes and Peaches were well grown together in a lean-to house with a hip roof, an exact duplicate of the one in which Mr. Ward is now trying the experiment. The edible *Passiflora* (*P. edulis*) is fruiting on the back wall of one of the vineries, and is ornamental as well as useful. Melons and Cucumbers find a congenial home at Longford, the latter being very fine, both in pots and boxes, for the winter supply. Close upon 3000 Strawberries are forced, and by the way, I noticed something new in a batch of *Hautbois* in pots coming into flower for autumn fruiting. The plants were layered into 5-inch pots on August 9 upon trial, and the fact should not be lost sight of by cultivators.

Leaving the hothouses I next paid a visit to those nooks and corners which the gardener by a kind of instinct—I suppose peculiar to the fraternity—knows where to find in every garden. Here, at the back of a wall, where provision has been made for temporary protection, are some grand samples of *Eupatorium riparium*, 5 or 6 feet through, and *Salvias* nearly as tall and as much in width. Mr. Ward has also the finest batch of *Callas* that I have seen for many a day, the stem of each plant being nearly as thick as a man's arm. All these plants have been planted out during the summer, and they are strong testimony in favour of the planting-out system. *Echeveria retusa* is grown in 4-inch pots for winter furnishing, and very handsome little plants they make for grouping in *jardinettes*, the drooping habit of the flower-spike harmonising sweetly with Ferns, and the colour too is not over plentiful in November.

The fruit gardens are particularly interesting from the fact of their being in so many divisions, and it would be well if there were a great many more of them in the country. I never saw such crops of Morello Cherries so late in the season. On October 1, the date of my visit, many of the trees were still carrying a full crop of fruit, the finest of which were being used for dessert. Morellos certainly improve with keeping, and those who do not mind a little acidity of flavour will find in them a nice change for dessert, but the fruit must be well grown and perfectly ripe.

Figs bear abundantly in this garden, and there are several notable examples amongst their number; one planted in an angle covers a space of 70 feet of wall in length, and is vigorous enough to extend itself still further. I must not omit to mention a bed of alpine Strawberries I saw in one of the divisions bearing freely and a still greater novelty (to me), in a bed of Cranberries, which are specially grown and greatly appreciated. Raspberries, too, were fruiting in abundance, the variety being *Belle de Fontenay*, the best for autumn fruiting; it bears on the wood of the current year, and should have a place in every garden. The vegetable quarters also indicate a high state of cultivation, so that there will always be a crisp salad to accompany a good dessert and plenty of vegetables for the cook. *Visitor*.

ROOT-PRUNING.

I CANNOT help thinking, when reading the several articles on root-pruning in your journal, that your correspondents have in some manner wandered into vague diffuseness—I hesitate to speak plainly. Is not root-pruning misunderstood, or is it practised without knowledge? As a matter of fact, the underground tree requires—except in the cultivation of forest trees, with which the garden has nothing to do—the same treatment as the tree above ground. The roots, corresponding to the branches, are constantly pushing forward into fresh pastures to feed the rootlets, which, like the leaves, are annual. If these roots are pruned close to the stem, and compelled to produce rootlets in soil which has already been searched and exhausted, it can hardly be expected that they will flourish; but if the root-pruned tree be annually supplied with new material or fresh soil, the roots or underground branches will produce rootlets ready to



FIG. 106.—PEACH TREE, TO SHOW FORMATION OF ROOT FIBRILS AFTER PRUNING.

feed and to take up all the nutriment contained in the added soil. If this treatment be continued annually your root-prunophobes will become philo-root-pruners, and will cease to abuse the Rivers' system, which does not appear to me to be sufficiently understood to be well abused, although it is simplicity itself.

As a proof of the results of root-pruning I enclose a photograph of a root-pruned tree (fig. 106), the plant of which has been grown for three years with annual root-pruning; and I am disposed to think that this system may work an entire revolution in fruit-growing where the subsoil does not agree with fruit trees, as it is certainly beyond cavil that in many districts trees are injured by the nature of the soil into which the roots penetrate. Although the trees (of which I speak from experience) have been grown under glass and in perforated pots, yet from the extraordinary rapidity of the emission of the roots into the soil outside the pots into the prepared border, it stands to reason that the same results would follow trees under out-of-doors culture, and I consider that on walls in adverse soils trees may be grown in perforated pots and kept under

annual root-pruning, the health and vigour of the tree being in no way impaired by the heroic treatment of the annual pruning of the roots outside the pot.

It is probable that when annual root-pruning by means of perforated pots is well understood and intelligently worked out, a complete reformation will be effected in the production of fruit. Vines grown under the same conditions will produce large crops without the enormous expense of constructing Vine borders, and a great amount of heat will be economised, as the roots will be at all times within the influence of the surrounding atmosphere. A few shovelfuls of earth for annual renewal will be the only necessity; the annual expense of this will be trifling, and no fear need be entertained as to the results. *T. Francis Rivers*.

ST. JOHN'S NURSERY.

(Concluded from p. 588.)

LET us now get back to the point from whence we started, and see what is done under glass, of which, as before mentioned, there is not less than 5 acres.

Immediately to the left of the entrance to the nursery is a small, old-fashioned span-roofed structure of some interest, inasmuch as it is the first propagating house that was put up, now many years ago, and serves, by comparison with the monster structures in proximity to it, to give a forcible illustration of the growth of the establishment. A few paces further on in the same direction are the offices, which have lately been considerably enlarged and improved, to meet the growing requirements of the clerical and managerial branch, and which are very pleasantly surrounded by trees and shrubs of a choice character, well-kept grass plots, and gay beds of flowering plants. Of "the houses" proper perhaps the most important is a span-roof 365 feet long and 20 feet wide, devoted almost exclusively to propagating Clematises and Conifers. Two lofty span-roofed structures, each 200 feet long, one 12 feet and the other 22 feet wide, are devoted to Roses in pots, while pot Vines, orchard-house trees, hard-wooded and other plants occupy two ranges, 204 feet long, 12 feet and 24 feet wide respectively; two ranges 117 feet long each, and 15 and 25 feet wide; and five houses each 50 feet by 25; while Figs occupy another, which is 45 feet long and 15 feet wide. The smaller houses, pits, and frames are innumerable, as they need be, to bring on the stock of tender plants that are annually turned out, of which it may be mentioned here that no less than from 60,000 to 80,000 consist of bedding-plants, and 10,000 of Dahlias. More important features in this department, however, than the bedding plants and the Dahlias, are the enormous numbers of pot Roses, pot Vines, and Clematises that are annually propagated and disposed of. Pot Roses alone number 70,000, and most of them are worked on the seedling Brier. The Rose most extensively grown is the beautiful white Tea, *Niphetos*, and the stock of this variety alone consists of 35,000 plants; while for *Gloire de Dijon* and *Maréchal Niel*, the next greatest favourites, the demand is about equal—from 4000 to 5000 plants—and grand plants, too—in 48 and 32-sized pots.

Next to the Roses come Clematises, and of these the saleable stock is 40,000, all grafted plants. The stock upon which they are grafted is a good and suitable one, as demonstrated by the quick, ready way in which stock and scion unite, and the plants subsequently develop into robust flowering specimens—as witness the grand examples staged by the firm at the last great Whitsuntide exhibition at Manchester. Whatever the stock may be the roots are carefully lifted and prepared to a uniform standard of size, and when the graft has been put on they are potted in small 60's, and placed in a clean frame. The grafts take in about ten days, and the plants are then re-potted into 48's, and grown on into good strong stuff. About seventy varieties are grown, and Jackmanni, here as almost everywhere else, is the one most extensively propagated. In the Jackmanni section there are a dozen varieties, all of which are as suitable for bedding or planting on rockeries as they are for climbing against walls. They are, in fact, everybody's plants, and everybody who has a garden should grow them. The dozen are *Alexandra*, *Gipsy Queen*, *Guiding Star*, *Jackmanni*, *Magnifica*, *Prince of Wales*, *Rubella*, *Rubro-vioacea*, *Star of India*, *Tunbridgensis*, *Velutina purpurea*, and *Victoria*. The *Launuginosa* section includes some thirty-one varieties,

amongst which we noticed Anderson Henry, Excelsior, Fairy Queen, Gloire de St. Julien, Hybrida perfecta, Impératrice Eugénie, Lady C. Nevill, Lord Nevill, Lanuginosa, Lawsoniana, Marie Lefebvre, Madame Van Houtte, Otto Froebel, Princess Beatrice, *Purpurea elegans*, Sensation, William Kennett, Grand Duchess. In the Florida section there are eight, including the well-known varieties Fortunei, John Gould Veitch, Countess of Lovelace, Duchess of Edinburgh, and Lucy Lemoine; while in the Patens section the best are Duke of Edinburgh, Fair Rosamond, Miss Bateman, Mrs. Quilter, Albert Victor, Lady Londesborough, Sir Garnet Wolseley, and The Queen; and the Viticella type four—Lady Bovill, Madame Grangé, Mrs. James Bateman, and Thomas Moore.

House after house in the growing season is devoted to the rearing of Vines for fruiting in pots and planting out, of which altogether there are 5000—2000 being Black Hamburgs, and the remainder composed of such popular sorts as Muscat of Alexandria, Foster's Seedling, Buckland Sweetwater, Alicante, Lady Downe's, &c. Orchard-house trees are also grown in immense numbers, and in remarkably good style.

In the houses devoted to hard-wooded plants we noticed a clean well grown batch of from 4000 to 5000 Azaleas, all "home grafted" and turned out in capital style, nice bushy heads on clean stems, after the Continental manner. *Azalea amœna* Caldwellii, the finest of the section, is grown in great numbers, and turned out by hundreds in 60-sized pots. Heath, Epacris, &c., are also done largely. Rhododendrons are grown extensively for potting up to flower under glass, the stout little plants grown in a heavy loam, setting from three to six trusses on each. *Aralia Sieboldii*, in various sizes, numbers about 20,000, which will all go to the towns, so well does it withstand the evil effects of gas, smoke, and dust. In another house is contained a large collection of Ferns in a small state; and in yet another we noted *Clematis indivisa lobata*, a beautiful greenhouse climber, which is an evergreen, and produces its white flowers on the old wood—also *Calceolaria Pavoni*, a Mexican species, of a shrubby habit of growth, and having yellow flowers spotted with black, as large as those of *C. amplexicaulis*; and most freely produced in the depth of winter. Another item or two, and we must have done with this department. The first has reference to flower pots, of which some may care to know that the number purchased last year was 179,786; and that 74,000 of these were sent at one consignment. "Who is your potter?" we ask, and the answer is "Matthews, of Weston-super-Mare—no pots stand like his;" and we think it only justice to the maker that we should mention the fact. The second point has reference to the cleanliness of the plants, and more especially of the Roses, which are kept clean and free from fly by the use of an admirable fumigator, of which we gave an illustration in a former volume, and which we now commend for its substantial character and great usefulness. It was invented by one of the foremen, and is known in the "sundries" lists as Harber's Worcester Fumigator.

Another interesting feature is the trade in hardy plants, such as *Euonymus*, choice Conifers, &c., grown in pots, and sold for the decoration of cold greenhouses, corridors, balconies, &c., and very largely for winter bedding. *Euonymus* alone number 5000—a beautiful lot of small bushy plants, consisting of all the best kinds, of which it may be stated as an interesting fact that *E. ovata aurea*, a handsome golden variegated form, is the hardiest, having come through the winter untouched, while others were killed to the ground.

Amongst coniferous plants we noted charming little specimens of *Thuja occidentalis lutea*, the best golden variegated Conifer grown, inasmuch as it never burns, and is never touched by frost; *Cupressus Lawsoniana lutea*; Young's Golden Chinese Juniper, and *Retinospora plumosa aurea*, the four best golden variegated Conifers; *Biota sempervirens*, is not here so good a plant as *B. elegantissima*, a fine golden-yellow colour, which stands well.

We pass now to the herbaceous and alpine-plant department, of which, as before mentioned, the stock consists of about 300,000 plants, of which some 46,000 are kept in pots, and the remainder planted out. The number of species and varieties grown is about 3000, but some of course are cultivated to a much greater extent than others. For instance, of the best show

and fancy Pansies there are 6000; of *Dielytras*, good sound clumps for forcing, 3000; *Phloxes*, 2000; *Delphiniums*, 1000; and of *Spiræa japonica* (*Astilbe barbata*), 5000; besides a good batch each of some ten or a dozen other varieties.

THE CHRYSANTHEMUM.

THE time for the display of these useful flowers is again come. The greenhouses and conservatories are already gay with the earliest flowering varieties, and by fairly good management they will continue in beauty for six weeks at least. The growers for exhibition are now busy tying the flowers of the large-blooming section to sticks. We have always found that two-year-old plants give the best results in the large-flowered section, and plants from cuttings struck in December form the finest specimen Pompons for the following season. The growers near London always grow their specimen plants from single stems, and the schedules stipulate that a clear stem should be seen above the mould in the pot when the plants are exhibited. During the summer months the growths are stopped up to the middle of June, and as the plants grow into size the stems are tied down, to make very dwarf specimens; but plants trained down closely, and each flower fastened securely to a stick, so as to form an unbroken hemisphere, are very formal and humpty-dumpty like. All the small side flowers are removed, so as to throw all the strength into the one flower on each main stem.

I grew some specimen plants about sixteen years ago which were much admired. The cuttings were put in very early in December I think. Each cutting was placed at first in the centre of a small pot, and as the plants grew in strength and filled the pots with roots they were potted on, until by the end of May they were ready to be repotted into 11-inch pots. The growths were stopped only once, when the plants were 9 inches high; as the stems progressed in growth they were tied to stout sticks about 4 feet long. Ten or a dozen sticks were placed in each pot, to which the main stems were tied; besides the main stems there are very numerous side-growths which either hang loose or are tied to the sticks without altering their natural position much. All these plants produced very large and finely formed flowers, from fifty to a hundred on each plant. There were Pompons grown on in the same way from cuttings with single stems, and on one plant I counted 1400 flowers.

I would certainly urge on exhibitors the expediency of growing their plants in a more natural manner. There is no reason why the flowers should be bent down to the level of the rim of the pot except a bad custom. Single flowers cut and placed in stands for exhibition are not shown in a natural way either—every one of them must be dressed; but exhibitors will always exhibit them in this way, because many of the flowers cannot be shown with full centres unless they are fixed in blocks. The growers near London are adepts in the dressing of Chrysanthemums. The Brothers Saunderson are quite perfect in the art of improving Nature. There are some flowers which require no manipulation, but others could not be exhibited on the stands without it. It has always been understood that you may subtract as much as you like from the flowers, but add nothing to them. There are often badly formed petals on otherwise good flowers, which spoil their outline, and ought to be taken out. The largest number of varieties required in a stand are twenty-four, and it is not possible to obtain a greater number of really good flowers than this of the incurved type, and these only should be exhibited. Flowers with bad centres or broad strap-shaped petals count for nothing. All except the incurved varieties should be exhibited with stems and leaves attached. The Japanese varieties make a very fine display exhibited in this manner, so also do the stands of *Anemone* Pompons exhibited in triples.

Then we have the large-flowered *Anemones*, which are not nearly so much grown as they ought to be; amongst them we have such beautiful clear white flowers as *Fleur de Marie* and *Prince of Anemones*, a perfect model for a quilled Aster. If the flowers of any of the above are cut with about 6-inch stems, and arranged on a box of green moss, like cut Roses, they are sure to be very much admired at exhibitions. I have frequently urged the importance of keeping the plants free from mildew and aphids. Both of these must either be

destroyed on their first appearance or precautions must be taken to prevent their attacking the plants at all. It is not possible to be successful at exhibitions, or even to produce successful results on the home stage, if perfect cleanliness be not insisted upon. I am afraid that in too many cases the Chrysanthemum does not get anything like fair justice done to it. The plants are not carefully attended to in the early stages of their growth, and during the early summer they are not potted on at the right time, nor are they supplied with sufficient water. The Chrysanthemum requires much water and rich compost to grow in. Many people are unaware of the perfection to which the Chrysanthemum can be grown when all its wants are attended to at the right time. The cultivator must have an eye to his plants from the time he puts in the cuttings, six weeks hence, until the flowers are fully open, when he will have a full reward for all his pains. *F. Douglas, Loxford, Ilford.*

FRUIT WALLS.

WITH the advent of frost the leaves of Apricots and Plums begin to fall quickly, and as the wood is now well ripened, owing to so fine an autumn, it is advantageous to get quit of the foliage as soon as possible, so as to allow any necessary pruning to be proceeded with, and the tying or more cumbersome process of nailing to be done before the weather is too cold for the fingers, and the days are too short for making good progress with the work. Where summer pruning has been carried out the Apricot and Plum trees will require little use of the knife at this time; merely those shoots of the current year's growth that have escaped observation previously, and any spurs that with the growth of years may have become too large, will require cutting back now. One of the most prolific sources of dead spurs is the negligent system of leaving quantities of breastwood on the trees to be removed at the winter pruning; many of the growths so cut at this time, especially of Plums, are left without a wood-bud. Now these may carry a crop of probably imperfect fruit the following season, but having no terminal wood growth, which they seem unable to form, they can but die back to the branch from which they sprung; thus quantities of spurs are annually lost, and unsightly gaps made which require both time and attention to fill up even if they ever are effectually replaced.

When the pruning of those subjects is closely attended to during the summer months the annual extension of spur is slight. The tying or nailing can be commenced when the leaves fall, with little delay, as the time required for the preliminary pruning will be short, and the result will compare favourably with the system of close winter pruning, but may not quite please the eye of an advocate of the latter system.

If particular attention be paid to the furnishing of a tree with regular and well-balanced branches in the first place, not close together, but sufficiently distant to allow free spur development without crowding the foliage, a further extension of spur is admissible—even preferable to the restriction that usually obtains, as carrying more fruit, and assisting the vigour of the tree by allowing more leaf development than is possible where the foliage is all close to the wall. Where any protection is given to the walls in the spring, moderate extension of spurs will not show any appreciable disadvantage from loss of wall benefit by their being further from it, and where no protection is afforded the outer portions of spurs will give shelter to the inner blooms, so that even after exceptionally severe spring frosts a crop may yet be secured.

All shoots required for extension may be laid in at full length, only cutting back, more or less closely according to its strength, any weak one, so as to concentrate the efforts of the rising sap in the spring to one or two eyes in cases of very weak growth, thus securing a stronger growth the following season. Before proceeding with the training of young trees see that provision is made for a sufficient number of radiating branches, cutting back the centre shoots if necessary. Look carefully over established trees to see that no old cords or shreds are too tight, and let each limb have at least two or three fresh ties to insure its stability, nothing being more unsightly than loose branches in summer, probably laden with fruit, requiring attention at a busy, and, possibly, inconvenient moment. Any Plum branches affected with scale may be first scraped—the handle of a budding knife is suitable, and generally at hand—then dressed carefully with petrol or benzoline oil, not using more

than is absolutely necessary to dress the parts affected, as when allowed to run on young growths or amongst the spurs injury may result.

Where Apricot branches are subject to dying off let a sharp look-out be kept for the larvæ of the Red-belted Clearwing (*Sesia myopæformis*), which is causing much injury in some places. As its operations are very insidious, being entirely confined to the inner bark, to which it gains entrance on emergence from the egg, its presence is not easily detected, and is not, in fact, suspected, even in cases where it is producing great damage. The perfect insect is on the wing in the spring months, and the larvæ are so small when first hatched that it is almost impossible to detect them in every instance where present, before the month of August, when, as they increase in size, the *débris* from their workings becomes more plentiful, and consequently is more readily detected resting in angles between branches and stems, or caught in any small spider-webs that may happen to be around the stem. But it frequently happens that when the trees have carried a full crop of fruit, which, perhaps, is all gathered by the middle or end of August, they make little more growth, and are therefore subject to little scrutiny, as the further attention required will be slight where the shoots for extension or filling up blanks have been kept nailed in. This circumstance, probably, is one reason why the grub in question is not generally recognised as injurious to Apricot branches. The full-grown larva is little over four lines in length and from one-half to three-quarters of a line in breadth. When I first discovered the injury being done here, I was at a loss to find the original spot from whence it spread, as the trees affected were healthy young Apricots just filling their allotted spaces of wall, some old trees on another portion of wall being unaffected, as were also the Pear and Apple trees in the garden and orchard. From the latter fact I have been inclined to doubt the identity of the insects with that of the "Apple Clearwing," but I have lately discovered that a very large old Apple tree, situated behind the Apricot wall in the grounds, is very badly affected. This tree will be cut down at once and the trunk burnt, as the surest preventive of further propagation from that quarter. I have tried rock oil without effect on the affected Apricot branches; it does not, apparently, reach the larvæ in their retreats, as the channels are very eccentric.

Where the light red granules of ejected matter are observed protruding from the tiny orifice means must be taken to reach the borer. It is both troublesome to the cultivator and injurious to the tree to cut out the grub, which, however, must be done, or on its emergence from the pupa state each female insect will increase the difficulty of extermination by depositing its eggs probably quite near the scene of its progenitor's, or more correctly perhaps, its own operations in a previous state of existence. The main stem and the branches near to it are the parts mostly selected by the perfect insect for depositing her eggs, and where several grubs attack one branch it may be expected to die out as soon as growth has exhausted the stored material necessary to start the buds into vegetation; but where the ravage is less complete sufficient circulation may remain, it may be for years, but in the end gum forms in the injured space under the bark totally unsuspected, and diseased tissue is formed which secretes more gum mingled with sap; then the injury spreads, and eventually, at a time when the demand on the tree is greatest, the branch dies, and there is no evidence of the primary cause. I first drew attention to this as a cause of injury to Apricot branches in the *Journal of Horticulture* last year; since which time other cultivators have also noticed it. I revert to it here, as now is the time to look out for evidences of its presence while the only means of detection is visible, namely the *débris* of the tissue destroyed. When winter fairly sets in the grub ceases its operations and changes into the pupa state. *R. Crossling, The Gardens, St. Fagan's Castle.*

THE DROUGHT IN NEW SOUTH WALES.—A correspondent writing from Sydney on September 10 states:—"We have had no rain for months, water is getting very scarce, and the gardens are suffering very much. The Government Astronomer has published a statement that there has not been such a light rainfall during the same winter months for forty years. The days are already as hot as in November, and some great bush fires have occurred towards the Sydney Head Lighthouse."

AMERICAN GRAPES.

WHEN in England I noticed particularly the scarcity and high price of good fruit. Grapes at 3s. and 4s. per pound are too expensive a luxury to be indulged in by the masses, and the question frequently suggested itself whether it might not be possible to produce cheaper fruit by cultivating the American Grape. I understand that the chief obstacles to open-air Grape culture are late spring and early autumn frosts, as well as moist, dull, cloudy weather. But are there not localities, at least in the southern parts of England, where these frosts do not prevail, and where there is a sufficient amount of solar heat to mature the Grape? It is well known that night frosts are far more destructive in valleys than on elevations. Vegetation, too, on low ground is far more liable to injury from frost, because the growth is more luxuriant and less matured. In our severe climate we see this verified every year, and when in France a short time ago I saw on low ground relics of what were once magnificent specimens of *Sequoia gigantea*, but which had been utterly ruined by the severity of the past winter, while on high ground but a short distance away this tree was uninjured.

Again, in low places, the mild weather which often occurs in winter forces the buds prematurely, and succeeding cold weather does great injury. We think here, that hillsides sloping to the east and south, where the full benefit of the sun may be obtained and where protection from high winds is secured, are sites peculiarly suited to the growth of the Vine. I call attention briefly to these points, not so much for the purpose of giving information, as to remind experimenters that elevation and aspect have a great deal to do with successful cultivation. I find another impediment to the introduction of the American Grape is the quality of the fruit. I learned that American Grapes were considered too pulpy and foxy to merit attention. Varieties like Isabella, Concord, and Hartford Prolific, which rank second in quality even in America, seem to have been tested to some extent, and, proving unsatisfactory, the conclusion seems to have been reached that all American Grapes deserve similar condemnation. I regret that an opinion like this should prevail, for during the last few years several American Grapes of fine quality have been introduced, and it seems to me that if these were tried in the open air under favourable circumstances, they would certainly prove desirable if not profitable.

Our Grapes may not be so melting and high flavoured as well grown, thoroughly ripened Hamburgs, Frontignans, Muscats, &c., nevertheless, I have seen in the London market hothouse Grapes which certainly were inferior in quality to American Grapes. In August I found a considerable portion of the Grapes in market only half coloured and imperfectly ripened, and frequently I visited several stands before obtaining such Grapes as I desired. I am aware that this is the result of over-cropping; but I mention the fact to show that European Grapes are not always perfect, at least such as are sent to market. In Paris I had a similar experience, and I naturally came to the conclusion that if this quality of fruit could be sold at a high price, then American Grapes, if they can be grown, ought to find a ready sale, especially since they could be offered so much cheaper. In view of the difficulty and expense of producing Grapes under glass, I hope some one will give American Grapes a trial, bringing to bear upon the subject all the knowledge and skill for which the English are so justly celebrated.

It is my intention to name only a few of our best sorts, and I will commence with

BLACK GRAPES.

Eumelan, supposed to be a seedling of the Isabella but without any of the foxiness of that variety. The bunch and berry, though not large, are of good size, and the flesh is tender, juicy, sprightly, refreshing and very agreeable. No Grape that I know has such a pleasant vinous flavour, and it is surprising what a quantity of the fruit can be eaten without causing any uneasiness. The only defect which this variety exhibits is the habit of the Vine, which I regret to say is not the best. Had it the vigorous constitution of the Concord or Hartford it would undoubtedly be cultivated almost to the exclusion of all other black varieties. It is such a poor grower that it requires to be grafted upon a vigorous variety, then it succeeds admirably.

Barry, or Rogers' Hybrid No. 43, claimed to be a hybrid between an American and a European variety, is a black Grape, large in bunch and berry, and bearing a closer resemblance to Black Hamburg than any other American sort. The flesh is tender, sweet, and the flavour pleasant. Of the many varieties of Rogers this is justly entitled to the first place. No other combines so many valuable qualities, and whether for amateurs' use, or for vineyard culture, it has few equals. In our vineyard a long line of trellis supporting some large Vines heavily laden with immense bunches of this variety, some of them weighing 27 oz., is a picture which would excite the admiration of a veteran Grape grower, and certainly astonish the novice in open-air Grape culture.

Herbert, another black variety of Rogers, is not so large in bunch and berry as the last-mentioned, but the fruit is superior in quality.

Lindley, or Rogers' No. 9, is, all things considered, one of the best red Grapes we have. The bunch is large and long; berry of medium size; flesh sweet, juicy, and high flavoured. The Delaware has long been regarded as the best table Grape, but I think that the Lindley, when it becomes known, is destined to supersede it. The fruit is certainly equal in flavour, much larger, more showy, and the Vine is a stronger grower.

Delaware, in the estimation of the American public, occupies the same rank among Grapes that the Seckle does among Pears. The bunch is of medium size, shouldered, very compact; the berry is small, light red, with a thin skin; flesh melting, sweet, vinous, excellent. The Vine is a slender grower, and requires high culture; nevertheless it is hardy, and very productive.

Brighton is an early Grape, raised by artificial crossing of the Concord and Diana Hamburg. The bunch and berry are of good size, flesh tender, sweet, vinous, and high flavoured. The Vine is a vigorous grower, and very productive.

Rochester is another early purple Grape, of fine quality. I consider it one of the most valuable to experiment with, as the Vine is healthy and vigorous, and the fruit ripens early and well, even in the worst of seasons.

WHITE GRAPES.

Of the white Grapes now grown, or about to be introduced, I do not think that any one of them will be entirely satisfactory. Those which are healthy and vigorous in habit produce fruit of medium quality, while those which yield high-flavoured fruit are deficient in vigour. It is doubtful whether any of the white Grapes will succeed in England; nevertheless, I would recommend a trial of the following:—

Croton, a cross of the Delaware with the Chas-selas, is the best so far as regards the quality of the fruit, but the Vine is not robust enough, and is sometimes liable to mildew.

Rebecca is another fine-flavoured Grape, but the foliage is tender, and the growth moderate.

Lady Washington, a new Grape, is a seedling of Concord crossed with Allen's Hybrid, and is very promising. The Vine is a robust grower, bunch large, and the fruit good.

Duchess is another new variety, and, according to all accounts, perhaps the best. The Vine is said to be vigorous and healthy, and the fruit sprightly, rich, and vinous.

Niagara is a splendid new Grape, a pure native. The Vine is vigorous and hardy; foliage healthy, the fruit is large and handsome, and of fair quality. It combines many important characteristics, and will, it is believed by many, take the lead in this class.

NEW GRAPES.

We are making remarkable progress in this country in the production of new kinds of Grapes. I have recently seen some new hybrids which are far in advance of any varieties now known. They combine qualities long sought after but never attained until now—hardiness, vigour, with fruit of fine texture and high flavour, fully equal to the best foreign sorts. Their introduction will mark a new era in Grape culture in America. *W. C. Barry, Mount Hope Nurseries, Rochester, N. Y., October 21.*

HOW TO KEEP FLIES OUT OF STABLES.—A correspondent of the *Country Gentleman* recommends the sprinkling of the floor of the stable very lightly with kerosene, taking care to remove the droppings several times a day.

WEST INDIAN FRUITS: THE MANGO.

MANGIFERA INDICA, L., is a tree producing the fruit so widely known as the Mango. In Jamaica its introduction is said to date from June, 1782. It was then among a number of valuable plants taken, in a French vessel bound from the East Indies to St. Domingo, by Captain Marshall, of H.M.S. *Flora*, attached to Lord Rodney's squadron. There being a large number of plants they appeared to have been numbered, thus giving rise to the name "No. 11," a name possessed by the variety which, from its superior qualities, is most readily known and distinguished from all others. "It is a flat-sided green fruit, of a delicious aroma, and an agreeable sub-acid taste," a delicacy alike to rich and poor in Jamaica. Of the other numbers supposed to have been introduced little is known, the interest attached to them probably being little on account of their qualities being mostly inferior. The Mango is distributed throughout Jamaica, growing from the level of the sea to elevations of 5000 feet, at which latter height it is not very productive, thriving best at the lower altitudes.

From the great number of varieties now existing in the island it is very evident that there has been a gradual departure from the original types first imported. In the No. 11 variety the tendency to vary seems to exist in only a minor degree, if at all, as fruit is seldom seen possessing any of the intermediate qualities one would suppose to exist between this and the commoner kinds. Mangos are found of diverse shapes, colours, and flavours; of the latter some are agreeable, others nauseous and acetous combined with a turpentine smell and taste of varying intensity, thus obtaining for them their well-known appellation of "tow and turpentine," which is in many cases well deserved. From the many, however, may be selected varieties which are special favourites of particular palates, possessing flavours peculiarly their own, and yet known by no distinctive or authoritative appellation, most of them being merely separated locally from "No. 11" as "common Mangos." A few varieties attain to the distinction of having names conferred on them, but they will generally be found to vary in each district of the island.

The Mango is one of the most productive of tropical fruits, and is very wholesome and nutritious. It is greedily sought after by most domesticated and wild animals, which it fattens in a surprising manner; poultry also feed upon it readily. It is a well-known fact in Jamaica that during "Mango season" (from May to August) there is an appreciable difference in the sale of breadstuffs, from the fruit being consumed in such large quantities by the labouring classes.

During the last few years a large demand for this, in common with other fruits, has been called into existence by the increased facilities of transport between the United States and Jamaica, and the export has been carried on with no small degree of success. It requires the most careful supervision to prevent the fruit being bruised in the slightest degree to ensure successful transit, and in this point (one by no means easy to remove) lies the greatest hindrance to the shipper.

The Mango is seldom to be found in good order in English markets, but that it may be had even at that distance has been proved by the writer, who has in several instances successfully transmitted it to gentlemen at home, his latest consignment being noted by the Editors at p. 337 of the present volume.

The Mango is easily propagated from seed, sometimes each seed producing as many as four perfect plants, showing that more than one germinal vesicle must have been fertilised, thus ensuring a plurality of embryos in the one integument. The best method of propagating any desired variety is by inarching on one-year-old seedlings of a strong-growing variety, but a careful selection of seeds from the best varieties would doubtless in time produce a better class of fruit than now exists.

Within the last few years several varieties of East Indian Mangos have been introduced into Jamaica, one of which, a very fine variety, unnamed, has fruited during the past season. During the visit of the Royal Princes in the *Bacchante* to Jamaica in March last, and when guests of His Excellency Lieut.-Governor Newton, C.M.G., at King's House, a young tree of this kind was planted by the younger Prince, and named by him, in honour of his Royal mother, the Alexandra Mango. At the same time and place a young tree of *Swietenia Mahagoni* was planted by the elder, and both trees are now growing remarkably well—the one planted illustrative of the woods produced in the island, the other of the fruits. *J. Hart, King's House, Jamaica, Oct.*

THE THEORY AND PRACTICE OF ROOT-PRUNING.

THE theory is sound, Nature herself being our teacher. However much and long cultivators may have ignored the correlation between root-pruning and fertility, Nature has recognised and acted on the facts involved in it from the beginning. That the practice

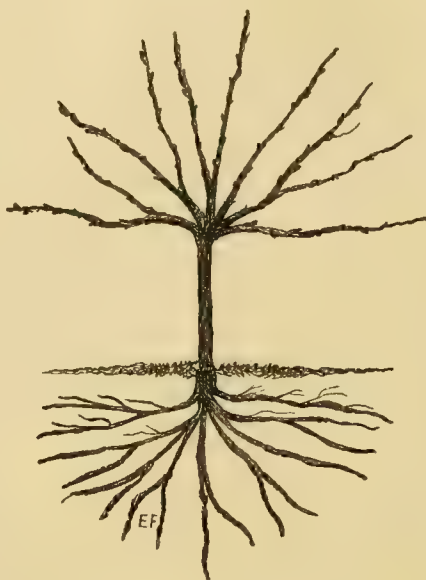


FIG. 107.—PEAR TREE WITH STRONG ROOTS.

has been so recently advocated and practised by cultivators, can only be accounted for by the fact that root-growth and modification was and is hidden. The practice, however, prevailed while the theory was unknown, ignored, or condemned. It is often amusing to read severe condemnations of root-pruning from those whose boasted success is the direct result of it in its most



FIG. 108.—PEAR TREE AFTER BEING ROOT-PRUNED.

extreme form. For is not every removal of a bush or tree from its seed-bed or budding or grafting quarters a severe root-pruning? And what is the most successful practice in our best nurseries, by which trees are moulded into fertility and kept within saleable size, but a series of persistent root-prunings? And yet, when these trees, in which habits of fertility have become a second nature, are finally removed into commercial or private gardens, we have them held up as proofs positive that root-pruning is not needed, or is a huge mistake. This is kicking down the ladder by which success was attained with a vengeance, or as nothing succeeds like success, so there is no

surer means of laying the basis of permanent fertility than good crops from the beginning of the life of the tree. Under liberal, skilful culture precocity does not cause exhaustion, but establishes fertility. But the main question remains—How was the fertility hastened as well as heightened at the first? This answer in nine cases out of ten, whether acknowledged or not making no difference to the fact, may be given in the one compound word—root-pruning.

But though root-pruning may be thus expedient in Art, it might not be in accordance with Nature, as I have affirmed; indeed, it is constantly condemned as unnatural. It might be shown that were the condemnation just the practice might be equally good and useful nevertheless. Cultivators are not to be blind copyists of Nature. To become so is to invite failure, for many of Nature's ways are very far from what they seem, and who can ever understand all her ways? There are hidden depths, unreached mysteries in this apparently simple matter of root growth that have not as yet been, probably never will be fathomed. Nature, however, teaches us a few lessons, that suffice to form a solid philosophical basis for the practice of root-pruning. The first function of all roots is to fix the plant firmly in the soil or to one particular spot; the second is to feed the top and its produce; the third—a continuation of the second—to enlarge the area or raise the stature of the stem or branches. During all these stages the root is a borer and a holdfast. In general terms, the deeper it goes the higher the plant ascends, and the more firmly it is held in position. This being the first work of the roots, their simple and elementary structure is admirably adapted for it. They possess great powers of penetration, on which the immobility or stability of the tree depends. In virtue of the correlation of growth between root and top, the more simple and undivided the root the more vertical and tall the top, the single stem above being the counterpart of the single or tap-root below. This form at starting admirably suits Nature's purposes, the fixing of the tree to one spot, and the raising of it as speedily and as high as possible into the atmosphere.

So far there has been little attempt at devising substitutes for root-pruning. But as Nature does not elect to grow her trees into uniform pyramids or narrower vegetable columns, certain means have been provided for checking the growth of mere tap-roots and breaking them up into fibres; in other words, of root-checking, curbing or pruning the one strong root or roots into many smaller ones. The demand of the tree for more food may be said to be the first root-pruner. This demand is universal, and must be supplied if trees are to live and grow. The large roots, so useful at first, are found to be hold-fasts or pioneers rather than feeders. Absorption of water and other substances from the soil takes place by means of the smallest fibres only. Hence, if the tree is to continue to be fed, these roots must break into or develop fibres. Now the production from the merely boring of fibrous feeding roots is the chief aim and object of the root-pruner, and this foundation lesson any careful observer may learn from Nature. But Nature affords accidental as well as vital illustration of the theory and practice of root-pruning. These are the hardness and thinness of the soil, the numbers of stones and roots found in it, and the sterility of the subsoil. To those who have not recognised the presence nor acknowledged the force of these obstructions to root-extension, the roots may seem as free to grow in the earth as the tops in the air. And had Nature been only a timber grower doubtless matters would have been so arranged. For example, considering the respectable age of the earth in the light of the most severe science, one might have expected it to have been covered with a thicker crust of good growing soil. Supposing, for instance, that instead of a surface staple averaging 1 foot in depth the surface-soil had averaged 6 feet, all our trees would have become giants, and our fruits, if any, have ripened in cloudland. But the thin soil bars the progress of the roots. It does more, by breaking up or off the point of the one or several far-boring roots, it ultimately converts them into many fibrous ones (see figs. 107, 108).

The hardness of the surface soil is a still more effective root-pruner or transformer. It is particularly desirable to note the wide difference of these two phrases. For the wise root-pruner who sits at the feet of Nature is less anxious to prune away superfluous roots than to cause them to assume a greater degree of usefulness. No one, unless he has tried to

dig in a natural soil or old-established forest, can form any idea of the extreme hardness the roots have to endure and overcome before they can make any progress in it. This hardness not merely checks their progress but alters their form and functions—does, in a word, in a slower and perhaps better fashion, all that is done by the most skilful root-pruner. The loose stones so abundantly found in most soils, especially in a state of Nature, arrest and modify root growth even more than the hardness of the staple. For where stones do not break off the points of the tap or boring roots, as they often do, the mere forcible arrest or change of direction their presence compels mostly causes the strong roots to break into several smaller ones (see figs. 109 and 110).

And roots themselves where they abound so as to overcrowd one another, as is nearly always the case in a state of Nature, do very much to check and change the form or function of one another. The struggle for life above ground is as nothing to the fierce struggle going on underground. And every process, such as ringing, &c., that has been adopted by cultivators to arrest the growth of stems above ground, may be found illustrated and intensified among the hidden crushings and crowdings, interlacings, interminglings, twistings and contortions of the roots below. In the struggle that ends in the survival of the fittest, that is the strongest, what an infinite number and variety of roots are torn asunder, crushed up, or destroyed; and how many more are modified in form and altered in function, in the struggle for food and life. Again, sterile subsoils present an impenetrable barrier to descending roots. Not a few of these are so hard or sterile as to resemble rocks. Their chemical composition as well as mechanical condition alike repel the roots, and force them to return whence they came or to skim along their upper surface. Either way the result is very much the same: the large roots break up into smaller ones, and these again are far more fruitful of fibres (fig. 111) than the larger stronger roots.

Of course, too, in cases where subsoils give place to primitive or other rocks, their effects on the roots are still more pronounced. The strongest roots mostly turn away from chalk, and when compelled to run along the surface of such strata elect not to hug it very closely. Few roots can run along horizontally through a thin layer of surface soil without becoming more branched or fibrous in consequence. And thus the hardness of subsoils, and the close proximity of impenetrable rocks to the surface, become some of Nature's more powerful root-checkers or pruners. And besides all these indirect modes of root-pruning, or equivalents for it, Nature prunes off her feeding fibres annually on the most gigantic scale. The whole of these may be said to perish annually. The body of the roots live, the ultimate fibrils die; so that the very practice which is so generally decried and so loudly condemned as unnatural, is indulged in by Nature to an excess, and in a direction, that most good cultivators would condemn. Instead, therefore, of the root-pruner going beyond Nature in this matter, he would be only too glad if Nature would stop short of some of her pruning processes. For example, he tries hard to conserve the extreme fibres or feeders of the roots which Nature, left to herself, as persistently destroys.

But there is another vital point here in favour of root-pruning that deserves special notice. But for previous root-pruning, by Nature or Art, the feeding-fibres would be few and far between. Strong growing tap-roots, like vigorous growing shoots or gourmands (fig. 109), have few buds, proper or adventitious. Break up the force of the one shoot or root into many, and in the exact ratio of their increase we have the multiplication of buds or growing points. These are the embryo fruit-buds, shoots, or root-fibres, according to circumstances or accidents of position, and hence the root-pruned root has its fibre-reproducing or increasing power multiplied probably a hundredfold. It is impossible to exaggerate the beneficial effects on the future life or produce of the plants, of this augmentation of reserve force, or feeding-mouths in embryo, that results from the practice of root-pruning, or those natural substitutes or equivalents for it to which reference has been made.

The fact that it is by some such processes as these that Nature carries her fruit-bearing trees through the early stages of sterility and forces them into fruit-bearing ways, is wholly overlooked or ignored by those who contend that Nature is on their side as

against the root-pruners. The facts are wholly and altogether the other way. Nature root-checks or root-prunes her trees more or less always and everywhere, and as a rule her methods are finally and permanently successful. The greatest evils to fruit-bearing trees have arisen from overlooking these facts, the removal of natural obstacles to root extension, and by the richness, softness, depth, and friability of our fruit borders, tempting the roots to bore or run, to their degradation and deterioration, and of necessity sending the tops into timber instead of fruit.

The only faults Nature has as a root-pruner are that she is too slow and too ponderous. Nature is



FIG. 109.—TAP-ROOT IN DEEP SOIL, MEETING WITH NO OBSTRUCTION.

seldom in a hurry, even in these days of feverish haste and constant struggle against time. The present pace of horticulture is almost killing—the work of years is often concentrated into a few months. Attempts, more or less successful, are constantly being made to

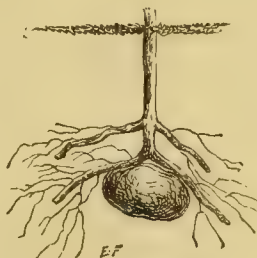


FIG. 110.—TAP-ROOT ARRESTED BY A STONE.

abridge and lessen the space between the seeds, scion, or bud and the produce. These have proved so successful that scion or bud have well-nigh sighted the finished fruit. The sharp cut of the knife does in a moment what Nature takes years to accomplish. But



FIG. 111.—TAP-ROOT ARRESTED BY A HARD SUBSOIL.

not only are the results identical, they are produced by similar causes; time is shortened and saved, that is all, and on that alone I am well content to rest the theory and vindicate the practice of root-pruning.

But Nature is ponderous as well as slow. The art of root-pruning needs almost less space than time. Access to the roots, room to wield the knife, are all that are needed. But we have already seen what deep borings and wide spreadings may be needed before roots are sufficiently cramped or pruned by Nature. The chapter of accidents has also to intervene. The tops meanwhile rise high and spread wide before they are arrested and moulded into fruitfulness. This is

all very well for Nature, for she is never pressed for time nor fettered for lack of space. But the limited areas and crowded state of our gardens demand the adoption of short cuts to fertility, and among these none equal in potency, simplicity, and efficiency root-pruning. It is not opposed to Nature, but only assists her to do her work in less time and in smaller areas, and is therefore invaluable to the modern fruit grower, who is severely pressed for both.

Having thus endeavoured to show that the theory of root-pruning is based on the teaching of Nature, and is consequently consistent with the highest Art, it may prove useful in a future paper to give some plain instructions as to the time, mode, and extent of it, and also to show that it is conducive to the highest utility. *D. T. Fish.*

(To be continued.)

ROYAL GARDENS, KEW.

(Continued from p. 559.)

SELECT NOTES FROM OFFICIAL CORRESPONDENCE.

Candelillo.—In the Kew Report for 1877 (p. 29) reference is made to a disease of the Coffee plant, which is known in Venezuela under this name, in the following terms:—"The young twigs and the under surface of the leaves are densely covered by a white felted mycelium, strings of which appear to pass from the former to the latter. Professor Ernst has accordingly proposed for it the name of *Erysiphe scandens*. The Rev. M. J. Berkeley remarks that it is similar in appearance to the 'leaf rot' of Mysore, which is produced by a distinct fungus, *Pellicularia Koleroga*, Cooke (see Kew Report for 1876, p. 20). It is possible that the disease mentioned as having occurred in Jamaica may be identical with the *Candelillo*."

Professor Ernst has forwarded to Kew copious specimens of diseased Coffee leaves affected with this fungus, and these have been carefully examined by Dr. Cooke, who independently confirms Mr. Berkeley's suggestion as to its identity with the *Koleroga*. Professor Ernst referred the fungus in Venezuela to the genus *Erysiphe* with doubt. Dr. Cooke reports:—

"I have carefully examined the leaves. I found in some cases, plentifully, the globose rough spores of the *Pellicularia* on short branches or pedicles, the latter remaining persistent after the fall of the spores. The habit and character of the mould is entirely different from *Erysiphe*, which latter is always more or less pulverulent, and never, as far as I am aware, are the threads connected into a stratum by a gelatinous film. Neither is the action upon the leaf at all similar in its destructive character to the *Koleroga*. Although the stratum is thinner, and much less dense than in Mysore specimens, the character is the same, and so characteristic are the features which the threads present (an unusual occurrence in fungi of this kind) that I recognised under the microscope the identity of this with the *Koleroga*. From the character of the threads, apart from all other evidence, I should doubt its ultimate development into an *Erysiphe*."

The occurrence of a parasitic fungus of a very specialised type in coffee plantations, both in the Old and New World, is a somewhat remarkable circumstance. It is, however, possible that it has been introduced into Mysore from South America or the West Indies.

Dominica Pimento.—Dr. Imray writes:—"Mr. Thistelton Dyer has informed me that the species of Pimento sent to Kew is not *P. acris* but *P. officinalis*. I was not aware that we had two species of this tree in the island until it was pointed out by Mr. Dyer; such is the case, however. I find them very distinct on examination, and the people of the island who are acquainted with our forest trees are aware of the fact. *P. officinalis* is, I suppose, the same as *P. vulgaris* of Grisebach. No doubt this is the species that produces the Jamaica pepper of commerce, and unfortunately it is the leaves of this species that are selected for the distillation of Bay oil (although both kinds are used) of which I spoke in one of my letters, part of which has been transferred to the pages of the Kew Report. Nearly all the northern district of the island is already exhausted of these leaves, which means that most of the trees have been destroyed. It is not only the Crown lands that are thus denuded of a valuable timber tree, the seeds of which might also be turned to account, but private property is invaded, the Bay-leaf gatherers not being very particular about boundaries. It is to be regretted that the Government of the colony does not interfere to prevent the wholesale waste of this most useful tree."

Food Products.—1. *Arracacha*.—The Indian Government are desirous of introducing this esculent vegetable into India. *Arracacha esculenta* is cultivated in the cooler mountainous districts of South America, where the roots form the staple diet of the inhabitants. Steps have been taken at Kew (where plants are now growing) to procure the seed, and as success in cultivation appears to depend on the method of treatment, I place on record here some particulars obligingly communicated to me by Mr. Henry Birchall, of Bogotá.

"About 6000 feet is nearly the upper level of any extensive cultivation of this plant, though it produces at points a good deal higher. It is rather difficult to obtain the seed, as from habit the peons invariably pull up the flowering plants, as they do not produce the edible root. I have several times missed getting the seed by the stupidity of the men who weeded the plantations.

"As regards cultivating from seed my own experience is *nil*, but my neighbours assure me that by repeated replanting of the young plants at last the roots are developed.

"When this is attained the plant throws out a multitude of shoots from the crown. These being broken off are prepared by slicing the base neatly and then putting them in a hole dibbled about 5 or 6 inches deep, and require no further care than ordinary weeding, for which the rows and plants should be 3 feet apart.

"In our climate the root comes to perfection in eight to ten months, and the weight of a good specimen will be 8 lb. to 10 lb. No doubt if scientifically cultivated, and in properly loosened soil, much larger roots would be obtained. We do not even plough, but stick the seed in immediately after burning off the forest or the brushwood, as the case may be. It is cheaper to take new ground than to cultivate properly the old, as we have no command of skilled labour or good apparatus."

2. *Chestnut-flour*.—We are indebted to Mr. D. E. Colnaghi, H.B.M.'s Consul at Florence, for specimens of the dried Chestnuts, flours, and *necci* (the cakes made from them), which are so important an article of subsistence in the Apennines. The collection of the specimens for Kew was due to the kindness of Dr. L. Bacci, of Castigiano, in the mountains of Pistoia.

The fresh Chestnuts are dried, or rather roasted, for three days and nights in a *seccatoio*, or drying-room, on a latticed floor covering a chamber in which a fire is lighted. The husk is then easily removable, and the kernel is ready to be ground into flour, which is of a pinkish colour. This is mixed to the consistence of cream with water, and poured on fresh Chestnut leaves to be baked into small circular cakes, *necci*, between heated stones.

The collection having been divided between the Museum of the Royal Gardens and the Food Collection, Bethnal Green, Professor Church, who has charge of the latter, has obligingly furnished us with the following analysis of the flour :—

Moisture	14.0
Oil or fat	2.0
Proteids	8.5
Starch	29.2
Dextrin and soluble starch	22.9
Sugar	17.5
Cellulose, &c.	3.3
Ash	2.0
100.0	

The cakes were found to contain only 6.7 per cent. of proteids, with 3.4 per cent. of flour. The large amount of dextrin is due to the high temperature to which the Chestnuts are subjected in the process of drying. Professor Church thinks that Chestnut-flour ought to be of easy digestibility, and a suitable children's food, considering that it contains over 40 per cent. of nutritious matters soluble in pure water.

3. *Thé de Montagne*.—The Museum of the Royal Gardens is indebted to Mr. George Maw for a specimen of a product used, according to the Rev. Wentworth Webster, who procured it, as tea in the Basses Pyrénées in France, and on the Spanish side of the Pyrénées in Navarre. It was found to consist of the dried shoots of a species of *Lithospermum*, which was identified with probability as *L. officinale*.

(To be continued)

ANTHURIUM ANDREANUM.—We learn from Mr. Bull that this grand new Aroid is now flowering in his nursery at Chelsea.



SEASON'S GROWTH.—The season that now draws to a close has admittedly been an exceptional one, and that being so effects must of necessity correspond with the cause. Last season, so long to be remembered, was a very wet, cold, and sunless one, and this has just been the very opposite extreme in almost every respect. It is both interesting and instructive to learn the character and extent of the effects of the dry and warm season gone by in comparison with the preceding wet one upon our principal forest trees. In order to ascertain the facts, I have measured the growths of the following plantations and specimen trees here and there, and find the following results :—

Growth of Scots Firs.—No. 1 is a mixed Scots Pine and Larch plantation, six years planted on heathy moorland, much exposed, about 600 feet altitude, and about 3 miles from the Moray Firth, the average growths of which are—Scots Firs, average growth for 1880, 5 inches, and for 1879, 7 inches.

No. 2 is a mixed Scots Pine and Larch plantation, eight years old; average growth for 1880, 6 inches, and for 1879, 9 inches.

No. 3 is a mixed Scots Pine and Larch plantation, nine years planted; average growth in 1880, 7 inches, and for 1879, 9 inches.

No. 4 is a mixed Scots Pine and Larch plantation, ten years planted; average growth in 1880, 4 inches, and in 1879, 6 inches.

No. 5 is a mixed Scots Pine and Larch plantation, ten years planted; average growth in 1880, 6 inches, and in 1879, 10 inches.

No. 6 is a mixed Scots Pine and Larch plantation, three years old; average growth for 1880, 4 inches, and for 1879, 4 inches.

No. 7 is a mixed Scots Pine and Larch plantation with some hardwoods, six years old; average growth in 1880, 7 inches, and in 1879, 9 inches.

No. 8 is a mixed Scots Pine and Larch plantation, eight years old; average growth in 1880, 8 inches, and in 1879, 14 inches.

No. 9 is a mixed Scots Pine and Larch plantation with some Norway Spruce, three years old; average growth in 1880, 3½ inches, and in 1879, 3 inches.

No. 10 is a mixed Scots Pine and Larch plantation, six years old; average growth in 1880, 10 inches, and in 1879, 2 inches.

No. 11 is a mixed Scots Pine and Larch plantation, seven years old; average growth in 1880, 7½ inches, and in 1879, 9 inches.

No. 12 is a mixed Scots Pine, Larch, and hardwood plantation, eight years planted; growth in 1880, 9 inches, and in 1879, 12 inches.

The Growth of Larch in the following corresponding plantations is thus indicated by numbers, and is the extreme opposite of that of the Scots Fir :—

№	Growth for 1880.	Growth for 1879.	№	Growth for 1880.	Growth for 1879.
	Inches.	Inches.		Inches.	Inches.
1	12	3	7	28	5
2	27	12	8	10	5
3	24	14	9	23	16
4	12	10	10	16	6
5	18	7½	11	22	8
6	6	5	12	24	10

Growth of Norway Spruce.—The following may be regarded as average examples, though not taken from the same plantations as the Scots Fir and Larch. Norway Spruce is not much planted in this district, but the difference in growth between this year and last are as follows on the individual trees, and shows pretty correctly what it was all over the district :—

№	Growth for 1880.	Growth for 1879.	№	Growth for 1880.	Growth for 1879.
	Inches.	Inches.		Inches.	Inches.
1	6	24	7	2	9
2	8	18	8	3	12
3	3	20	9	7	30
4	2	18	10	6	28
5	4	16	11	5	24
6	8	12	12	3	9

Growth of Silvers.—On individual trees of the Silver Fir the growths may be taken as fairly representative of the growth on the whole estate here :—

№	Growth for 1880.	Growth for 1879.	№	Growth for 1880.	Growth for 1879.
	Inches.	Inches.		Inches.	Inches.
1	12	14	7	10	16
2	13	13	8	9	24
3	13	20	9	8	16
4	8	24	10	7	20
5	7	15	11	4	12
6	6	12	12	13	14

On looking over the Pinetum I find the following results, namely :—*Abies Douglasii*, scarcely so good this year as last; *Picea cephalonica*, much the same as last year; *Picea nobilis*, less this year than last; *Abies Menziesii*, about a quarter less this year than last; *Pinus insignis*, fully equal to last year; *Cedrus Deodara*, better growth this year than last; *Picea Lowii*, better than last year. From the preceding data it will be seen that the Scots Pine has suffered this year more than it probably ever did, owing to want of moisture in May, June and July, while making its young wood. The Norway Spruce has, however, of all others sustained the greatest loss of growth. It is usually planted in soft damp ground, and grows rapidly; but this year, at the time it required moisture, at that very time the ground was exceedingly dry, it therefore could not grow for want of moisture. It is also probable that last year's growth being unnaturally succulent, and this the other extreme, has had something to do with the disparity of growth. The growth of Larch is certainly very fine this season, but from the circumstance that last year it was so very deficient the difference is on that account all the more striking. The *Cedrus Deodara* has grown very well this season, and the reason is that it is later in its growth than most other species, except the Larch, and hence had the benefits of the rain and the moistened earth. The common Beech, both as a tree and hedge, has suffered much this season, and from stagnation of growth became leprous with the white insect, of which we hear and feel so much. The Oak has made an excellent growth, which is also accounted for from making its wood late in the season. It may therefore be regarded as a rule that if two or at most three months' suitable weather prevails during the time of any tree's active growth it will be a good one, be it late, as suits the Larch, *Cedrus Deodara*, Oak and English Elm; or early, to suit the Scots Fir and Norway Spruce; or medium, to suit the Beech, Wych Elm, Sycamore, &c. It is very pleasing to relate that much of the injury inflicted on the Larch by last year's cold and wet are overcome and made up for by the present season, for in cold situations and secluded ravines it suffered very seriously indeed. C. Y. Michie, Cullen House, Cullen, Banffshire, Nov. 1.

Garden Operations.

KITCHEN GARDEN.

FORCING DEPARTMENT.—Leaves from trees are an important commodity in the economy of a garden establishment, inasmuch that they are extensively required as a means of providing heat at the roots of vegetables and plants which are subjected to forcing operations. The stimulating influence derived from a bed of fermenting leaves within a forcing house has, moreover, a marvellously beneficial effect upon vegetation, and tends to ameliorate and reduce the aridity which naturally abounds. For this object a portion of the material should be turned over every day to let the vapour arise and spread through the house. Leaves, after they attain a decomposed state, are likewise invaluable as a mild stimulating agent in the way of manure, such as cannot be superseded for certain purposes in cultivation. A frost of 10° occurred here this morning (November 2), and it has brought down from the trees an almost unlimited supply of some sorts, such as Horse Chestnut, Sycamore, Plane, and others; and although these are not of the best description for lasting, yet they will be found useful when mixed with a proportion of about one-half of long stable manure for filling up pits which have been emptied of the beds of decomposed stuff, which will come in for future crops of Asparagus, Potatoes, Carrots, &c. After this kind of work is completed a reserve heap should be formed near the frame ground with some of the best of the leaves, with which about one-third of long stable manure should be well mixed and turned over into a mass, so as to become warm and purified by fermentation and thus prepared for use.

An early batch of *Asparagus* roots should be put in ere long. At this season the bed on which it is to be planted should be sufficiently large to retain its heat a considerable time; otherwise, much of the grass will not start into growth. 70° is a good standard heat. In planting the roots at this period use fine rich soil, and let it be well placed amongst the roots, and be watered with tepid water to settle it firmly about them. Although *Seakale* cannot be produced of such fine quality in Mushroom-houses generally as in places where the heat is wholly derived from fermenting matter, nevertheless, in the absence of such conveniences being available, some should be placed in this compartment. If the roots are put into pots, and another one is inverted on the top, and these are covered with some old mats, it will accelerate its growth and improve its quality considerably. If *Chicory* is used for salading, this should also be put in pots in a like manner, and be treated in the same way. If not already attended to, no further delay should ensue before a supply of *Rhubarb* roots is planted. All these subjects should be watered with tepid water at the time they are potted or planted to settle the soil firmly about them, and produce quick root-action. Former advice with regard to crops of *French Beans*, *Mustard* and *Cress*, &c., should be observed.

FRAME GROUND.—Frost has already necessitated the covering up at night of the different subjects located here. Let ample provision be made—if not already done—for future needs in this way. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

THE CHERRY-HOUSE.—If the sashes were taken from off this house, and are not yet replaced, it should be done without any further delay; and as soon as the leaves fall from the trees, proceed to prune them at once, by cutting back to within an inch or so of the base from whence the shoots started all those laterals which were made during the summer, and which in the ordinary course of practice should be stopped at about the fifth joint. We do not shorten any of the terminal shoots on our trees unless it is necessitated by the want of space, or in those instances where it is requisite to multiply the shoots next season. After this operation the trees should be properly washed by hand with a brush, and be tied up together in order to save them from injury and expedite other necessary matters, as white-washing, painting, &c. In the preparation of white-wash for forcing-houses the best fresh lime should be employed, with a slight admixture of size to make it adhere firmly; it should not be laid on the walls too thickly or its effect is not so beneficial. When all such preliminary matters are completed, and the trees are trained and tied, all the loose materials on the surface of the border should be taken right away, and any soil of an inert description that can be removed should also be forked over and changed for other, which is calculated to induce root-action more speedily by-and-by; after this, apply the usual quantity, about 3 inches thick, of good decomposed manure on the top, keep the house well ventilated at all times except during actual frosts, until such time as forcing operations are to be commenced, which should be at about the beginning of December, if ripe *Cherries* are to be fit for use by the commencement of next May. *G. T. Miles, Wycombe Abbey.*

ORCHARD HOUSE.

The fruiting trees are now out-of-doors, where the pots are plunged in cocoa-nut fibre refuse well over their rims. Earth-worms will make considerable effort to get into the pots, and every precaution must be taken to keep them out. We place our pots on a hard bottom of gravel, and underneath some soot, which they do not like. The trees were top-dressed just before they were taken out of the house; nevertheless they are even now (cold as it is) making roots into the new compost. The trees are no further trouble to us until we take them into the house about the first week in January.

Where the trees were forced last year the buds will be very prominent by this time, and preparations must be made for starting them early again. If the trees have not been taken outside, let them be looked over carefully, and any of the insect tribe that would be injurious to the leaves should be washed off with soapy water. It is now a good time to paint the woodwork if it is intended to do so; if not, that and the glass must be thoroughly washed with warm water. Work of this kind must be planned while out-of-doors' operations cannot be carried on. The *Strawberries* have just been removed to the shelves. We allow them to remain out as long as possible; heavy rains do not injure them, as it is easy to lay the plants down on their sides. This is desirable sometimes, as the undersides of the leaves are frequently attacked by red-spider, and the rains will cleanse them from this. It may be of use to some persons to say that the best varieties for a successional crop are *Black Prince* for the earliest, *Keens' Seed-*

ling next, followed by *President*, *British Queen*, *Frogmore Late Pine*, and *Loxford Hall Seedling*. The orchard-house ought also to be utilised for flowers as well as fruit, and this may be done as a source of profit as well as pleasure. Our large house is now quite filled with *Chrysanthemums*. The plants are all placed on the ground and under the eye of the visitor. In spring, too, the borders may be made quite gay with spring flowers. One cannot always enjoy *Tulips* and *Hyacinths* in the open air in March and April, but in the orchard-house the air may be warm and comfortable while a piercing east wind is blowing. Clumps of them may be planted in the borders, but it is more satisfactory to grow them in pots which can be placed in any position that may be desirable. If the sight of the pots is objectionable it is easy to plunge them. *J. Douglas, Loxford.*

ORANGE HOUSE.

Those who are fond of a tropical atmosphere at this season should take to *Orange* culture. It is very doubtful if it would be a profitable experiment to go in for it on a large scale; but a small house for *Orange* culture ought to be adopted in all large gardens. An *Orange* grove under glass might be very agreeable as a "perfumed promenade," but they will never be common, as confidently predicted some years ago. The climate might be made to suit an invalid, but the high temperature required is not liked by many. I have often urged their culture under glass for dessert purposes at this season, and if a small house can be spared for them they will certainly give much satisfaction. Four kinds need only be grown—*St. Michael's*, *Tangerine*, *Maltese Blood*, and the *Plata* or *Silver Orange*. The trees must be clean to start with, and quite free from mealy-bug or scale. The trouble of cleaning the trees from these pests, if they have taken good hold of them, is very trying to one's patience. We still keep up a temperature of 65°, and admit as much air as possible; but do not syringe much after this, although a moderately moist atmosphere is very desirable to keep the trees in health. *J. Douglas, Loxford Cottage, Ilford.*

VINES.

Where very early thin-skinned *Grapes* take precedence of *Lady Downe's* and other late kinds, the house intended for their culture will now be ready for their reception if they are not already in position. If weight and quality are the first and only points to be considered, the apertures at the bottoms of the pots should be enlarged and some rich turf placed within easy reach of the young roots, which will speedily follow the stimulating liquid with which the *Vines* are fed. Moreover, the pots should be placed on stands of some kind that will not give way under their weight or interfere with the regular turning of the fermenting material used for supplying bottom-heat. For making the stands there is nothing better than common bricks, and for bottom-heat sound *Oak* leaves are well adapted, as they supply warmth and moisture through the early stages of growth, and rich stimulating food at the finish, when the fruit requires all the support that can be given to it. If the rods have not been shortened to the proper length and dressed with styptic this operation must be deferred, as bleeding would weaken them, and it is very easy to disbud when they break. In addition to the *Hamburg*, *Madresfield Court Muscat* is an excellent variety for pot culture, or for planting out in warm internal borders, in which the roots can be liberally fed until the berries show signs of changing colour, when a gradual diminution, combined with a dry atmosphere, is necessary to prevent cracking.

The early and permanently planted *Vines* from which ripe *Grapes* are expected by the end of May should be closed by the middle of the month, or a little before where the *Vines* are young and vigorous, as they do not always break so quickly as old ones that have been forced for a number of years. To economise fire-heat, and to produce a soft humid atmosphere, a good ridge of fermenting material, consisting of leaves and short manure may be placed upon the border and turned over at short intervals, additions being made as the heat declines. Old rods may be tied up to the wires immediately after they are dressed, but young ones, to prevent disappointment, will be the better for being kept in a horizontal position over the fermenting material, where they can be well syringed with tepid water some 10° warmer than the house, which may range from 50° on cold nights to 65° on bright days.

Houses in which *Hamburgs* are hanging cannot be kept too dry; a steady temperature of 50°, with a little warmth in the pipes and liberal ventilation on dry days, will suit them during the fall of the leaf, when, unless the house is well adapted for keeping them, the bunches may be cut, bottled, and placed in the *Lady Downe's* or *Muscat*-house. If late *Grapes* have not finished well, nothing will be gained by pushing the fires after the wood is ripe, neither will a high temperature prevent them from shrivelling when the leaves fall. Where this defect is the result of over-cropping, relief should be given to the *Vines*

by cutting a portion of the bunches at the earliest convenience; but where it can be traced to imperfect drainage or bad borders, no time should be lost in getting out the old soil and relaying the roots in new compost. *W. Coleman, Eastnor.*

PLANT HOUSES.

ORCHIDS.—The inmates of the Mexican-house will now begin to repay by their charming blossoms for the care and attention bestowed upon them through the growing season. The following will now be either in or coming into bloom:—*Odontoglossum Londesboroughianum*, *Barkeria elegans*, *B. Lindleyana*, *B. cyclotella*, *Lælia autumnalis* and *L. albida*. The whole of these plants are first-rate *Orchids*, that should be grown wherever choice flowers are appreciated at this dull time of the year. Certainly the spike of the *Odontoglossum* would be all the better if a little less long, but much may be done to mitigate this defect by allowing the flowering portion to depend gracefully instead of tying it upright to a stake. I have seen a branched spike growing in this manner with the elegance of a *Fern* frond. Water must only be given to this plant through the winter at long intervals, and never should any be allowed to get into the axils of the leaves while watering or they are sure to rot, and in some cases the bulbs also. The best of the *Barkerias* is, no doubt, the deep rose-coloured *B. Lindleyana*, the spike of which would be useful in many ways, but is especially adapted as a spray for the hair. These *Barkerias* when growing should be kept well to the light and always moist. Their roots love to be in the air rather than covered up by either peat or moss. The plants should be fastened to slender rods of wood, the ends of which may be held firm in a pot full of crocks, surfaced with growing sphagnum. After they have done flowering water them just often enough to prevent shrivelling. The individual flowers of both *Lælias* are well enough known, but I question if any cultivated plant has ever produced a really representative spike of what these two plants are in all their vigour and glory when growing naturally. The contrast between the puny, slender spikes we get on our cultivated plants and the sturdy fellows that come over on imported plants, is indeed very great. Add to this, the fact that a thoroughly established plant of either species is a rarity, and I think we are bound to admit that the culture of these two *Lælias* has yet to be hit off. By an established plant, I do not mean one that may have been imported for about two years, and which may have produced a couple of fair spikes and a certain number of roots, as such plants bring over in their back bulbs a reserve of elaborated sap which will build up a young bulb or two in spite of the errors of the cultivator, but a plant which the grower has handled well for five or six years, and which accordingly produces annually good roots and spikes. Without pretending to know exactly how to grow such plants I feel sure that no grower will go far wrong if he acts as follows. Use small well-drained pots, and give but a little of the best peat to root in. Endeavour to keep the roots free from the ravages of insect pests. Place the plants in a house but thinly shaded. Give abundance of air and also water during the heat of summer. Keep the plants on the dry side and cool through the winter. At the present time, with the flowers just opening, the night temperature, should range from 55° to 60° and the day temperature from 60° to 65° by fire-heat, and as much higher as the sun-heat will carry up the temperature, with the house well aired. These plants, if grown in a well aired house, will take almost any amount of sun-heat, and with a moderate supply of water at the roots, and an occasional syringing overhead, will make up far larger bulbs than when grown in a moist, shady position in a close house and kept constantly saturated at the roots. Water must now only be given just often enough to *Dendrobium Falconeri* to prevent undue shrivelling. Many a plant of this splendid *Orchid* has fallen a victim to the over-resting system. To keep it the whole winter through in a dry house without giving it a drop of water will guarantee abundance of bloom the following summer, but the after-growth of such a plant will be miserably weak. In order to obtain a fair show of bloom, and also maintain the plant in health, keep it through the winter close to the roof-glass of the *Cattleya*-house, and syringe it once a week. If rooted in a basket or pot give a good watering about every three weeks. *D. Falconeri giganteum* should be treated in every respect as a *D. Wardianum*.

The following should be the temperatures of the various divisions when maintained by fire-heat:—Cool-house, 48° to 53°; *Cattleya*-house, 58° to 63°; *East Indian*-house, 62° to 67°; *Phalænopsis* division, 65° to 72°. When the external air is such that an unusually large amount of fire-heat has to be used, each house may, especially through the night, be allowed to fall a degree or two. On all bright, clear days, the higher or day temperatures given may be allowed to rise a few degrees by fire-heat, and several by sun-heat. *Joseph C. Spyers, Burford Lodge, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Nov. 8	Sale of Bulbs from Holland, at Stevens' Rooms; and at the Mart, by Protheroe & Morris
TUESDAY, Nov. 9	Sale of Lilium auratum, at Stevens' Rooms Sale of English-grown Camellias, Herbaceous Plants, and Bulbs, at Stevens' Rooms
WEDNESDAY, Nov. 10	Sale of Nursery Stock, at Osborne's Nursery, Fulham, by Protheroe & Morris Sale of English-grown Lilies, at Stevens' Rooms
THURSDAY, Nov. 11	Sale of Nursery Stock, at the Leytonstone Nurseries, by Protheroe & Morris Sale of Imported Orchids, at Stevens' Rooms
FRIDAY, Nov. 12	Continuation of Sale at Leytonstone
SATURDAY, Nov. 13	Sale of Hardy Bulbs and Plants, at Stevens' Rooms

TWO remarkable addresses were delivered before the recent meeting of the British Medical Association at Cambridge, by Sir JAMES PAGET and Mr. LISTER respectively. It might, at the first blush, be thought that addresses by eminent medical men before an exclusively professional auditory would have little interest for practical gardeners. It is, however, far otherwise. Sir JAMES PAGET took as his subject the diseased conditions of plants, while Mr. LISTER discussed the action in promoting disease of those extremely minute plants known in a general sense as Bacteria. Here, then, we have two of the leaders of the medical profession entering upon the domain of the vegetable physiologist, narrating their own experience, summarising the observations and experiments of others, drawing their own inferences, and suggesting their application to the practical business of their profession—in other words, to the maintenance of health, and the palliation and cure of disease.

Practical gardening stands to structural and physiological botany precisely in the same relation that the art of healing does to the structure and physiology of animals. In both cases the best practitioner is he who, having made himself acquainted with the principles or science of his profession, and who, keeping pace with its growth, knows best how to apply the knowledge so obtained to the complex, variable, shifting problems of daily practice. It is very noteworthy that these two addresses should have been delivered at the time when, by a pretty general consensus of opinion, Botany is recommended to be struck out of the course of professional education which medical students must pass through before obtaining their license to practise. It would be out of place here to discuss that matter, but the coincidence is so remarkable that we would fain hope the Medical Council will give to it the consideration it deserves.

Adverting now to the address of Sir JAMES PAGET, the substance of which we propose to reproduce in our own columns, we may remark that in illustrating the diseased processes which go on in the human body by comparing them with similar phenomena in plants he proceeded on a very secure basis—that is, so far as his method of procedure is concerned. In all or any case when we have a complex problem before us the surest means of unravelling it consists in (so far as possible) reducing it to its elements. It may be a sum in arithmetic, a mathematical calculation, a chemical analysis, a piece of mechanism, organic or inorganic—it matters not what. Careful analysis, careful picking to pieces, careful observation of each part separately, of each part in combination with each other part, of each unit with the whole aggregate, will, in proportion to the power of accomplishing all this, afford the surest means of simplifying and explaining what is complex and obscure. It is simply the teaching of common sense to proceed from the simple to the compound. And this is why philosophic medical men, brought face to face with diseased structures of great complexity, and dealing with manifold disordered conditions, hark back to first principles in their endeavour to understand what they see, and to prevent, control, or de-

stroy the diseased structure or the perverted function.

In studying the processes of growth, or repair after injuries, of degeneration and morbid developments, Sir JAMES PAGET, who owes much of his brilliant reputation to his early studies in pathology, goes to the plant, and in it finds many of the same general phenomena of disease as in human beings, but in a form more easily studied, because associated with simpler conditions of life and simpler structure. In some respects, indeed, the simpler organisation of plants presents an obstacle to the student, as he is deprived, or partially so, of the evidence which the nervous system and nervous action of animals provides. We say advisedly "partially so," for, as is well known, living protoplasm exhibits many of the phenomena which we are too apt to consider as the exclusive properties of nerve-tissue. Again, there is nothing in plants comparable to that continuous system of blood-vessels, by means of which the blood permeates into every portion of the body. We do not, therefore, meet in plants with any but remote resemblance to constitutional diseases, such as arise from blood poisoning, fevers, pyæmia, and the like. The cells of plants retain throughout life a much greater degree of separate, independent action than do those of animals, one consequence of which is that disease is more localised in plants than in the case of animals, at least in the first instance. The whole system of the plant does not rapidly become poisoned by injurious agency, but only those portions directly affected; and the spread of the disease to other parts, if it takes place at all, is slower than in the case of animals. In plants growth (including not only mere increase of bulk but development also) may be deficient, or in excess, or it may be perverted. The structure may be disorganised, injured by wounds, poisons, frosts or scalds; it may be preyed upon by parasites, vegetable or animal, or distorted and spoiled by the irritation they occasion. These are the pathological conditions we meet with in plants. In the animal the problem is not only more complex but the study is of necessity restricted by conscientious motives, which no right-minded man will disregard, to say nothing of the vexatious hindrances imposed by well meaning but excessively short-sighted people.

Practical gardeners, and the ordinary consumers of Cauliflowers and Celery, Potatoes or Pine-apples, and even, in less degree, the florists and the flower lovers who dote over their Roses and Carnations, do not realise that the productions they take so much pains to raise, or which they appreciate so highly, are in very many instances the outcome of diseased conditions—pathological phenomena. Yet, when we blanch our Celery, raise our giant Mangels, double our flowers, we do most unmistakably induce unnatural conditions. We destroy the balance of growth, we check the exercise of some functions, and unduly exalt that of others. Of course, we do all this for our own advantage—we have no fear of the Vivisection Act before our eyes, and so we torture and bother the plant just as it suits our convenience or our requirements. No doubt the nett result is beneficial to us, but we may well ask if there are not some drawbacks—whether the plants are not avenged for the treatment we bestow upon them? We know, indeed, that they are. We deliberately put the plants into unhealthy conditions, and then, as a consequence, more or less direct, come the rot, the murrain, the spot, the canker; come disorganised tissues and sterile flowers; come the hosts of fungus and insect parasites, to find an easy prey in the plants which we have caused to assume a diseased condition to suit our purposes. Of course, there is another side to this matter. Gardeners are not only wholesale

poisoners or vivisectioners, they are in other cases wise physicians. When it suits their purpose to do so they raise, they train, they shelter, they feed their *protégés* in a manner which the physician or moralist well may envy. Everything hurtful is banished, all access of evil prevented, all damaging rivalry obviated, every condition of health and strength furnished so far as circumstances allow; and the result of all this is seen in the "splendidly cultivated" specimens our gardens and fields boast of, and in the numerous and healthy progeny in consequence engendered. Oh, that our moralists and doctors could environ human subjects with health-giving conditions—mental, moral, physical—as the gardener seeks in his way to do for his patients.

But we must pass on to note the subject-matter of Mr. LISTER'S address. Under certain circumstances, earth, air, water, our very bodies, teem with living organisms of such extremely minute size that the highest powers of the microscope alone suffice to make them obvious to the eye; other means of observation show the great probability that still more minute organisms exist in myriads. It will suffice for our present purpose to speak of all these as Bacteria. Assuredly our forefathers would have laughed to scorn the idea that there was any use in studying creatures of such infinitesimal minuteness; in our own times the so-called practical man has been known to sneer at and deride such investigations. But what if it be proved that the various processes of fermentation, to which he owes his wine, his beer, his vinegar, depend essentially on minute organisms?—what if it be proved that still smaller organisms interfere with his digestion, and, worse still, putrefy his tissues and poison his life-blood till he, and thousands like him, are laid low with epidemic pestilence! And in a general sense, all this is proved. It is proved that if certain organisms enter the blood, putrefaction and blood poisoning of necessity occur; that if an organism of a certain kind gain entrance one particular form of disease occurs in consequence; and that if some other organism gain access to the body another disease shows itself. On the other hand, it is proved that if these organisms can be kept out no putrefaction, no ulceration, no disease occurs. We cannot, of course, go into particulars here: the general facts are as we have stated them, and they afford a convincing proof of the paramount utility of the study of the forms and life history of these minute organisms. Mr. LISTER has turned his knowledge to practical account, and by its means has sensibly reduced the sum of human misery and suffering. His address contains a brief statement of the facts of the case as at present known, and justifies the hope that the prolonged study of these minute plants and their ways of life may lead to the adoption of practical means of prevention in the case of many fevers and blood diseases as efficacious as properly performed and properly renewed vaccination is proved to be in the case of small-pox.

We alluded above to the close analogy between the methods of practical medicine and those of practical gardening, we may conclude by pointing out another *rapprochement*, unsuspected by most gardeners, we imagine—and that is, that in their investigations into the natural history of these organisms physiologists find it necessary to cultivate them and watch every stage of their growth with as many precautions as the gardener finds it necessary to adopt; but while the latter, by hoeing and "roguing" and other means, manages to isolate the objects of his care, the physiologist is by no means so well able to keep the organisms he is desirous of studying apart from others whose presence is sure to confuse and complicate, and very likely to injure the growth he wishes to study.

— **A FINE CAPSICUM.**—A few weeks ago our correspondent, Mr. MORGAN, of The Butts, Harrow-on-the-Hill, sent us a large and very handsome crimson-scarlet Capsicum, received from Spain under the name of Black Pepper, but which we recognised as the variety of Capsicum which the French call *Piment gros carré d'ouv.* At fig. 112 we give its portrait, not because of its flavour, which was not good, but on account of its very handsome appearance. On this score some of our readers may think with us that it is worth growing as a decorative plant, and be induced next year to add it to their collections. The plant in question affords an illustration of the worthlessness of popular names. We find that it is called Black Pepper, and it is neither black, nor is it a Pepper. It is called Piment, but is certainly no Pimenta. If called by its right name of Capsicum there would be no doubt as to what the plant really is.

different case, the arrangement in the Japanese hand being generally different from those in an Englishman's hand. Mr. FAULDS urges that his new system of palmistry, as we may call it, might be useful in the detection of criminals and for other purposes.

— **SCHIZOSTYLIS COCCINEA.**—What a fine autumnal decorative flowering plant this is when thoroughly well grown. It is quite hardy, but seldom seen in very satisfactory condition, our late miserably cold wet autumns destroying its beauty even where it has grown fairly well. We remember once seeing a grand bed of it a glorious blaze of scarlet in November, in Messrs. LEE's nursery at Isleworth. The fact is, it requires just a little more heat and attention than it receives in our ordinary summers, and to have it in perfection it should be grown in pots. At Holme Lacey, Hereford, the seat of Sir

MAN's examples were not quite so black in colour as they are usually seen, and, as Mr. COLEMAN informed us, they never are black: being grown in the Muscat-house the extra heat may account for this. This Grape, it may be noted, is one of the reputed parents of the Alnwick Seedling, and also, when remarkably well grown at Kempsey, deceived all the pomologists of the time, and was dubbed Kempsey Alicante.

— **EFFECTS OF THE LATE FROSTS LAST SPRING.**—Such destructive frosts as we experienced in this country during the last week of May, in 1866, fell to the lot of the Germans last May, destroying in one night the hopes of hundreds of fruit growers. But even as far south as Athens the cold worked great destruction. This happened, it is true, a great deal earlier in the year (March 15), though it overtook vegetation in full activity. Just thirty years ago, it

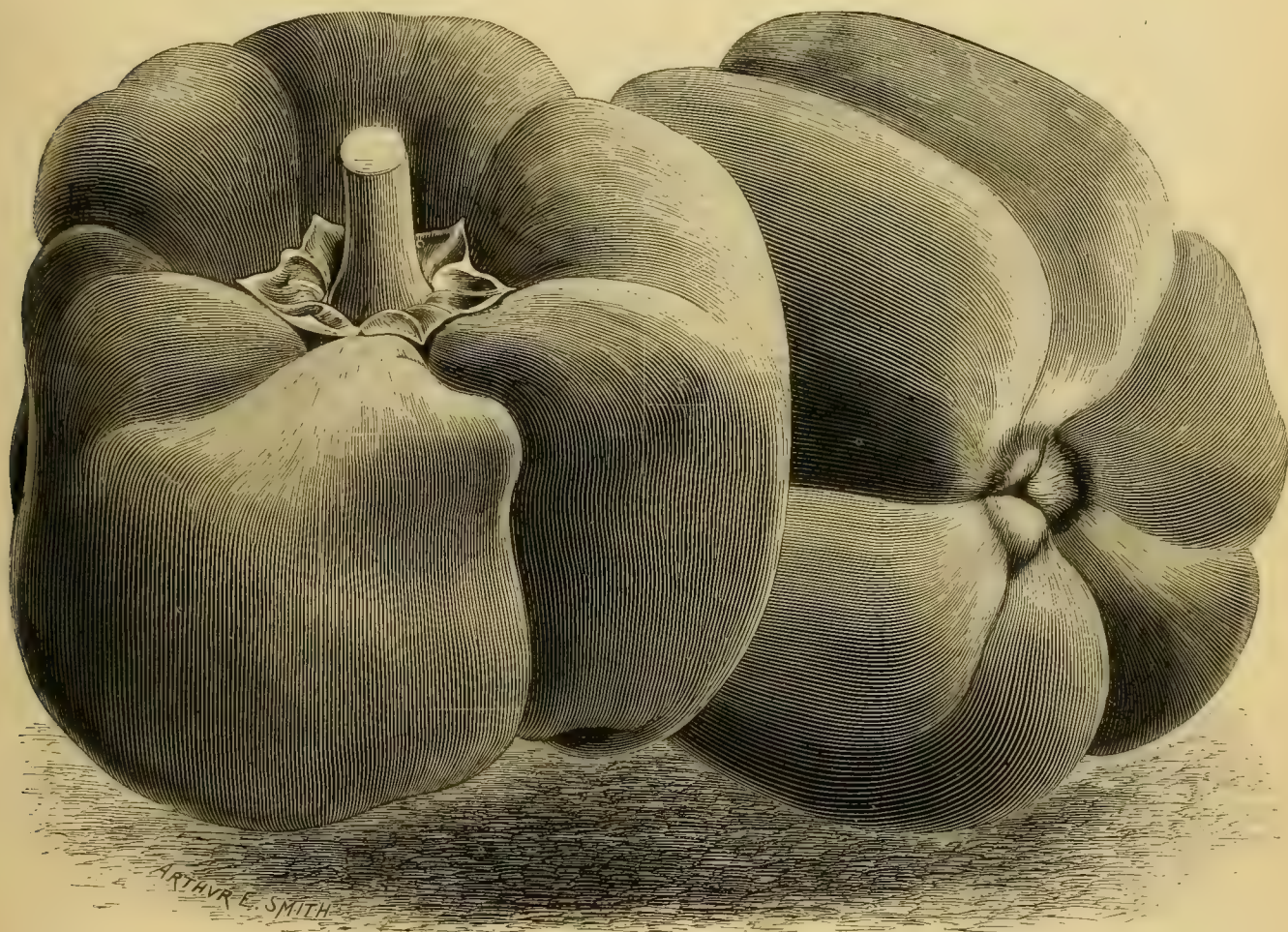


FIG. 112.— SQUARE-FRUITED CAPSICUMS. NAT. SIZE.

— **PLAGIARISM.**—We regret to find that in an unsigned article which appeared in our columns on October 16 a paragraph was inserted substantially the same, we are informed, as one that appeared in *The Gardener* so long ago as 1862. The article in question was sent us by one of our contributors, who, referring to an old note-book, found therein the entry in his own handwriting, without any record of its having been taken from *The Gardener* or any other publication. We regret the occurrence, but considering that scarcely one of those now responsible for the management of the *Gardeners' Chronicle* was in any way connected with it in 1862, it is not very surprising that a single paragraph in a long article should not have been recognised as having been originally published in another journal nearly twenty years ago.

— **FINGER-PRINTS.**—Mr. HENRY FAULDS has been investigating the furrows and ridges of the hands and fingers, and finds that these vary in

H. S. STANHOPE, Bart., we observed the other day a great number of very fine examples in 8-inch pots, some in flower and others to succeed these. Mr. YOUNG, the gardener, repots it in spring and grows it in pots all the year round in good rich soil. At Holme Lacey it is evidently a great favourite for conservatory decoration, and also for the cut flowers, which last a long time in water.

— **THE BLACK MOROCCO GRAPE.**—This remarkably handsome and withal excellent Grape is not often seen in good condition. It is one of the most provoking of Grapes to set, and so gardeners fight shy of it. Mr. COLEMAN, of Eastnor Castle, is not one of the timid set, however, and so there we were pleased to see the Black Morocco vigorously taken in hand. The bunches were all properly set, only Mr. COLEMAN takes some pains to do so, and it is well worthy of the trouble taken, for no more piquant-flavoured or better keeping Grape exists. Mr. COLE-

MAN appears, a late frost devastated the gardens of Athens, and what was regained in that period has been lost again this season. At least, so writes Court Gardener SCHMIDT in the Berlin *Monatsschrift*. All the Palms, ranging from 15 to 35 feet in height, lost their crowns, and thousands of Orange trees and numerous kinds of trees and shrubs, including *Laurus*, *Euonymus*, *Pittosporum*, *Metrosideros*, *Melaleuca*, *Eucalyptus*, were so much injured that it was necessary to cut them down to the ground. Olives, Grapes, and various other crops were more or less damaged.

— **FERN-SPORES.**—When a seed of an ordinary plant germinates it produces, as we all know, a seedling plant, which in essentials is the counterpart of the mother plant, but in the case of a Fern things are different. There the spores, which most people call seeds (but hardly correctly so), produce little green plates, or prothallia, which never themselves grow into perfect Ferns, but remain as little plates, and which,

when examined by the microscope, are found to bear on their under-surface organs analogous to stamens (antheridia), and to pistils (archegonia), and fulfilling the same offices. From their interaction the seedling Fern arises, and grows up in time into the perfect Fern. All this is well known to botanists and Fern lovers. We advert to the subject now for the sake of mentioning that, through the kindness of Professor OLIVER, we were lately enabled to examine some prothallia from a crested form of *Athyrium Filix-femina*, grown by Mr. CLAPHAM, from the upper surface of which sprang small tufts or rosettes of green scales—buds, in fact, similar to the gemmæ of mosses, and which probably would grow up into crested Ferns, and reproduce the variety just as a cutting or graft would do in the case of the Apple. On the lower surface of the original prothallium were seen numerous archegonia but no antheridia. The supplementary scales bore no trace of sexual organs. This reproduction by means of buds produced by the prothallia was observed first by FARLOW, and was included by DE BARY under the head of Apogamy.

— BATH AND WEST OF ENGLAND SOCIETY. —At the Council meeting of this Society, held on October 26, in accordance with a wish expressed by the Tunbridge Wells Local Committee, the show of next year was fixed to commence on Monday, June 6, and to close on Friday, June 10, it being considered that the plan adopted at Worcester of opening on a Wednesday was not suitable for Tunbridge Wells.

— SALVIA PITCHERI. —Under this name Mr. CANNELL sends us specimens of a beautiful blue-flowered *Salvia*, which we are unable to distinguish from *Salvia angustifolia*, as figured in SWEET'S *British Flower Garden*, 2 ser., t. 219, unless it be in the presence of a larger amount of pubescence over the whole of the vegetative organs, and the more crowded verticillasters of flowers, the latter at least of which differences may be the result of higher cultivation. The true *S. Pitcheri*, though belonging to the same section, is compared with *S. azurea*, but the plant before us is far nearer to *S. angustifolia*, which in our younger days used to be not infrequently met with in our best flower gardens, but which, being just too tender to live out-of-doors, has apparently been allowed to drop out of cultivation. Its brilliant blue flowers are, however, very attractive.

— MUSCAT GRAPES. —The very fine crop of Muscat of Alexandria Grapes now hanging in the long range at the Grove Vineyard, Feltham, shows that Mr. WM. COLE has not lost that skill to produce good examples of this fine Grape, which he so often showed when at Ealing Park. Fifteen hundredweight of Muscates may seem to be but a moderate quantity to growers on a large scale, but it is not so much the bulk that tells of the skill of the grower as the quality, and Mr. COLE'S certainly show that they are well grown and ripened. There is throughout fine berries and a rich amber tint, with not an evidence of shanking or shrivelling, whilst the bunches range from 1 lb. to 3 lb. in weight, all of a good serviceable market size, such as suits the salesman and the consumer. The fruit produced by the grafts on Gros Colmar and Lady Downe's is exceptionally good, the bunches large, and the berries fine. Vines that were inarched but two years last spring are now carrying from 30 to 40 lb. of Grapes. As to the influence of the stock upon the fruit, the berries upon the Gros Colmar certainly seem to be sweeter and more juicy than on Vines on their own roots, whilst the Lady Downe's gives the best flavour. Perhaps the grand growth the grafts have shown has much to do with this small divergence, and it is probable that in a season or two the quality and flavour throughout will not differ. The house is low, the roof-rafters spring from the ground level to a back wall; the height inside being obtained largely by lowering the back of the floor. The border is partly inside and partly out. As a house for the growth of market Grapes it is perhaps as cheap a structure as could be devised.

— THE NUMBER OF FREE SEATS IN THE PUBLIC PARKS AND GARDENS OF BERLIN. —Some months ago, when the question arose in the House of Commons respecting free seats in the public parks and gardens of London, we quoted some figures from our contemporary, the *Monatsschrift des Vereines zur Beförderung des Gartenbaues*, &c., purporting to

represent the number of free seats in the public parks and gardens of Berlin. The total number was somewhat startling, being nearly five times as great as that recorded for the public parks and gardens of Paris in 1876; but it was given on the authority of Dr. WITTMACK, as obtained from the official *Reichsanzeiger*. It now appears that this number, 35,357, represents in shillings the cost of the free seats in the public parks and gardens of Berlin — the actual number of free seats being 782; so the comparisons fall to the ground.

— ADDITIONS TO KEW HERBARIUM. —Mr. JOSEPH THOMSON, lately returned from Lake Nyassa, has presented a collection of about 200 species of dried plants gathered in the neighbourhood of the lake. Although the number of species is small, the specimens are very good, and represent a large proportion of novelties. The collection was made chiefly in temperate regions, and is exceedingly interesting as illustrative of the composition of the temperate flora of Southern Central Africa.

— THE OLD CEDAR OF LEBANON IN THE JARDIN DES PLANTES, PARIS. —Many of our readers will be glad to learn that this historical tree was not really killed by frost, as was at first supposed. In a letter to Mr. BENTHAM, Mr. PAUL LAGOT states that although many of the branchlets were killed by the frost the tree has shot again from all its branches. He also mentions that he observed many trees and shrubs killed to the ground in the forests between Paris and Dijon, including Oak, Hornbeam, common Maple, and even some Blackthorn, and many Brambles and Roses.

— RUELLIA PORTELLA. —This is one of those beautiful winter flowering Acanthads for which Kew was famous a few years since. It is now flowering in the T range, and is a very pretty dwarf-growing shrub, with stalked lanceolate velvety leaves marked with a central white stripe, and irregular rosy-lilac flowers with a long bent tube and a flat 5-lobed limb. The plant is a native of South Brazil, whence it was sent to Kew by Senor FRANCISCO PORTELLA. It was figured in a recent number of the *Botanical Magazine*, t. 6498.

— FLOWERS WHICH HAVE WITHSTOOD THE FROST. —The Rev. C. WOLLEY DOD, writing on October 30, says:—"Amongst flowers which deserve honourable mention for having remained uninjured in spite of 10° of frost on several successive nights, followed by gales from the north and snowstorms, two good yellow Composites are conspicuous in my garden—*Helenium autumnale* (sold also as *Coreopsis longipes*) and *Rudbeckia subtomentosa*, *alias* *Actinomeris virginica*. Whilst all the Japanese Anemones and the much-praised *Rudbeckia Newmanni* have had their flowers and buds completely destroyed for the season, the two plants mentioned above are still gay, and even the open flowers were uninjured. Most of the perennial Asters and some Sunflowers, *Helianthus latiflorus*, *H. multiflorus*, and *H. orgyalis* have survived without much damage to the remainder of their flowers.

— THE POISONOUS EFFECTS OF ACORNS. —The crop of acorns that has been produced this year over a considerable portion of the southern counties has not been approached since 1874, in which year it was not equal to that of the present season. The branches of the trees in many cases are quite bent with their weight, and which, there is no doubt, combined with the snow that fell on the 20th, was the cause of so many limbs of the Oaks being broken off—for it is not a usual occurrence to see the branches of this tree give way under a pressure of either snow or wind so much as those of the Elm; and although the Elms as well as other trees suffered considerably, still the Oaks are much more broken than all other trees put together. Whilst this heavy yield of acorns is of some use as food for pigs, it is the reverse of an advantage where the trees are numerous in pasture and meadow land, for when they begin to fall cattle soon eat next to nothing else, as may be seen by their being continually under the trees after them. When eaten in such quantities they have a poisonous effect. Six years ago a good many cattle died through eating them, and now the same thing is again happening. The worst consequences arise after high winds, such as occurred the week before last, when the acorns

were brought down so as to almost cover the ground. Death is caused by violent inflammation of the small intestines immediately below the third stomach, which, when the animals are opened, present a mass almost approaching putrefaction. Those that recover after being affected are usually left in a greatly reduced condition, from which they take some time to recover. At first sight it seems strange that deer, which also eat the acorns, confined in the same parks with the cattle thus affected, are not injured by them. But, no doubt, being less under the influence of domestication, their natural instinct remains stronger.

— A MONSTER BOUQUET. —The President and members of the Municipal Council of Paris have, says the *Times*, sent to the Lord MAYOR a magnificent bouquet measuring 8½ feet in circumference, and representing the arms of the City of Paris, with its motto, *Fluctuat nec mergitur*, in proper heraldic colours. The ship, which bears so striking a part in the city's arms, is composed in the bouquet of white Lilac on a ground of red Carnations, and is surmounted by three *fleurs-de-lis* on a ground of blue Cornflowers, with a coronet of gold-coloured Chrysanthemums. The motto is in damask Rosebuds, with a wreath of Oak leaves and Laurel. The groundwork of the bouquet is of white Lilac and white Carnations, with wreaths, 6 inches deep, of Cornflowers, *Souvenir de la Malmaison* Roses, white Chrysanthemums, Orchids, and Ferns. The bouquet, which was so large that it had to be unpacked in the street before it could enter any door in the Mansion House, is hung with tricolor ribands, with the inscription, "Au Lord Maire, 26 Oct., 1880." It was sent from Paris by special messengers. This is one of those things they do not do better in France, and which we trust will not find imitators here.

— THE TREE SEED HARVEST. —The *Journal of Forestry* states that tree seeds have been harvested this autumn in fine condition; and although in many parts the crop has been a very partial one, in others it has been so abundant that no scarcity is likely to be felt. In the Southern and Midland Counties, Oaks and Beech have been heavily laden, and the Ash, Elm, Lime, Sycamore, and such like, have borne abundant crops. Hollies and Hawthorns are, however, deficient of the load of berries which they bore in the same places last year. The crop of cones on Larch, Scotch Fir, Spruce, and other Conifers, appears to be rather scarce in many districts, but what has been produced is said to be of excellent quality. The newer Conifers generally have also been less productive of cones this season than for some years past.

— VALUABLE PRIZES FOR FRUIT. —We understand that at the great International Fruit and Flower Show, fixed to be held in Edinburgh in September, 1882, under the auspices of the Royal Caledonian Horticultural Society, the General Horticultural Company (JOHN WILLS), Limited, will offer the following prizes for competition:—For the best six sorts of Grapes, two bunches of each, 30 guineas and 20 guineas; and similar amounts for the best collection of twelve sorts of fruit, including two Pine-apples, two sorts of Grapes, two Melons, and six other sorts.

— CAMBRIDGE BOTANIC GARDEN. —A memorial is in course of signature, to be presented to the Botanic Garden Syndicate, representing that it would be a great boon to members of the Senate if they could be permitted to visit the Botanic Garden with their friends on Sunday afternoons during the months of May, June, July, August and September. The memorial has already received many signatures of resident members of the Senate, including several Professors and clergymen.

— THE BLACK MONUKKA GRAPE. —Mr. BARON describes the peculiar Black Monukka Grape in his series of papers on Vines and Vine-culture, in the *Florist and Pomologist*, as an oval black Sweetwater Grape. "Vine.—Growth remarkably strong and robust, requiring considerable space. Leaves large, rugose, with a reddish tinge; the leaf-stalks deep red. A somewhat shy fruiter, young plants seldom cropping well. Fruit.—Bunches very large, frequently measuring 24 inches to 26 inches in length, and broadly shouldered, but of a remarkably regular tapering form, and weighing from 3 lb. to 5 lb. Berries small, long-ovate, inclining to be conical, or in shape like an acorn, measuring ½ inch in length and ⅓ inch

in diameter. It cannot be said to set well, although it is very regular, and the berries are all uniform; yet there are no perfect seeds, only one, or at most two, half-formed, and these being soft, like the flesh, are, as well as the skins, eaten with it. Skin thin, adhering to the pulp, which is firm, fleshy, not melting, yet very tender, and full of juice. In colour it approaches black when well ripened, but is more frequently half-grizzly, and with a thin coating of bloom. History, &c.—The Black Monukka is a Grape supposed to be of Indian origin. It was introduced by the late Mr. JOHNSON, gardener at Hampton Court, and was by him sent to the Royal Horticultural Society, and planted in the great conservatory at Chiswick, where it may be seen. It has been from thence distributed, but is not much cultivated in this country. Cultural Notes.—Ripens freely under the same treatment as Black Hamburgh, and fruits most freely on young rods from established plants. It requires very little thinning. Some years ago I made some interesting experiments in hybridising this Grape with the Black Hamburgh, and succeeded in fruiting fifteen plants, all of singular yet widely different character, but none worthy of cultivation. Season.—Mid-season. Merits.—One of the most pleasant-flavoured and agreeable Grapes to the palate that is grown, and useful to cut up for sweetmeats. But it can only be recommended for cultivation as an extra sort where plenty of means are at command."

— THE BELLE BAUCE PEACH.—Mr. CLAYTON, of Grimston Park Gardens, has recently written as follows in the *Florist* concerning the Belle Bauce Peach:—"This variety is, according to my observations, not so generally grown as from its merits it deserves. We have grown it here both on walls and under glass, and consider it one of the finest Peaches we have. It has a good constitution, is a free setter, the fruits are of a good size and of a handsome appearance, and it is one of the finest-flavoured Peaches I ever tasted. With us it comes into use about ten days later than Grosse Mignonne, when the two are growing side by side. We have a tree in our second Peach-house that has ripened sixteen dozen fine fruits each year for the past two years. It has one drawback to those who have to pack their fruit and send it to a distance—viz., when the fruit is fully ripe its flesh is so tender that it is almost impossible to handle it without bruising. To prevent this, we adopt the usual plan of picking the fruit a few days before it is quite ripe."

— CASTILLEJA INDIVISA.—Among the novelties offered by Mr. W. THOMPSON, of Ipswich, in 1879 was the subject that heads this notice. It was at that time supposed to represent a genus difficult of cultivation, but it is found by experience to be a plant that with a little attention does well, and forms an object of considerable beauty in the garden. It belongs to the half-hardy annuals, and came from Texas. It is not too much to state that it is one of the most effective of recent introductions, and produces flower-bracts of a brilliant scarlet-crimson hue, very rich in colour. In regard to raising seedlings Mr. THOMPSON recommends that the seed be sown early in heat, and transplanted while small, to ensure strong growth, which is essential to the production of fine specimens. The great point to be guarded against is the tendency the plant sometimes shows to throw up the flower-stem prematurely before the root and crown have attained sufficient strength. To effect this, the seedlings should be kept close to the glass, and be afforded abundance of air when the temperature permits. The seedlings should be planted out in good but friable soil at the end of May, and will throw up stems yielding flowers and bracts in long succession. Right up to the middle of October this fine plant has continued in flower, so it is a good autumn as well as a summer flowering subject. It is finely figured in the November number of the *Florist* and *Pomologist*.

— MÈRE DU MÉNAGE APPLE.—The finest specimen of this Apple that has come under our notice was brought to us the other day by Mr. JAMES R. BONNY, of Palmer's Hill House, Southgate. It measured 15½ inches in circumference, and when gathered weighed 26 oz. The tree which bore it was purchased as a small standard about eight years ago at FRASER'S Nursery, Lea Bridge, and has every year since had one half of its roots cut off with a

spade at about 5 feet from the stem. The produce of the tree this year is over 2 bushels of Apples, of the average weight of 14 oz. each—a very remarkable crop.

— AN EXHIBITION OF DAIRY STOCK, produce, and appliances, of Apples, Pears, and other orchard fruits, Potatoes, roots, &c., is to be held in Birmingham at the end of September next. A most influential society has been formed, with the Mayor of Birmingham as President, and many local peers, landed gentlemen, fruit growers, &c., as members of the Committee of Management. A guarantee fund of more than £1000 has already been raised; a special prize fund has been started, and the movement has been launched so promisingly that its success seems already almost assured. The point in which our readers will be chiefly interested is the announcement that the programme includes an exhibition of Apples, Pears, &c. The recent promological display at Hereford shows what is possible in this respect; and no one can question the wisdom of such displays being made at such exhibitions as that to be held at Birmingham. Fruit growing is sadly neglected in many districts where it might be profitably carried on, and of no part of the country is this more true than many of the favoured portions of the Midland Counties. It is, therefore, with pleasure we learn that, in addition to the display of fruit sent for competition, it is intended to include an educational exhibition of well-proved Apples and Pears, which would be Midland Counties' cultivators may safely plant in their gardens and orchards. Mr. EDWARD W. BADGER, *Midland Counties' Herald* Office, Birmingham, the Honorary Secretary of the show, will be glad to receive communications from fruit growers and others interested, offering suggestions, or asking for information.

— IMPORTATION OF POTATOS.—Mr. F. BAXTER, of the South-Eastern Wharf, Southwark, points out, in the *Times*, that "perhaps the most remarkable contrast between the present season and that of last year, so far as regards imports is concerned, is to be found in the fact that whereas between September 1 and October 21, 1879, there came to London alone from the Continent 817,422 bags of Potatoes, this year in the same period we have only imported 157,525 bags, or less than one-fifth of the former quantity."

— THE COMING WINTER.—Mr. SOWERBY writes to the *Times*, from the Royal Botanic Society's Garden, Regent's Park:—"Although it is worse than idle to attempt to predict a severe winter, it may be interesting to record a somewhat remarkable wave of cold at the present moment. Last night the minimum temperature of the air was registered in these gardens at 25°, and this morning (November 2) the lake is covered with a sheet of ice nearly a quarter of an inch thick. During the last ten years this early low temperature of 25° has been recorded in November of three years only—viz., 1871, November 12, 24°·8; 1873, November 13, 25°; 1874, November 22, 24°·5."

— AT THE HEREFORD APPLE AND PEAR SHOW last week there were many dishes of fruit labelled "name unknown." Some of these were sorts well known to commerce, but there were also many others as unknown to nurserymen and fruit growers generally as though they had no existence. No doubt the bulk of them are purely local; some of little or no value; while others, if one might safely judge by inspection, are worthy of general cultivation. Could not something be done to ascertain the merits of these good, but little-known fruits? If the possessors of Apples or Pears of really first-rate quality, but unknown name, would but send dishes of them to the Fruit Committee at South Kensington their merits might be tested by a competent authority, and some kinds worth being rescued from obscurity auspiciously introduced to public notice.

— INTERNATIONAL HORTICULTURAL EXHIBITION AT MANCHESTER.—We learn with reference to the International Exhibition announced to be held next September in the Botanical Gardens at Old Trafford, that the principal exhibitors in this country have already promised their aid to the success of the

project, and a number of Continental growers have also signified their intention to exhibit. About 140 noblemen and gentlemen have consented to be upon the general committee for the purposes of the exhibition; and the Council, at their monthly meeting held on Monday, resolved to call a meeting of the general committee, to be held on the 16th inst. in the Mayor's parlour, and over which the Mayor will preside. The exhibition to be held next year is expected to be extraordinary in its character, as befits an extraordinary occasion, and to this end a liberal measure of pecuniary support will be necessary. A considerable amount is already promised, which will be announced at the meeting named above. Considering the good work the Society has done for so many years, the Council feel that they may confidently appeal to the residents of Manchester and the surrounding districts for aid in carrying out the proposed exhibition.

— THE EPPING FOREST AND COUNTY OF ESSEX NATURALISTS' FIELD CLUB.—We are informed that H.R.H. the Duke of CONNAUGHT and STRATHEARN, K.G., Ranger of Epping Forest, has been pleased to become Patron of this Club. The first of the projected series of Winter Science Lectures will be given on Wednesday evening, November 10, by J. E. HARTING, Esq., F.L.S., F.Z.S., &c., in the Assembly Room, "Bald-faced Stag," Buckhurst Hill, at 8 o'clock. Subject:—"Forest Animals." Ruminants: the red deer, fallow deer, and roe deer. Rodents: the hare, rabbit, squirrel, dormouse, long-tailed fieldmouse and short-tailed vole. Insectivorous animals: the common shrew and the hedgehog. Carnivorous animals: the badger, weasel, stoat, polecat, marten, wild cat and fox.

— THE WEATHER.—General remarks on the weather during the week ending November 1, issued by the Meteorological Office, London:—"The weather during the greater part of this period has been very cold, unsettled, and boisterous, with exceedingly heavy rain at nearly all stations. Snow and hail showers occurred at many of the northern stations, and at Southampton a thunderstorm was experienced. During the last two days, however, the weather was much finer, and the sky comparatively clear. The temperature was several degrees below the mean in all districts, the deficit ranging from 5° to 8°. The thermometer was lowest during the latter part of the period, when a reading of 23° was recorded at Bawtry; in most other places the minima varied from 24° to 29°. The rainfall was less than the mean in "Ireland, N.," and equal to it in "Scotland, E.," but in all other districts the amounts were very large. In the "Midland Counties" the fall was 20, and in "England, N.E." 18, tenths more than the mean value. Bright sunshine was less prevalent than during last week in nearly all places, the percentage of total possible duration ranging from 33 in "Scotland, E." to 18 in the "Midland Counties." The wind has varied greatly both in direction and force. At the commencement of the period it was fresh from the north-east or east on all our coasts, but by the 27th it had shifted to south-west at the extreme south-western stations, and freshened to a gale in Ireland and the south-west of England. On the 28th a severe gale was blowing in all parts of the kingdom—from the west and south-west in the south and south-east, from east in the north, and from the north in the west. By the 29th, however, the wind had moderated on all except our south-east coast, and veered to the north, and during the remainder of the period moderate or fresh westerly or north-westerly breezes were experienced at nearly all our stations.

— GARDENING APPOINTMENTS.—Mr. W. CRUMP, formerly Gardener to the late J. S. SURMAN, Esq., J.P., Swindon Hall, Cheltenham, has taken charge of Beaurepaire Park, Basingstoke, the residence of H. WELCH THORNTON, Esq.—Mr. W. HENRY ROGERS, Foreman for the late Mr. MAUDE, has been appointed to succeed him as Head Gardener to Colonel TEMPEST, of Tong Hall, near Leeds.—Mr. G. W. EDEN, for two and a half years Foreman to Mr. BENHAM, at Henham Hall, Suffolk, has succeeded him as Gardener to the Earl of STRADBROOKE.—Mr. T. FRASER (late of the Royal Horticultural Society's Gardens, Chiswick), has succeeded Mr. BLAND as Gardener to the Earl of KILMOREY, Gordon House, Isleworth.

DISEASE IN PLANTS.

(Continued from p. 560.)

THE FALL OF THE LEAF.

BUT let me now point out another of the lessons which may be read in the decaying leaves; for really the pathologist may find in them as many as the moralist and the poet have found.

The leaves, I have said, are decaying, not dead; and their fall is due to other degenerative yet truly vital changes. Dead leaves do not similarly fall. If a branch have been killed before autumn, you may often see its dead leaves hanging dry and withered all the winter through; and often when leaves are yellow and withered in their last decay, they hang quivering and spinning, ready to fall, yet waiting. Each leaf is literary hanging on a thread, and at last, by a rougher wind, or a drop of rain, or some chance violence, the thread is broken, and the leaf falls.

This breaking of the thread is preceded by degenerative changes in the structures of the leaf-stalk and of the stem adjacent to their juncture or articulation. These changes were first well described by the late Dr. Inman* of Liverpool; they have since been made more fully known by Von Mohl† and others, and the rules observed in them hold, with certain variations, in the fall of petals, bracts, fruits, some twigs, and other deciduous organs.

In their beginning and maturity, the structures of the leaf-stalk and the stem or twig are continuous. There may be some external mark of distinction, but within there is exact continuity; the epidermis, parenchyma-cells, fibres, and sap-vessels are alike continuous. But, in preparation for the fall, changes ensue in the adjacent parts of both leaf-stalk and stem. In both, alike and equally, the cells multiply by partition, and those most nearly adjacent change, by a process of degeneration, into cork-cells, dry, brown and air-holding. Then, as these degenerative changes advance from opposite directions towards the plane of junction between leaf and stem, they meet, and, at their place of meeting, an intermediate layer, or rather two layers, of cells die and become scale-like and part asunder; and now the leaf is ready to fall. It hangs only on the dried thread of fibres and vessels which pass into it from the stem, and the stem is protected by its layers of cork and withered cells from the invasion of parasites and insects.

It would be hard to find a more admirable instance of processes adjacent, coincident, concurrent to a common end, yet independent. We have many of the kind in our pathology, but none more evident, or more within reach of complete study, as of vital processes tending to one end, but not guided from one centre; concurrent, but not concatenate; as independent as are the works of the several bees that make one honeycomb. And thus we may learn from the falling leaves a lesson against thinking that, when we see concurrent morbid processes, we must always expect to find some centre from which all are guided. It is not to be doubted that in organisms such as ours, in which the work is more divided according to its kind, and more distributed to appropriate organs, more is subjected to regulation by central organs, and the working of each part is more influenced by that of all the rest; yet it is not probable that, in any instance, the law is abrogated according to which each elemental structure lives its own life in a method determined by its own inherent properties. There is no law in pathology more important than this: let the falling leaves remind us of it.

And yet one lesson more. That thread on which for a time the falling leaf hangs quivering—that thin bundle of fibres and vessels connecting it with the stem—is regarded as a development from simpler cell-structures. Fibres and vessels are “higher” structures, so much higher that the relation between the vasculares and cellulares in plants may match in importance with that between the vertebrata and the invertebrata in animals. But mark this instance of anomaly in our language. In the elevation from the lowly cellular state to the higher dignity of fibres and vessels, there is, indeed, an instance of that development which makes fit for membership in a higher economy—that is, an economy more nearly like our own. But in the attaining of this fitness there is loss of vital power. There is no such activity

of organic life in the vessels and fibres of wood or bark as there is in the cells around them; they are comparatively unchanging; they cannot multiply; they cannot repair their own injuries; cannot protect themselves; cannot even degenerate as the fading leaf-substance around them does (for even to degenerate needs vital power); they can only die, and the dead thread on which the decaying leaf hangs cannot dispart itself; it must be broken by some alien force. In the taking of higher form the cells seem to have spent their power of forming.

Now we have in ourselves similar instances of degenerations which we call developments. When cartilage becomes bone we usually say it is developed; but this is only because it becomes fitter for a share in a higher condition of our economy. The man is “higher” than the child, and therefore we are ready to speak of everything as ennobled if it contributes to his manliness. But, in respect of texture and self-activity in vital process—in the activity which can work with even a distant supply of blood—cartilage is better than bone; and the change into bone partakes of the nature of a calcareous degeneration; in general utility there is development, in self-activity there is degeneration.

The same may be said of many changes from cells to fibrous structures in ourselves. In teleology there is elevation; in vital histology, degradation. And this anomaly of words is found, not without some confusion of thought, in parts of our pathology. We speak of rickets as a hindered or arrested development, and so, in respect of purpose and utility, it is; but in respect of elemental tissue-life it is rather an arrested degeneracy.

You may study such anomalies of terms in many instances in plants. Let me suggest a thesis for the D.Sc. There are such things as green Roses: show the analogies between a green Rose and a rickety child.*

But now let me end my notices of those changes in plants which you may study for illustration of atrophies and degenerations and retrogressive metamorphoses in ourselves. There are many more, such as the sweetening of fruits, in which, while becoming more useful to ourselves, they acquire chemical conditions less distant from inorganic matter; and the red and yellow tints of ripeness, which are colours indicative of imperfection, or the central softening and decay of fruits very like that of large morbid growths. In all these, as well as in decaying leaves, you may study general pathology when and where you will.

HEALING OF WOUNDS.

I will next speak of the repair of injuries. In studying the processes of repair in plants a first observation may be that, speaking generally, the repair of injuries and diseases is less complete in them than it is in animals, even than in ourselves and others of the highest groups. The processes of repair, so far as they extend, are similar in both, but in plants they rarely extend further than to be defensive or protective to the injured parts; they seldom reach to what may justly be called reparative or reformatory, and much more rarely to anything that may be named reproduction or regeneration of lost parts. Indeed, the only instances of reproduction which I have found recorded are those of the cells of *Vaucheria*,† and of parts of the minute leaflets of the small Moss, *Bryum Billardieri*, and even in these the midrib was not reproduced.‡

In most of the ordinary wounds and other injuries of leaves and stems, as well as of petals and fruits, we see only incomplete repair. Punctures and incisions, and minute excisions, such as in ourselves would be quickly closed and healed, and in a few days be almost unobserved, are, in plants, not closed at all, unless with careful help and in some few species.§ The gaps or spaces are not filled in with new material, there is no tendency to contraction, the edges do not draw together. The healing which does take place in these cases may be compared most nearly with that which, in animals, we see in wounds left open and healing under a scab. The cells and the ends of the fibro-vascular bundles which are cut across empty

themselves and die, and then, becoming dry, they slowly scale off and are detached; or the contents of the cells may ooze out and yield a gummy deposit, which may dry and glaze the surface of the wound. After a time this cracks, and is detached; but while it lasts it serves, as do the dead and dry layers of divided cells, for some protection of the cut surfaces. They serve, alike, for timely protection against invasion by parasites, just as in an animal do the dried blood or the first exudation on a wound left open. Beneath this temporary protective layer the more permanently protective or reparative changes now ensue, and these are usually described as in two methods—the formation of cork and the formation of callus.

In the healing with cork, which is the more frequent in the more succulent parts of plants, the layers of cells next beneath the dead cells or the gummy covering multiply by frequent partition, forming rows of thin-walled flattened cells. Then of these the outermost, lying at and next to the surface of the wound, become cork-cells, their walls thickening and their contents being replaced by air. The more deeply seated remain active, still capable of multiplying and of replacing the cork layer, which now serves as a dermal covering, and becomes continuous with the periderm at the borders of the wound, but does not acquire an epiderm.

In the healing with callus, examples of which may be studied in the closure of the wounded surfaces of slips and cuttings, the living cells next to the surface of the wound grow out into papillæ or short pouches, with or without cell-division. These may form a protective cork layer, and if they approach from nearly adjacent surfaces they may intermingle and unite; or they may form other structures, replacing those injured, as epithelial cells, parenchyma cells, or a new cambium layer, in which bark and wood and fibro-vascular bundles may form.

The best instances of healing after this manner are in the wounds or the splittings or strippings of bark which do not go through the outer layers of the cambium in vigorously growing stems or branches.* In the actively living structures of the cambium, if it be very gently guarded, callus forms by outgrowth and division of cells, somewhat after the manner of granulations, and of these, not only bark but wood, vessels, bark and cork may form and become connected with the similar tissues at the borders of the wound.

These, I say, are examples of the best healing known in plant structures, and they must be worth studying carefully, for they would illustrate many points in our own healings, and are far more apt for minute examination than any injured structures in animals.† Yet even in these the defective reparative power in plants is shown. An animal, if skin be stripped from it, will, if possible, lick the raw part, and then let dust and air and dirt collect and help to make a scab with blood and oozing fluid, and under the scab new skin will form, not indeed perfectly but well. But when bark is stripped only down to the living cambium the raw part must not be touched; mere wiping or touching with the finger, or too much drying, may kill the cambium-cells and prevent all healing; or parasites may attack it and make more mischief. And when we leave these best cases the repairs observed in plants are far less; even small branches or twigs when partially broken do not reunite, unless in a few instances in succulent plants in which the broken surfaces are carefully kept in contact, and even in them no new woody tissue may be formed. You know what is called in surgery a greenstick fracture, and its sure method of repair. In a real green stick no repair of the kind would happen; no ensheathing or intermediate callus would form; at the best the broken surfaces would be covered with a protective layer of cork without an epiderm. I cannot find an instance of repair in plants which even approaches in completeness to the ordinary repair of a broken bone or a divided nerve or tendon in ourselves or any other animal.

(To be continued.)

“UNIVERSAL INSTRUCTOR.”—Under this title Messrs. Ward & Lock are publishing, in penny numbers, a series of articles on various branches of knowledge adapted for those to whom schools and tutors are not available. The work is well got up and copiously illustrated. We strongly urge that it should be ordered for garden libraries, and that young gardeners should make themselves possessors of what promises to be a very useful publication.

* It may be well studied in longitudinal wounds made through bark for the relief of tension. (See H. de Vries, in *Archives Néerlandaises*, t. xi., Haarlem, 1870.)

† I have adopted, chiefly, the descriptions of healing given by Frank (c.c.). I hope that more minute researches and more mutual illustrations between animal and vegetable repairs will soon be published by Mr. Shattock, who has been studying the subject with great care and skill.

* Help may be found in the study of Dr. Ord's thoughtful paper, “On Brownian Movements,” in the *Journal. Microsc.*, June, 1879.

† As quoted from Hanstein by Frank in the *Encykl. der Naturwissenschaften*, Abth. i., Lief. 12, p. 380; and in *Botan. Zeitung*, 1873.

‡ Described by K. Müller in *Botan. Zeitung*, 1856, p. 200, and quoted by Frank, Waldenburg, Beijerinck, and many more, who do not add any similar fact.

§ See Frank, *l.c.*, p. 383-4.

* Henfrey's *Botanical Gazette*, 1849, p. 50, from the “Proceedings of the Literary and Philosophical Society of Liverpool,” No. 4, p. 89.

† *Botanische Zeitung*, 1860, Jahr. 18.

Home Correspondence.

Standard Fruit Trees in Kitchen Gardens.—

As the season has once more come round for planting trees, I would warn all those whom it may concern not to plant standard fruit trees in their kitchen gardens. It is often done, but is, nevertheless, a great mistake, for vegetables are better flavoured and the yield is certainly quite double when the crop is fully in the sun, and the crops can be planted more methodically when the ground is not previously occupied. Nothing seems more natural when a set of fine healthy young trees comes from the nursery than to plant them round the quarters of the kitchen garden. They are young and need protection—they are elegant and will look well; so planted they often are, and all goes well for a few years, but by-and-bye the tree spreads its branches and shades the crops, the roots are greedy and deprive the proper occupants of their proper nourishment. Trenching the ground is also hindered, the roots of the spreading trees coming in the way, so that very often, after years of careful pruning and patient waiting for the maturity of branch and fruit, then, alas! the mistake is discovered when too late—that it would have been far better to have chosen some piece of sheltered ground, and so planted an orchard proper where the trees might grow and bear for generations, and so save all the disappointment I have mentioned. Some twenty-three years ago I saw a thorough illustration of this at Fulham Palace garden; a great number of fruit trees had been planted all around the kitchen garden, but with a new master came a new gardener, and more than half the fine collection was ordered to be cut down, and never shall I forget the sight when I went into the garden and saw the fine collection felled by the axe. My heart positively ached to see fine trees in full vigour, which would have borne fruit for half a century, cut down because they had been planted in the wrong place. When I came here I found good trees in the kitchen garden, but by patience and perseverance I have at last got them all removed, and now can truly say that the ground produces twice the quantity of vegetables, and never more than in this the truth of the old adage—"A place for everything, and everything in its place." *J. Rust, Eridge Castle.*

The Late Snowstorm.—At Stanage Park, Radnorshire, the seat of C. C. Rogers, Esq., on Tuesday, October 26, rain fell during the morning, and about mid-day snow began to fall, with the thermometer standing at freezing-point. About 5 o'clock the trees began to bend and crack with the weight of snow upon them, and about 8 P.M. the cracking and breaking of branch and limb became general. There was a continuation of reports throughout the night, and when daylight came one did not have to search far for evidences of destruction. On the lawn there is a fine Cedar (*Cedrus Libani*) almost spoilt, while the two drives were completely strewn with limbs and branches, some as large round as a man's body. The destruction was the same throughout the woods, but the Oaks suffered most. Some had their tops torn off, others were stripped of nearly all their limbs, and one large Turkey Oak was split right down the trunk, while some of the Hawthorns in the park were torn quite down to the ground. Apple trees, Damsons, Beeches, and Elms all suffered severely. A gentleman who came here to see it told me that he had travelled a great deal through America, where the snowstorms are very heavy, but he never saw such a scene of destruction amongst trees before, and should not have believed it if he had not seen it. The damage must be very great, as there are some thousands of trees quite spoilt. A few miles away from here there was scarcely any snow, but a very heavy rain. *W. Stevens, Gr., Stanage Park.*

Tuberous Begonias.—On passing through the houses at Orwell Park a short time since I noticed some remarkably fine Begonias that had been raised from seed saved from selected plants, and the improvement has been such as to stamp them as one of the best strains it has been my good fortune to see. In crossing the one with the other I find that Mr. Wallis saves only those to breed from that have the largest female flowers, which accounts for his great success, as the male blooms are sure to be proportionate in size, and by blending the various colours endless shades are obtained. At one time it was rare to find any but red, but now there are lovely pinks, salmons, &c., in great variety, as well as yellows and whites; and with such a galaxy of beauty as the whole afford when associated together it is an easy matter to render conservatories and greenhouses much gayer than could be done some years ago, when we had not this useful and showy class of plants to depend on. What further improvement may be effected it is impossible to say, but I find it is the opinion of some that they are still in their infancy, and if so those of the future must be grand indeed, as to look at some of the best strains it would scarcely

seem likely that any further advance could be made. In some quarters they have been recommended for bedding, but that appears almost a base purpose to put them to, and I for one shall not regret if they do not succeed, for to see them in such common use outdoors would, in my opinion, detract from their value for internal decoration, a purpose for which they are specially adapted, both for rooms and the structures already mentioned above. Where they look best, however, is in baskets or vases well elevated, for being naturally drooping they are then seen to advantage, and there is no need to stake and tie them in the stiff way they are often met with when cultivated in pots. For windows they are the plants *par excellence*, and I shall be much surprised if the large market growers do not soon find this out and sell them by thousands, and as they can be got up quick and cheap from seed. That is another reason why they should take them in hand. Why they succeed so well in windows is that they are fond of partial shade like they get there naturally, and being moisture-loving, too, when blooming, they do not get killed or injured by over kindness in watering in the way so common with many. *J. Sheppard.*

Pelargonium tricolor (fig. 113).—This plant, which has been also called *Phytanthus tricolor*, is really a floral gem, but it is now very seldom met with. It is a diminutive plant, a good bush not exceeding a foot in height; it has elegantly shaped lanceolate leaves, which are incise-lobate at the edges, and it has trusses of small flowers, the two upper petals of which are of a blood-crimson, each with a black boss or wart at its base, and the three lower petals are of the purest white. When well grown and well bloomed it is a charming little plant. Being, however, a diminutive plant, it is also a delicate-rooting plant, and hence is more healthy and



FIG. 113. — PELARGONIUM TRICOLOR.

more permanent when grown in a peaty rather than a loamy soil. The truth is, that in a loamy soil moisture hangs too much about the roots in winter, and they rot—as happens with many other soft-wooded greenhouse plants, whose sudden demise sometimes creates surprise on the part of the grower. In all such cases we should advise potting, for the winter season at least, in soil in which peat-earth predominates, and with drainage made thoroughly effective; and in the case of the *Pelargonium* in question, this precaution, with judicious care in the application of water, would bring the plant safely through the winter, and result in the production of specimens which would assuredly need only to be seen to be admired. The plant does not in any case grow large enough to require a very large pot, and it is propagated by cuttings of half-ripened shoots planted in sandy peat. *T. Moore, in "Florist and Penologist."*

Glauclium luteum.—Those who plant *Cineraria maritima* for its ornamental foliage would do well to compare its merits with those of *Glauclium luteum*, the Yellow Horn Poppy, which I think would be more often used if better known. I am in the habit of trying all kinds of native plants, to see how they behave under cultivation, and I have been surprised to find how readily this Poppy when brought from the seashore adapts itself to its changed condition. No place or soils seems to come amiss to it, and on the rockery or the flat border, in sun or in shade, its crimped glaucous leaves are always attractive and look healthy and vigorous. Besides it remains uninjured by frost, and as it bears transplanting well, it may be used for filling beds which would otherwise remain bare in winter. Most persons will prefer to cut off the flower-stalks, but a plant should be left in a sunny corner to ripen some seed, and a single horn contains enough to stock a garden. Why it is called an annual in *Bentham's Handbook of British Flora* I cannot understand; for plants may be seen all over

the shore any day in spring growing vigorously with the remains of the last grass flower-stalks still visible. *C. Wolley Dod, Edge Hall, Malpas, Oct. 30.*

The Weather in Yorkshire.—The sad experiences of your more Southern correspondents have (although at a somewhat later date) visited us here in Yorkshire with unexampled severity. Towards mid-day on October 27 snow fell heavily and continued throughout the afternoon, until by 5 o'clock 6 inches had fallen generally. Many of the trees are still in full leafage, and the effects of the great weight of snow, added to the heavy foliage, is most disastrous. Many of the fine Oaks in the park and pleasure grounds are completely wrecked, every branch being wrung from them by the almost incredible weight. The cracking noise of falling trees and branches in every direction fairly defies description. Such a sight as this morning presented itself is one never to be forgotten. The drives, shubberies, walks, and grounds are quite blocked up with broken branches and fallen trees. Many fine old specimen Oaks that have stood for centuries were completely reduced to skeletons in a few hours, many hundreds of smaller ones are headless trunks. Why the Oak should have suffered so much more than the Elm I do not understand, as both appear heavy in foliage. Fortunately towards mid-night rain took the place of snow, and the trees were speedily relieved of their great burdens, or the effects, had the snow continued longer, must have been appalling. To-day a fearful storm of wind and rain is raging, and many trees that last night were weakened, but escaped, are to-night giving way with a crash. Such wholesale destruction is here quite unprecedented. *J. W. Silver, Farnley Hall Gardens, Otley, Yorkshire, Oct. 28.*

—A violent gale of wind from the north accompanied with sleet and snow visited this district yesterday (October 27). It commenced in the morning and continued all day and night with unabated fury. This morning the park is strewn with large limbs and branches blown down, and a great many trees have been uprooted altogether. The temperature was low all day, only getting to 33° Fahr. To-day it blows as fierce as ever, but is fair, the sun having got through about noon. We have had no snow yet although the hills have been slightly coated several times. *Robert Patterson, Ingmire Hall, Yorks.*

Broccoli.—If the nature of our winters could be accurately foretold we should certainly know how to act with regard to Broccoli, for in the event of a mild winter it is unquestionably a mistake to heel over the plants. On the other hand should the winter prove severe there is no doubt that by this system we do get a certain return for the extra labour involved, and as the saying goes, "Half a loaf is better than none;" so looking at it under this aspect, perhaps it is wise to take the necessary precautions as set forth by Mr. Fish and others. I question very much if many gardeners can boast of such good luck as Mr. Lloyd, especially during the last two winters: I am inclined to think he is favoured with more local advantages than he supposes; this, coupled with his *modus operandi*, as described in your last issue, which I most fully endorse, is perhaps the secret of his success. I am a strong advocate for giving plenty of room to all garden crops, more especially Broccoli, but unfortunately those gardeners so favoured are few and far between, the majority having to crop almost every foot of ground to supply the required demands. My chief object in writing under this heading, however, is to divulge something new (to me at all events) in the way of preserving Broccoli in severe winters. It is this: I have it on authority, that if a quantity of salt be strewed over the surface of the ground underneath the plants no frost will harm them. Whilst admitting the frost-resisting powers of salt, I am not prepared to say that I have tried the experiment, or that it will have the effect described, but is not this an opportunity for experimentalists? *E. Morgan, The Butts, Harrow-on-the-Hill.*

—I do not pretend to be able to answer all the interrogatories put by "A. D." with regard to the merits of Gilbert's Cabbage Broccoli, which is challenged at p. 569, but at least I can answer some of them. In the middle of the keen winter of 1878 Mr. Gilbert very kindly sent me a sample of his Cabbage Broccoli, which I had specially cooked and sent to the dining-room for trial, when it was voted by acclamation a delicious winter vegetable. The flavour is peculiarly agreeable, and there is a crispness about it which I venture to submit "A. D." will have difficulty in finding in any other Cabbage in cultivation. I had orders to obtain a stock of it as soon as it was in the market, and inquiries have been made of me since about this same Cabbage Broccoli—a fact, I think, which speaks in favour of the value of Mr. Gilbert's production. "A. D." wants to be able to "eat his loaf and have it," for he says if you cut it as a Cabbage there is an end of it. Surely he does not expect a Cauliflower to grow on the stump. There is something uncanny about this Cabbage Broccoli though, for if my memory be not

treacherous, a certain cultivator found it changing its character in a singularly vexatious manner from Cabbage to Broccoli, and *vice versa*, within a period so brief as to render the change little short of a phenomenon. Now this vegetable has been submitted to the keen scrutiny of twelve members of the Fruit Committee, and was awarded a First-class Certificate, and my experience of those gentlemen is that things must be pretty good before they are even noticed, much less receive an award of distinction. I look upon Mr. Gilbert's Cabbage Broccoli as a decided acquisition to our stock of winter vegetables, and every practical gardener in the kingdom having a large demand for vegetables should grow it, and in quantity too. *W. Hinds.*

The Acorn Crop.—I can fully bear out your statements at p. 536 as to the acorn crop. It is indeed a most marvellous crop—at least in this part of Warwickshire. In a circuit of 20 miles from this place I never saw such a crop before. Under the old Oak at Milverton (which people say marks the centre of England) I have seen quite a bevy of Arcadian beauties gathering acorns to trim bonnets or make necklaces with. Leaving the centre of England and its old Oak, and journeying southwards by the castle of the King-maker, and onwards past the noble woods of Warwick's lord, you might, if you chose, get down at every Oak on the road and gather acorns at your own free will, as the occupants of many a fashionable equipage from the Midland Spa may be seen doing. Pass onwards still further, and you will come to Okley Wood and see the crop of acorns there, with no one to gather them, dwelling-places in that district being like angels' visits—few and far between. But we will pause awhile, for the road that crosses our path is the old Roman fosse, and that piece of ground over there, with the stunted Oak, is covered with acorns and Whin bushes still in bloom. (And when is the Whin out of bloom? There is a saying about here that when Gorse is out of blossom kissing is out of fashion.) It is the site of a very large Roman camp, and what memories does not this road call up! What Roman legions may not have crushed down the acorns, as we are doing this autumn day? Leaving the old fosse-way, and proceeding on a more modern one, though not so firm and smooth a one as that on which the armies of Cæsar marched, there below us is Offchurch, and its park, with many a noble Oak glistening in the sunshine with its wreaths of acorns, Beeches to their mast, and giant Spanish and Horse Chestnuts loaded with fruit. But we are back at Warwick, and soon past romantic Guy's Cliff and Blacklow Hill, where, around the spot on which Pierce Gaveston was beheaded, many a noble Oak may be seen laden with bushels of acorns. On past the charming village of Leek Wootton, where you will meet troops of children gathering acorns. The children are not quite so fashionable as those who come from the Midland Spa, but they gather the acorns for a far more practical purpose—their baskets, bags and cans being filled with food for the piggy at home. But here I must leave you, although I should like to take you on to Coventry, through the Oak woods of Stoneleigh, over Gallon's Hill, to see the acorns that lie on the road; how many tons of which there must be on the road from Kenilworth to Coventry I should not like to say. *Joseph Murdoch, Leek Wootton.*

Chrysanthemum Hendersoni.—This sweet little golden-coloured Pompon seems proof against all weathers—wind, hail, snow, and frost. It has been in flower with us for the past two or three weeks, and no more desirable plant could be wished for at this season for the hardy garden. The plant is of dwarf habit, and is literally smothered with flowers, which only require to be seen to be admired. It is the most striking dwarf Chrysanthemum I have seen. *H. C.*

The American Tuberose The Pearl.—I can endorse "A. O.'s" high estimate of the great value of the double Tuberose for button-holes and bouquets in general. Our last flowers of it, however, are just exhausted—more's the pity; and I should be extremely obliged if your correspondent, or Mr. Vertegans, would describe the time of potting and treatment that promises to provide a succession of them throughout the winter. We grew our last batch out-of-doors, with the result that our last flowers were used on October 28. It is a very fine variety, and a decided improvement on the species. *D. T. Fish.*

The Sea Eagle Peach.—I notice that one of your correspondents speaks in high terms of the Sea Eagle Peach. It was raised here some years since, and is in all respects a high-class Peach. Your correspondent also refers to the modest manner of its introduction—so much the better. I also notice that some of your correspondents cavil at the flavour of the Early Beatrice and the Rivers' Early York. This is not the

fault of the Peaches, but of the cultivator, which I affirm without hesitation. *T. Francis Rivers.*

Callicarpa purpurea.—This plant is a most lovely object for the decoration of the stove or warm greenhouse at this season of the year. It is the only member of the genus I have seen worth growing, and when well done, as it is in the Botanical Gardens, Birmingham, is a fine thing. Several plants are clothed with the beautiful deep violet bunches of berries, which last a very considerable time. Another plant, and one I have never before seen, is the beautiful *Pratia littoralis*. Some plants growing in pans suspended from the roof of one of the cool-houses are now covered with beautiful rosy-purple berries. This plant is similar in habit to the *Fuchsia procumbens*, is very graceful, and well worth cultivating. *Alfred Outram.*

Rhapis flabelliformis.—This well known old plant is allied to the *Chamærops*, and was, I believe, introduced to this country from China about a century ago. Perhaps it is not so generally grown now as it once was, having doubtless in many cases given place to other varieties of Palms of recent introduction, which have habits of growth of a more elegant and graceful character. It is, however, useful for many purposes, for it is very accommodating as regards both soil and temperature, and can therefore be grown successfully by those who have not the means of growing some of the more beautiful but less hardy species belonging to its natural order. This *Rhapis* is usually classed as a greenhouse plant, as is also I believe the rest of its genus, and it will thrive well under such conditions; but it does equally well, if not better, in a higher and more humid temperature, such as that in which *Areca lutescens* and others luxuriate. With respect to soil it is not over-particular, a rich light loam, with a dash of sand mixed with it, and with or without a little peat added, suits it well. Specimens produce suckers very freely, and consequently soon become dense in habit, which gives them quite a distinct appearance from many other Palms. These suckers are readily furnished with roots, and if carefully severed when young from their parents, potted in small pots, and kept until established in a warm moist compartment, they soon grow into pretty little specimens, suitable either for house or table decoration, for which they are well adapted, and when used for such purposes they invariably give satisfaction. It is also suitable for planting out in conservatories and on rockwork under glass. I once saw plants of it used on a rockery at the end of a large plant stove associated with *Begonias*, *Caladiums*, *Ferns*, *Lycopods*, and other dwarf foliage-plants, where they were evidently perfectly at home, having formed large specimens, which looked to great advantage, placed as they were effectively here and there, overshadowing the other varied foliage. The variegated form is also very useful, and well deserves to be grown if for the sake of variety only. *T. Coomber.*

Fungophobia.—I am, I regret to say, no fungologist, as will plainly appear when I say that I do not even know the Latin name of the fine scarlet *Agaric* [*Agaricus muscarius*, one of the non-edibles] with white spots; therefore what I have to say may very probably be worthy only of the waste-paper basket. I have had a (to me) very remarkable crop of this species on my lawn—perhaps a couple of dozen—growing in a ring about 10 feet in diameter. [Are there any Birch trees about? *A. muscarius* commonly grows in this way in the neighbourhood of Birches.] My largest specimen is somewhat oval, measuring 8½ inches in its largest, 7½ inches in its lesser diameter; the next is circular, 7 inches in diameter. I found that the larger specimens increased very regularly by 1 inch in diameter in each twenty-four hours, growing at the same rate in the night as in the day. [The cells increase more in size than in number.] I observe another very handsome *Agaric* (?); it is of a rich brown, well dotted with white spots; it is much smaller than the scarlet one, not more than about 4 inches in diameter. I should be glad to know its name. [*A. rubescens*, if it turns to warm brown if cut or broken; stem rich brown at base inside; edible. If flesh remains white it is *A. pantherinus*, then not edible.] Is the common *Boletus* (I do not mean *luridus*) a really valuable article of food? [Yes; *Boletus edulis* is very nice—to those who like it—say the Silesians.] I have seen in Silesia at every cottage strings of some *Boletus* hanging up to dry, but the Silesians are extremely poor, and no doubt will eat everything that can be eaten with impunity. [This is correct—like the poor Esquimauxes.] *Alex. Nesbitt, Oldlands, Uckfield, Oct. 25.*

Horticultural Associations.—Notwithstanding the many obstacles that impede the progress and development of the art of gardening it still continues to flourish and ramify its branches in greater or less degree into the most remote corners of the British islands. Gardening is essentially a luxury in its highest and most appreciative sense, and as such it has to suffer sooner than other indispensable neces-

saries of life. It is, therefore, I think, incumbent upon those who not only live by but love the art to endeavour to promote its interests in every way that lies in their power whether the opportunity be great or small. One way of assisting the cause would be by forming Horticultural Associations, wherever there is anything like scope for a scheme of the kind to be carried out. As a body we have no organisation. I do not mean in the sense of trades unionism, for gardening were a mere will-o'-the-wisp if it be not supported by spontaneous action from the humblest member of the craft to the highest luminary in the Council of the Royal Horticultural Society or the richest noble in the kingdom. Well, in how many cases are efforts being made towards instituting associations which shall have for their object the twofold purpose of furthering the cause of gardening as well as the self-improvement of gardeners? Both purposes are twin brothers, if I may be permitted to use the metaphor. A Horticultural Association has a magnetic effect upon gardeners and upon all who love gardening for itself. It brings a number of persons together, who represent different views, different tastes, aye, and different interests. Its primary object is the mutual improvement of its members; next to this it, as it were, binds itself to raise the tone of horticulture in its own neighbourhood by opening communication with those who make different branches of gardening a special study. Its exhibitions are not tainted by trade management, because that element is relegated only to its fair share in the counsels of the association. In other words, gardeners have a voice in the management of their own affairs, and the broad question of horticultural progress is the aim of the association rather than the advancement of "special interests." That such associations are sorely wanted cannot be denied; gardeners are separated from one another to a degree that is injurious both to themselves and their calling. There are, it is true, difficulties in the way of organising such associations in out-of-the-way districts, but there is nothing to prevent us from having a far greater number of them than at present exists. If such associations were more numerous than they are, can it be doubted that the rising generation of gardeners would attain to greater eminence than their predecessors? In fact, want of association, of opportunities for discussion, and other social barriers are not sufficiently taken into account by the general body of horticulturists. As a source of acquiring knowledge the Horticultural Association is of the very first importance. Essays are read by those who have devoted much time and care to the subjects upon which they treat, and discussions take place which cannot fail to open up fresh channels of inquiry into a variety of topics which must be interesting and instructive alike to those who listen as well as to those who take part in the debates. But the Horticultural Association does even more than this: it snaps the cord that circumscribed the field of competition, it removes the narrow line of demarcation which checked progress, it crushes special interests, and floats upon a broad and healthy basis the true interests of all concerned in the welfare of practical horticulture. *W. Hinds.*

Japanese Elms.—In your paper for January 25, 1862, Mr. Veitch gives a list of the principal timber trees of Japan. In this list he mentions (No. 7) *Ulmus* sp., which he considers the finest timber in Japan. Is this *Planera acuminata*? If so, it should be largely planted, as it appears much harder than other non-coniferous Japan trees. *Charles Palmer, Manchester.* [Probably *Ulmus Keaki*, with which *P. acuminata* is synonymous. Eds.]

Japanese Lilies in the Open Border.—It is surprising to read (see p. 568) of the successful establishment of *L. speciosum* and *L. auratum* as hardy open border plants as far north as Lancashire. None of my acquaintance can succeed so well in this part of the kingdom. I have myself tried every variety of soil and situation, and every degree of overgrowth and shelter, without much encouragement. The bulbs, if good and sound, flower well enough the first year, but deteriorate yearly till they disappear, and their places have to be filled with fresh bulbs. A distinguished botanist and horticulturist who has a beautiful garden in the west of Shropshire, and had a fine display of *L. auratum* in August, told me that his experience of this class of Lilies is just the same as mine. Certainly the climate of Cheshire and Shropshire is very different from that of Surrey; but wherever there is a chance of establishing such splendid hardy flowers it is worth while to try. Only I would advise those who fail with these Japanese Lilies, not on that account to despair of Lilies altogether. In the Midland and Northern counties, Lilies which flower in June and July have a better chance than those which flower in September and October, and there are many which do fairly well here. Besides *D. croceum* and *L. bulbiferum* and their varieties, and the old-fashioned Turk's Cap, yellow, purple, and scarlet, there are the many forms of *L. elegans*. There are *L. carnio-licum*, *L. pomponium*, and *L. Szovitzianum*, and *L. testaceum*, or *excelsum*, a fine and vigorous Lily; *L.*

Humboldtii, too, flowers from year to year without deteriorating, and *L. pardalinum* and its varieties flower freely and increase rapidly. Others, as *L. candidum*, *L. superbum*, and *L. canadense*, are more uncertain, being hard to please in the matter of soil. *L. tigrinum*, of which the double form is very beautiful, requires a warm summer to develop its full growth; but all I have recommended may be tried in these parts with a reasonable chance of success. *C. Wolley Dod, Edge Hall, Malpas, Cheshire, Nov. 1.*

Wintering Echeverias.—The out-of-doors system of wintering Echeverias which is recommended by "Cultivator" and others, is, I think, oftentimes more a matter of obligation than choice, from the want of suitable accommodation. Although the Echeveria has been found to be tolerably hardy, it is nevertheless greatly benefited by house or frame accommodation, and if fire-heat is at command so much the better in case of damping. This I think is to be guarded against more than the frost, but expose the Echeveria to both frost and damp and its destruction is inevitable, therefore "without coddling," as "Cultivator's" plea is for not wintering his plants under glass, I would advise all who have the means at hand not to depend upon any make-shift mode of keeping their Echeverias over the winter, at the great risk of loss and disappointment. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Root-pruning Fruit Trees.—A few more words in reference to "A. D.'s" communication on this subject at p. 569. He there attributes excessive growth to the richness of the soil: so far so good; but allow me to say there are other circumstances productive of this evil. I do not know if "A. D." has had any experience in fruit growing on a clay subsoil, if so he must admit the tendency roots have to penetrate the clay. Even in spite of all precautions taken at the time of planting, they oftentimes exceed their proper limits and descend into the subsoil, and what is the result? Experience teaches me that gross, sappy, barren wood must, and does follow this state of things. Under these circumstances then, what is the grower's procedure? for so long as the roots are allowed to grow undisturbed in the clay no digging or forking the surface will have the desired effect, and no pruning or thinning of the branches will remedy the evil. Nothing remains to be done then but to arrest all such exuberant growth by root-pruning, thereby diminishing the flow of superabundant sap, which is the source of all the mischief. Is it not evidence of itself that these vital organs must necessarily be subjected to restraint, in order that the trees may accomplish the purpose for which they are intended? Then as to the effect being only a temporary check as "A. D." assumes, I think I can lay some claim to a knowledge gained from practical experience that fruit trees when once root-pruned effectually do not become doubly excessive in root-power, neither do they require the aid of the surgeon to amputate the roots so often as he supposes. It is now ten years since I conducted the root-pruning of a number of Pear trees on a wall, previous to which they used to produce 5 or 6 feet of wood almost as thick as one's finger, and the more the knife was used the more it seemed to aggravate the evil. The result has been annually since that time good crops of fruit, and the trees still promise to continue their fruitfulness for another ten years without the operation being repeated. Thus I believe that if fruit trees whose roots it is found necessary to prune are done effectually and judiciously they seldom require doing again. I am also led to express a belief that at only one particular stage of a tree's existence is root-pruning most needed, and if then the operation is carried into effect enough has been done in that way for the tree's future prosperity. *E. Morgan, The Butts, Harrow-on-the-Hill.*

—If "A. D." is weak in argument in regard to the subject-matter he has taken up against me, he is strong in protests, as he has now issued another, this time against the remarks I made that we do not plant Apples and Pears for posterity, which may appear selfish to him, but much as most of us may feel for those who in the natural course of things will come after, there is, I think, that feeling of self interest in us all which renders us desirous to reap some of the fruits of our labour; but if his teaching be followed, and we leave trees to grow like Oaks, &c., those advanced in years will not stand a chance of doing this, whereas if they root-prune the wild tendency of the plant is at once checked, and instead of producing wood and leaves it then becomes fertile. The late Mr. Rivers knew this, and by diverting the forces of Nature in the channel he wished them to take, he lived to see all his earlier seedlings bear and show what they were, but if he had left them alone to grow away like giants of the forest, we certainly should not have had our gardens enriched as they are. "A. D." says, excessive sappy growth, needing the corrective of such a drastic operation as the cutting away of the roots, is the product of soil of exceeding richness, and that it is a fault in cul-

tivation to plant trees where such growth is produced; but I never yet saw Pears and Apples do any good in poor ground, and my experience of them is that they require the best. In good unctuous loams they may always be seen with clean, shining bark, bearing fine fruit, which is not the case in districts where they are not so favoured, as there the skins of Pears crack, and Apples never attain the size they should do. "A. D." goes on to remark that the mere act of digging or forking amongst fruit trees is not root-pruning; but, living in the neighbourhood he does, he ought to know that market gardeners do something more, which is, they trench deeply, and in the performance of that operation they are continually root-pruning, and the trees are continuously forming fresh fibres. These are what are wanted to stud the branches with blossom-buds, and the mulching of long manure encourages the fresh feeders upwards by retaining the moisture, and thus assists greatly in swelling and developing the fruit. *J. S.*

Rats in the Garden and How to Get Rid of Them.—I wonder if any one could be found to say a word in favour of the rat. I am unable to give any better account of him than that recently given by Mr. D. T. Fish of the sparrow. I am afraid he is a great deal worse than useless. The fence on one side of our kitchen garden is a quick hedge on a bank. This bank had become the "comfortable and convenient residence" of a number of rats. From it they took their walks abroad, and helped themselves very freely to the roots of such crops as Beet, Carrots, Parsnips, and Turnips, displaying their intelligence and powers of discrimination by selecting the finest roots for operating on, but, unfortunately for us, not staying to finish one before commencing another. Provision for rats not being exactly the object we had in view in the cultivation of these crops, and trapping and shooting being rather slow, we decided to try the effect of a little poison. Some scraps of stale bread were covered with fat and three-pennyworth of Adhead's phosphor paste spread on the fat, the whole was then pushed into the rat runs. Within a week thirty-one rats were found dead, and probably some died which were not found. For such a small quantity of paste I thought the number remarkable—ten a penny must be cheap enough for anybody. As the paste speedily dries up the carcasses, until they resemble pieces of leather, it may, I imagine, be used anywhere. *G. Duffield, Winchmore Hill.*

Alonsoa grandiflora, Monochætum ensiferum, and Linum trigynum.—These three plants are very useful for decorative purposes at this dull season. Those in want of such would do well to pay some attention to their cultivation, for, as seen growing at Welcome, near Stratford-on-Avon, they are lovely objects. Mr. Potts, the gardener there, informed me that he strikes his Alonsoa early in spring, and those so struck are now about 2 feet high and the same through, literally covered with their beautiful scarlet flowers; these, mixed with the bright yellow Linum, produce a grand display. Monochætum is also well worth a place in a warm greenhouse. They will continue to flower a long time; their bright rosy flowers, produced as they are in great profusion, are well worth a place where convenience is at hand. *A. O.*

Outdoor Grapes.—In many of the picturesque hamlets in this part of England, situated on sunny slopes and in warm sheltered nooks, and protected by plantations from the sweep of devastating winds, many of the Vines with which the quaint thatched cottages are covered have this season ripened their fruit. The chief varieties grown are the Black Burgundy, Royal Muscadine, and Grove End Sweetwater, the latter being the most popular. The Vines are now almost all defoliated by the late sharp frosts, the soft points of the shoots being killed; the wood, however, nearer the base of this season's growth, on which will in a great measure depend next year's crop, is firm and well matured. *James Wilson, The Gardens, Charlecote Park, Warwick.*

Loasa vulcanica.—A small bed of this very pretty and uncommon annual has been one of the gayest things in my garden since the middle of August. Its delicate white and orange flowers have taken the fancy of all my visitors, and have daily adorned my drawing-room table till last Wednesday, when the frost laid it low. Its leaves sting worse than Nettles, so it is well to gather it in gloves. *H. Harpur-Crewe, Drayton Beauchamp Rectory, Tring, Oct. 26.*

Carrot Culture.—This is perhaps one of the most essential products of the kitchen garden, and yet how seldom do we see satisfactory crops. After years of experience in growing Carrots under some of the most adverse conditions with regard to soil, I am at length convinced of the necessity of trenching to ensure anything like remuneration in the way of a good crop, and here I would refer your readers to the remarks at p. 523 upon the success

attained by Mr. Ingram, at Alnwick Castle, in the cultivation of this desirable esculent. He there sums up the whole secret of his success in a very few words, every one of which from experience I am able to verify. To those of your readers then, who are unable, through the unfavourable condition of the soil with which they have to deal, to grow Carrots successfully, I would say, follow out Mr. Ingram's plan, and they will be rewarded beyond their expectations. I need not again repeat my *modus operandi*, which corresponds with Mr. Ingram's except in one particular, that is, instead of spreading the ashes on the surface and forking them in, I draw out drills as for Peas, filling up with ashes to the required depth—by ashes I mean those produced by burning the garden refuse—upon which I sow the seed; the result this year is a splendid crop. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Dimorphism in Ficus repens.—Your account of the dimorphism in *Ficus repens* (p. 560) has interested me, because I have an old plant in a small Fern-house, which has developed the large leaves this year for the first time. I cannot think that the dimorphism is explained by the large leaves being found only on shoots away from the wall, because I have seen hundreds of such shoots with the typical leaves only, and I should think the large leaves would remain if those shoots were trained to the wall (but this might be proved by experiment). Whenever I have seen a flourishing plant of this *Ficus* I have asked if there were ever any signs of fruit, and have always been answered in the negative. I was, however, once told (I quite forget by whom) that when the plant fruits it has a different habit and foliage. Is this so? and are these large-leaved branches the fruit bearers? [Probably.] Since writing this I have examined the plant, and find that the large-leaved branches are well furnished with rootlets as the small-leaved. *Henry N. Ellacombe, Bilton Vicarage.*

Eria meirax (Cryptochelilus meirax, Rchb.).*—This curious little Orchid is now in flower at Kew, and although it has not the slightest claim to beauty, its very humbleness and dull colour render it interesting, for it is just one of those obscure plants which scarce any one but a botanist would detect. The leafless pseudobulbs are very much flattened and roundish in outline, the largest being about the size of a sixpence, and about one-eighth of an inch thick; they are dark dull green, with a few simple pale brown fibres, and grow in small dense clusters. The solitary, nearly sessile flower arises from the centre of the bulb, and is turned on its side; it is of a dull brownish-purple, and about one-third of an inch long. The sepals are united into a tube, shortly 3-lobed at apex, the petals and labellum being entirely concealed within it. Altogether it is among the smallest and most singular of Orchids at present in cultivation. *N. E. Brown, Kew.*

Alpine Strawberries.—Taking into consideration the easy culture of this very prolific and useful Strawberry, also the fact of its continuing in fruit till the end of the autumn, is it not strange that it is not more extensively grown in private gardens than it would appear to be from the fact that we very seldom meet with it in such gardens? It may be had in fruit from June to November during favourable autumn weather, but the object in view should be to get it into full bearing by the time the other varieties have ceased to yield an adequate supply to the demand for this always acceptable and delicious fruit. Therefore, under these circumstances, the flower-spikes should be kept cut off until the middle or end of June. The plant is a very free grower, a heavy cropper, and flourishes under the most ordinary treatment. However it pays well for liberal treatment, and, like everything else, if worth growing at all is worth growing well. Therefore, with this object in view, the earliest runners should be obtained, and stopped after they have developed the miniature leaves and crown necessary to the formation of the future plant, this will check the flow of sap, which will then be directed to the consolidation of the crowns, and the strengthening of the young plants generally that are to produce fruit the following year. So soon as these runners have been thoroughly formed into well rooted little plants, they should be detached from the parent plants and planted in rows, raised 3 or 4 inches higher than that of the intervening space, 18 inches apart, and 12 inches in the rows, the soil immediately around and between the plants being firmly trodden, and a couple of inches of half-rotten manure put between the rows and plants. After this, all the attention they require until the following spring, is to remove the runners and keep them free from weeds. If, when the plants commence to grow in the spring, some flints, from a chalk-pit or other source, are placed around and between the plants in the rows, they will not only

* Transactions of the Linnean Society, vol. xxx., p. 148.

give them a neat and somewhat natural appearance but also, in the event of heavy rains, prevent the earth being washed on to the fruit. Moreover, in the event of a dry summer, the stones conserve the moisture, thereby keeping the surface-roots of the plants nice and cool. From plants which have received similar treatment to that which I have here endeavoured to describe, we have gathered daily, with a few exceptions, up to the present date a good dish of fruit, which is conical in shape, the flesh solid, juicy, and rich, with an agreeable flavour even at this late date. I may add in conclusion that any one desiring to have a crop of the Alpine Strawberry next autumn should obtain young plants at once, and plant them in small beds in a south border, and thence in the spring in rows, as above recommended. It must be distinctly understood that an annual planting must be made, and that the plants which have fruited for the first time during late summer and autumn should be hoed up and removed forthwith to the rubbish-heap when they have done fruiting. Should any of your readers be desirous to cultivate this Strawberry and experience any difficulty in obtaining it, I shall be very pleased to let them have a few young plants to start with, providing they make their wants known within a week or two from this date. *H. W. W.*

Single Dahlias.—I think we have not yet fully realised the value of these charming plants. I potted a number last spring in 9-inch pots, and plunged them in the open ground, from which they were removed to the greenhouse before the advent of frost, and where they are now blooming away in the wildest profusion. Their beautiful flowers are most acceptable for cutting purposes; a few of them tell quite a tale of their own, and those especially of Paragon are particularly valuable, not alone for their colours, but because few people know what they are. I have often thought that we do not take half enough out of Dahlias. *T. Smith, Newry.*

Asparagus.—Although Asparagus is generally looked on as perfectly hardy, it will be in the remembrance of most cultivators how disappointing it was last spring, and there can be no question that the weakness of the heads produced and the gappy condition of the beds were due in a great measure to the severity of the winter, coming as it did after an exceptionally wet summer, when the crowns, owing to their unripe condition, were ill-prepared to withstand any great amount of frost. It was the opinion of some that the roots were killed from the excessive rainfall, but then against this they seem to have suffered almost everywhere alike, both in heavy land and light, and it was only in cases where the beds were protected that the produce was in any way at all satisfactory. This may lead many to go back to the old plan of digging out the alleys and casting the soil on the crowns, a practice that is full of evil, as the digging and delving not only cuts off and destroys large numbers of roots that are always to be found there, but, unless the trenches are again filled with litter, lets the frost in below, where it does irreparable mischief. To cover up Asparagus with manure and fresh soil at this season is the right thing to do, as it is a plant which, from its mode of growth, has a tendency to push itself out of the ground, as may easily be seen after taking up clumps for forcing or transplanting, when on examination it will be found that each fresh crown is seated above the old one, and this taking place from year to year must, perforce, after a time elevate them to such a degree as to leave them with very little earth over them, and besides what is going on with the plants in the way mentioned, there is loss of soil also in the cleaning and raking of the beds. The best way, therefore, to treat these is to very slightly prick them over at once with a fork, and then give a heavy dressing of short rotten manure, and over that a good sprinkling of refuse mould or rubbish-heap stuff that has been turned a few times so as to get it well rotted, in which state it has fertilising properties of great value. To kill any weed seeds there may be some salt and lime should be used at the time of turning, and if any river or pond mud and sand can be had to mix with it the Asparagus will be greatly benefited thereby. In forming new plantations it is very important that the ground should be deeply trenched, and although planting should not take place till spring it is always advisable to carry out preparatory work of this kind now, for not only is the ground greatly improved by being turned up and exposed to the ameliorating influence of the frost and air, which disintegrates it, but when April arrives there is no leisure for trenching, and the chances are it then gets planted without. In trenching, it does not necessarily follow that the subsoil should be brought to the top; indeed to do this in most cases would be a great mistake, for were that done, the young plants would have nothing but dead earth to grow in for some time, which would so check and stunt them that they would be of very little use after. The way to prepare the land is to dig and open up a deep wide trench by wheeling back to where the work will finish, all that is taken out of

that and the top of the next, when it will come right all through for keeping the bottom down, which in being turned over should be heavily manured with long dung, and, if close and heavy, have plenty of road scrapings, leaf-mould, or other decomposed vegetable matter worked in as the trenching proceeds. This will keep it open and give the roots of the Asparagus free ingress below where they can find something to feed on during dry weather. To have fine large heads the plants must have proper room, and a distance of a yard between the rows is not too much, nor 2 feet plant from plant, as at those wide intervals they cannot starve one another. *J. S.*

Duchess of Gloucester Apple.—Mr. Killick showed a fine dish of a handsome Apple under this name at Hereford last week. I cannot find any reference to it in Hogg's *Fruit Manual*, or in any of the nurserymen's lists which I possess. Can any reader inform me how long this Apple has been in commerce, by whom it was raised, whether it is known by any other name, and what are its qualities? It is certainly most handsome to look at. *B. W. E.*

Dendrobes.—Such late-growing plants as *D. Bensoniæ*, *D. Parishii*, *D. macrophyllum*, and *D. albo-sanguineum*, will now be near finishing up, and may soon be treated as resting plants. These plants, along with *D. Dalhousianum*, *D. primulinum*, *D. lituiflorum*, and *D. Boxalli* should never, even when resting, be placed in a temperature lower than 50°. When the plants are wintered in too low a temperature their flowers may be freely produced, but the quality is poor, and I have known the cold to turn the base of the leading growths quite black, in which case the plant has been almost killed. *J. C. Spyers.*

GREENHOUSE FLORISTS' FLOWERS.

AZALEAS.—The Azalea is not considered to be a very ornamental plant at this season of the year, and the plants are sometimes pushed into out-of-the-way corners, where they are neglected, and do not get so much light and air as they require. The leaves fall off at this season, too, and further cause the plants to have an untidy appearance if they are not picked off and gathered up about twice a week. The plants, should not be set in out-of-the-way places, but well exposed to the light and air. It is now a good time to fumigate for thrips, and also to syringe the plants thoroughly on the under sides of the leaves: for this purpose they should be taken outside the house and be laid on their sides.

BOUVARDIAS.

These are still exceedingly useful as cut flowers, and the plants are very pretty arranged in the greenhouse. They will not continue for long to produce flowers in an unheated house, although we have a number of pots of some of the free-flowering varieties still doing good service that have not been in heat at all. As the early flowering varieties discontinue to produce flowers, they are removed to any spare shelf in theinery or Peach-house, where they receive but little water during the winter, until it is time to place them in heat to produce cuttings for next season. The later flowering plants may now be placed in a temperature of about 55° at night.

CALCEOLARIAS.

During mild weather the plants make very rapid growth, and they must still be potted on as they require it. See p. 462 for instructions as to potting and watering. Look carefully underneath the plants about once in a week or ten days, and any decaying leaves may be removed without injuring the others that are sound. Give the plants a thorough fumigating whether there is green-fly on them or not. I was once asked, "What is the use of smoking the plants when you can see nothing on them?" The result of not doing it was that they became pretty well covered with aphids when the plants were in flower, when the pest could not be destroyed without also doing much damage to the flowers.

CAMELLIAS.

There will now be an opportunity to look over the whole stock of plants, and wash the leaves with soapy water, and also the stems if they require it. The buds may also be thinned out if there are too many of them. Unlike the Azalea the Camellia does not like too much exposure to air and light, and if exposed to drying winds suffers injury. Even if the plants are not in flower their large deep green glossy leaves are effective amongst flowering plants at this season of the year.

CHINESE PRIMULAS.

The earliest flowering plants are now in flower, and they are very useful at this season of the year just before the Chrysanthemums come in. The single flowering varieties when they form nice plants may be taken into entrance halls or rooms, where they last in beauty for a considerable time. The flowers are of little use for cutting, though double varieties answer very well for this. Mr. Gilbert's variety is the most free grower and has the finest flowers; it is quite distinct from the old variety. The others with a white ground striped and spotted with red are also very valuable for cutting and other purposes. Keep the plants near the glass; and do not apply too much water to the roots now; but if they do not get enough the flowers will not be full-sized. A damp atmosphere and too much water causes many plants to damp off at the neck.

CINERARIAS.

See that the plants are potted on as they require it. It is not worth while to use very large pots, as I have seen them sometimes even in large well managed gardens. Like the Pelargonium very large specimens can be produced in 8½ inch pots; and more flowers are produced in proportion to the leaves than in pots of a larger size. The plants must be placed near the glass now, and the flowering stems should be tied down to the rims of the pots as they advance in growth. At this season, not much artificial heat would be required; but it is sometimes necessary to heat the pipes to cause a circulation of air for the purpose of drying the damp that hangs on the leaves, which in excess causes mould. A frosty night sometimes does injury to them, as they are not so hardy as the Calceolaria.

CHRYSANTHEMUMS.

The earliest flowering varieties are now coming in, and most welcome are the large handsome blooms of such varieties as Elaine and James Salter. I find that many blossoms are injured by a damp stagnant atmosphere; the petals become disfigured by decay spots. It is better not to apply artificial heat to dispel damp, but if it is necessary let the pipes be heated in the day, and cool down towards evening. It is well to be very careful not to spill any water about on the paths or borders. Just use enough to water the plants. Admit plenty of air on all favourable occasions. The specimen plants must now be all trained and tied into the required shape. Even for exhibition purposes it would be better only to support each stem to a neat stick without bending those stems down to get the plants into a shape that Nature never intended they should assume. The difficulty with specimen plants, or indeed any other, is to keep the leaves in a healthy green state from the base upwards. The leaves fall off through two causes principally: mildew is one. The leaves are very often attacked by this parasite, and they should be dusted with flowers of sulphur when the plants are taken under glass to prevent its appearance. The plants at some time or other during their growth may also lack water, and this will also cause the leaves to fall off sooner or later. The fact is, although the Chrysanthemum is one of the easiest grown and hardiest of plants, it suffers as soon as any other from neglect, and will show it at flowering time.

STAGE PELARGONIUMS.

We do not require our plants to be in flower before the middle or end of June, and to obtain this we cut down rather late and repot late. We have not yet potted our plants into their blooming pots, but will probably do so in the course of a week. Some persons recommend doing this in February, but the plants produce less flower and more leaves when they are potted late. Whether the plants are potted or not, see that they are freely exposed to light and air at this season, and that they are not over-watered. Use rain-water if possible—indeed this would be possible in every garden if that precious commodity was not allowed to run to waste. In all our glasshouses there are sufficient tanks, mostly formed of brickwork set in cement, to supply all the water we require; even in dry seasons we do not want for it more than six weeks or two months in the year.

ZONAL PELARGONIUMS.

The plants under glass intended to flower during the dull days of winter should now be coming freely into flower. They require a rather warm, moderately dry atmosphere, with sufficient ventilation. If the

plants are flowering freely, and the pots well filled with roots, it will be as well to give frequent applications of weak manure-water, say at every alternate watering. The young plants for flowering next year may be placed on any shelf in a cool house, and be watered once a-week, or probably not even so often as that. *J. Douglas, Loxford, Ilford.*

Reports of Societies.

Scottish Arboricultural: Oct. 5.—The twenty-seventh annual general meeting of the Scottish Arboricultural Society was held in the class-room of the Royal Botanic Gardens, Edinburgh. Robert Hutchison, Esq., of Carlisle, Vice-President, in the unavoidable absence of the President, the Marquis of Lothian, occupied the chair. A full report of this interesting meeting will be found in the current number of the *Journal of Forestry*. In the course of his introductory address the Chairman thought that experiments might profitably be instituted as to the time in the month when pruning may be done with the least risk of injury from bleeding, and stated, as a result of his own observation, that during the winter months about three days after full moon the sap periodically rises and circulates more vigorously, consequently at that time the tree suffers more from pruning than it would do a week or two later.

An interesting discussion on the "Blister of the Larch" followed, but in the result it was not made clear whether the insect which occasions the blister is the sole source of the mischief, or whether frost, undrained soil, want of timely thinning, and other causes, might not account for the phenomenon.

PRESENTATION TO MR. M'CORQUODALE.

At the annual dinner of the Society a presentation was made to Mr. M'Corquodale, of Scone, on the occasion of the completion of his fiftieth year as a practical forester. "Forty-four of these years," said the Chairman, "have been spent in the management and supervision of the woods and plantations on the extensive estates of the Earl of Mansfield. During that time he has planted and reared many thousands of acres of woodlands with the greatest possible success. Oak, Larch, and Scots Fir are the varieties which he has most largely cultivated, but all other species and varieties of British timber have found a home under his care on the Scone estates, according to their respective suitabilities for the various localities, and with due regard to their nature and merits. Still it will probably be as the pioneer planter of the newer Coniferae on an extensive scale, as a regular forest crop, that Mr. M'Corquodale will be best handed down to future generations. When he first took charge of the Scone woods, the taste for planting ornamental Conifers was just developing—fostered by the splendid introductions of Douglas (himself a native of Scone) and others, from the north-western seaboard of America. Of these noble trees, especially Abies Douglasii, many thousands have been planted as experimental and permanent forest crops by our friend, Mr. M'Corquodale, to whose skill and forethought they will stand as living monuments for generations yet to come. Regarding Mr. M'Corquodale's skill as a practical forester I need say very little, as most of you had an opportunity of judging of this for yourselves by the condition of the woods under his care when the Society visited the woods of the Earl of Mansfield. From his extensive experience Mr. M'Corquodale has frequently been employed as a wood valuator and surveyor, and his opinion upon all matters affecting the laying-out and management of woods and plantations is held in the very highest estimation by landlords and others. His connection with the Arboricultural Society has been already referred to, but I may notice his frequent valuable contributions to its *Transactions*, and to his having been Vice-President in 1857, the second year of the Society's existence, and to his having since been repeatedly elected as Vice-President. Mr. M'Corquodale has also been a frequent and valuable contributor to the *Journal of Forestry*, and this month we find him writing on his favourite theme, Abies Douglasii. He has also been a contributor to several Continental journals, and in 1868 his opinion was solicited by the Hanoverian Government as to the treatment of Larch in Scotland. The training of young foresters has been one of the most important parts of his career. Many young men who now hold important posts abroad can point to him as their preceptor and guide. Indeed, Mr. M'Corquodale may almost say that

"From Greenland's icy mountains
To India's coral strand"

he has sent young men to sow the seeds of common sense and perseverance first learned and imbibed at Scone.

The presentation, which had been subscribed to by a very large number of Mr. M'Corquodale's friends and admirers, took the form of a handsome gold watch, and a purse of 100 sovereigns, with a brooch for Mrs. M'Corquodale. The watch bore the following inscription:—"Presented, along with a purse of sovereigns, to William M'Corquodale, Esq., by his arboricultural and other friends, as a mark of respect and esteem, on the fiftyth anniversary of his career as a practical forester. Edinburgh, October, 1880.

THE HISTORY OF THE ARBORICULTURAL SOCIETY.

Mr. M'Corquodale, in returning thanks, said—I knew from former experience, before the establishment of this Society, that the situation of forester was a very solitary one. In those days it was seldom indeed that foresters

had the opportunity of associating together, or of discussing any subject on forest management. The first impulse that was given to the art of forestry in my days, some thirty years ago, was through the praiseworthy perseverance of Dr. James Brown, on his publishing his book on forest management, and for some years after he was extensively employed in making wood inspections, which also tended very much to the advancement of arboriculture. On the occasion of his appointment as Deputy Surveyor of Dean Forest, before he left Scotland to enter on the duties of his appointment, he was entertained at dinner by his friends within the Regent Hotel, Waterloo Place, Edinburgh, on February 17, 1854, now twenty-six years ago, and I had the honour of presiding at the dinner and of making the presentation. It was at that dinner that the late Mr. Thomson, Deputy-Surveyor of Chopwell Forest, proposed that an Arboricultural Society should be formed, and I seconded his proposal, which was unanimously agreed to. This is the origin of the Scottish Arboricultural Society. In 1837, prior to Dr. Brown's start at Armiton, now forty-three years ago, I turned my attention to the training of forest pupils at Scone, and to the providing of situations for them, which I have continued to do down to this day. I have also been extensively employed in the capacity of wood surveyor to other proprietors, and during that long period I have reported on the existing state and the future management of woods on many estates in Scotland, and also in England. The next important step in the right direction was happily the springing into existence of the *Journal of Forestry*, which is so ably conducted by the enterprising firm of Messrs. J. & W. Rider, of London. But after all that has been done and said, there are still essential elements wanting, which must be obtained to enable forest pupils to complete their arboricultural studies in a fitting manner for the duties of the highest forest appointments at home or in India. This Society should never rest satisfied until these are obtained, viz., a charter, a board for the examination and granting certificates of merit to foresters, and a forest school. If these were secured, I should then consider the Scottish Arboricultural Society in full working order, and then forest pupils might be efficiently trained at home. I hold that with all our intelligence and vigour, the state of our arboricultural education is defective, when we cannot train our own subjects in Britain efficiently for forest appointments in India, but are obliged to send them to Germany or France for instruction.

Feltham Horticultural.—The first show of this newly-formed Society was held in the public hall, Feltham, on the 26th ult., the exhibits being limited to fruits and vegetables. As Feltham is a district where market growers do largely congregate, prizes were specially offered to these as well as to cottagers, and the exhibits of the former class were truly first-rate. In the class for six vegetables there were three exhibitors, the two best collections being nearly even, and in each case were the same kinds staged—Giant Autumn Broccoli, Savoy and white Cabbages, Rosette Coleworts, Brussels Sprouts, and Magnum Bonum Potatoes. In the respective kinds these collections would have taken a lot of beating. Brussels Sprouts, shown in flats, were all that the market growers desire—medium-sized, firm, and even; the Coleworts like small Cabbages, but flat and firm, and perfectly true; the Savoy, of good size and well curled; Cauliflowers not as big as a frying-pan, which is the favoured style with some gardeners, but of medium size, and fit for any one's table. A novel class was that of the best bushel of Potatoes, the prizes being respectively a new wheelbarrow, digging-fork, and spade. All the prizes went to Magnum Bonum, of which now popular market Potato very fine samples were shown. One curious feature displayed in these Potatoes was that the 1st prize lot were very much netted, whilst the second lot was smooth and bright, leading to the belief that they were distinct kinds. Although these bushels were grown in adjoining fields, yet the explanation is found in the fact that the bright samples had been lifted quite a month earlier than the others, and which also, being later planted, had to endure the recent heavy rains.

The best two dishes of Apples were Ribston Pippin and Blenheim Orange, and the second best Blenheim Orange and Warner's King. The cottagers, owing to the novelty of the thing, were sparsely represented, but better results are promised next year. From the Middlesex Industrial Schools, which are situated at Feltham, there came a very fine collection of vegetables, the produce of the boys' labour under the supervision of the able bailiff, Mr. Low. This included a Giant Gourd, grand red and white Cabbage, Savoy, Brussels Sprouts, good white Spanish Onions, very fine and clean Intermediate Carrots, good Beet, Celery, Potatoes, &c. The collection evidenced that vegetable culture is at this large institution a matter of more than passing moment. Mr. Dean, of the Bedford Seed Ground, showed a large collection of Potatoes of some fifty kinds, with Apples, Pears, vegetables, and other things. Although the day was a miserably wet one much interest was taken in the show, and it is anticipated that this first venture will not show any financial loss.

Obituary.

MANY will learn with regret of the death of Mr. JAMES COCKER, Sen., which occurred somewhat suddenly at his residence, at the Morningfield Nursery, Aberdeen, late on Friday night, the 22d ult. Mr. Cocker was the senior partner in the firm of Messrs. James Cocker & Sons, nurserymen and seeds-men, of Aberdeen, and was seventy-four years of age.

He had only been ailing for two days, and his death was caused by an acute attack of bronchitis. The deceased was a native of Insh, and commenced his gardening career by serving an apprenticeship at Castle Forbes. In 1835 he came to Aberdeen, and commenced business for himself as a market gardener at Porthill, removing after a few years to Sunny Park, and entering on the more extensive occupation of a nurseryman. This venture proved a very successful one, as the products of his nurseries were supplied to the leading gentlemen's gardeners and foresters in Aberdeen and the adjoining counties. In a few years Mr. Cocker found it necessary to acquire additional grounds at Morningfield, adding fifty acres to the twenty he had previously occupied, and at a later period a seed-shop was established in the city. For the past twenty years Mr. Cocker's name has been intimately associated with all matters relating to horticulture, and he always took a leading position among exhibitors at the shows held not only in Aberdeen, but throughout Scotland. Mr. Cocker was a thorough florist, and was the first to introduce into Aberdeen, on a large scale, Dahlias, Pansies, and other objects of the florist's care. In 1874 he took two of his sons into partnership with him, and with this accession of strength the business increased, and an extensive trade is carried on as nurserymen, seeds-men, and florists. The nurseries at Sunny Park, Froghall, and Morningfield, are connected with the firm, in addition to the seed-shop. Mr. Cocker closed an honourable career much regretted by a large circle of friends and his fellow-citizens, by whom his genial and gentlemanly bearing was much appreciated.

— We have also to record the sudden death, on Wednesday morning last, of Mr. H. MAY, of the Hope Nurseries, Bedale, Yorkshire. Mr. May, who was about fifty-three years old, was driving to Bedale Market on the previous day, and from some cause or other either fell or was thrown from his trap, and was so seriously injured that he remained unconscious to the hour of his death. He was known to many in private life as an excellent neighbour and most estimable man, and amongst horticulturists as a keen and successful exhibitor of Roses, Pelargoniums and Dahlias at the principal Northern shows. With Roses and Dahlias he not unfrequently came South, and was seldom far from number one in the prize lists. His first essay in London with Roses was made some years ago at the Crystal Palace, when he was unsuccessful, but standing in the afternoon before his flowers he heard one well-known rosonian remark to another—"If this man could only show Roses as well as he can grow them!"—and by that means he gained a hint that he never forgot to profit by in after years.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, NOV. 3, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC DEVIATIONS FROM GLAISHER'S TABLE 6th Edition.		WIND.	RAINFALL.
	Mean Reading from 5 a.m. to 5 p.m.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Dew Point.	Degree of Humidity. Sat. = 100.		
Oct.	In.	In.	°	°	°	°	°	°	S.W.	In.
28	28.77	-.06	57.2	39.2	18.0	46.2	0.5	43.0	90	0.51
29	29.56	-.17	44.1	33.5	10.6	8.3	8.3	13.8	84	0.08
30	29.97	+.24	46.0	28.8	17.2	36.8	0.7	33.0	87	0.00
31	29.91	+.17	49.4	33.5	15.9	41.6	4.8	34.0	75	0.00
Nov.										
1	31.18	+.33	44.2	31.8	12.4	37.6	8.6	30.2	75	0.00
2	29.93	+.17	45.0	25.0	20.0	34.8	11.2	28.0	75	0.00
3	30.08	+.31	47.0	32.1	15.8	39.1	6.7	31.0	74	0.00
Mean	29.76	+.02	47.9	32.0	15.9	39.2	7.1	33.3	80	0.59

Oct. 28.—Generally dull, with frequent showers of rain, breaks in clouds at times. Gale of wind in early morning, strong wind all day. Mild till afternoon. Temperature decreased towards night.*

* 28th.—The readings of the barometer were as follows:—At 9 A.M., 28.67 in.; 10 A.M., 28.61 in.; 10.40 A.M., 28.61 in.

Oct. 29.—A fine day, though dull and cloudy. Cold wind. Rain fell frequently till 9 A.M. Cloudless and cold at night.
 — 30.—A fine bright pleasant day. Cold. Hoar-frost in morning. Cloudless at night.
 — 31.—A very fine day. Clear, cold, and dry. Generally cloudless till evening.
 Nov. 1.—Fine, but generally dull till evening, then cloudless. Very cold. Temperature decreased after noon.
 — 2.—A very fine, pleasant day. Raw cold. Dry. Hoar-frost in morning.
 — 3.—A very fine, clear day. Very cold. Strong wind.

LONDON: Barometer.—During the week ending Saturday, October 30, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.09 inches at the beginning of the week to 30.49 inches by mid-day on the 24th, decreased to 28.79 inches by 10.40 on the 28th, and rapidly increased to 30.17 inches by the end of the week. The mean daily reading were very low on the 27th and 28th, being 0.66 inch and 0.96 inch respectively below their averages. The mean reading for the week at sea level was 29.73 inches, being 0.17 inch below that of the preceding week, and 0.18 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 57½° on the 27th to 43½° on the 26th; the mean value for the week was 49°. The lowest temperatures of the air observed by night varied from 28½° on the 30th, to 39½° on the 28th; the mean value for the week was 34½°. The mean daily range of temperature in the week was 14½°, the greatest range in the day being 19° on the 27th, and the least, 6½°, on the 26th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—24th, 38°·8, —9°·1; 25th, 40°·5, —7°; 26th, 39°·6, —7°·6; 27th, 47°·6, +0°·7; 28th, 46°·2, —0°·5; 29th, 38°·3, —8°·3; 30th, 36°·8, —9°·7. The mean temperature of the air for the week was 41°·1, being 5°·9 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 90° on the 30th, and 74° on the 24th; on the 26th the readings did not rise above 51°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 24° on the 30th, 25½° on the 24th, 27° on the 25th, and 29½° on the 29th; the mean of the seven lowest readings was 31½°.

Wind.—The direction of the wind was mostly from the S.W., and its strength strong, except on the 24th.

The weather during the week was somewhat fine, but generally dull, and very cold, with heavy rains on the 26th, 27th, and 28th, and gales on the 27th and 28th. Fog prevailed on the 24th.

Rain fell on four days during the week; the amount measured was 1.77 inch.

ENGLAND: Temperature.—During the week ending Saturday, October 30, the highest temperatures of the air observed by day were above 58° at Truro, Plymouth, and Brighton, and below 50° at Wolverhampton and Bradford; the mean value from all stations was 54°. The lowest temperatures of the air observed by night were below 28° at Truro, Bristol, Leicester, Cambridge, Wolverhampton, Nottingham, and Hull, and above 34° at Norwich, Liverpool, and Sunderland; the general mean from all places was 28½°. The extreme range of temperature in the week was more than 30° at Truro, Bristol, and Cambridge, and less than 17° at Liverpool and Sunderland; the mean range from all stations was 25½°.

The mean of the seven high day temperatures was above 50° at Truro, Plymouth, Brighton, and Cambridge, and below 45° at Wolverhampton and Bradford; the mean from all places was 48°. The mean of the seven low night temperatures was below 34° at Leicester, Wolverhampton, and Nottingham, and above 39° at Liverpool and Sunderland; the general mean from all stations was 35½°. The mean daily range of temperature in the week was more than 15° at Truro, Plymouth, and Cambridge, and less than 7° at Liverpool and Sunderland; the mean daily range from all places was 12½°.

The mean temperature of the air for the week from all stations was 41°, being 4½° lower than the value for the corresponding week in 1879. The mean temperature was above 43° at Truro, Plymouth, Brighton, and Sunderland, and below 39° at Wolverhampton, Nottingham, and Bradford.

Rain.—Rain fell on every day in the week at Bradford, but generally on four or five days. The falls were very heavy everywhere, causing very destructive floods and loss of property. The heaviest falls were at Birmingham, 3.22 inches; Hull, 3.19 inches; Wolverhampton, 3.05 inches; Bradford, 3 inches; Liverpool, 2.91 inches; Leeds, 2.76 inches; and Bristol and Nottingham more than 2½ inches; the least falls were at Norwich, 1.19 inch; and Plymouth and Cambridge, both 1.51 inch; the average fall over the country was 2.34 inches.

(minimum).—11.30 A.M., 28.66 in.; 0.45 P.M., 28.74 in.; 2 P.M., 28.78 in.; 3 P.M., 28.81 in.; 4.30 P.M., 28.83 in.; 6.30 P.M., 28.84 in.; 8.30 P.M., 28.83 in.; 9.45 P.M., 28.81 in.; 10.30 P.M., 28.83 in.; and steadily increased to 28.87 at midnight.

The weather during the week was generally dull, very cold, and stormy with heavy rains. Gales were very prevalent on the 27th and 28th, doing much damage to trees, &c., and causing many disastrous shipwrecks.

SCOTLAND: Temperature.—During the week ending Saturday, Oct. 30, the highest temperatures of the air observed by day varied from 53° at Perth, to 50° at Glasgow; the general mean from all places was 51½°. The lowest temperatures of the air observed by night varied from 21° at Paisley and 25° at Glasgow, to 34° at Leith; the mean value from all stations was 29½°. The mean range of temperature in the week from all places was 22°.

The mean temperature of the air for the week from all stations was 39°, being 2° below that of England, and 2½° below the value for the corresponding week in 1879. The mean temperature was above 40° at Edinburgh, Greenock, and Leith, and below 37° at Glasgow and Paisley.

Rain.—The falls of rain in the week were the heaviest at Glasgow, 1.15 inch; Edinburgh, 0.98 inch; and Leith, 0.89 inch; and the least at Perth, 0.09 inch, and Paisley, 0.17 inch; the average fall over the country was 0.60 inches.

DUBLIN.—The highest temperature of the air was 51½°, the lowest 26½°, the extreme range 25°, the mean 39½°, and the fall of rain 4.41 inches.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

THE "GEMSENKRAUT," OR CHAMOIS HERB.—"It has a thick, green, trilobate leaf, with a flower so delicate and gauze-like that one wonders how it can bear for a moment the harsh storms to which it is exposed. Its petals have a most curious, crumpled appearance, and are of the softest pink imaginable—almost transparent." The above is an extract from a paper on chamois hunting, which appeared in *Frazer's Magazine* for 1851. Can you kindly tell me what plant is meant? X.

Answers to Correspondents.

AMELLUS OF VIRGIL: *W. W. R.* Aster Amellus fits the description given very well, and is generally recognised as the plant intended.

CALADIUMS: *Anxious.* It matters little while the Caladiums are at rest whether they are placed over or beneath the pipes on the stages. The chief thing is to keep them moderately dry and warm while they are at rest, and then let them have light as soon as they start afresh into growth. They must not be suffered to become shrivelled through drought, nor chilled through removal to a cold house.

CHERRY PLUM: *R. P.* Prunus Myrobalana.

COLEUS: *Anxious.* C. Blumei was introduced in 1850, and C. Verschaffeltii in 1861, but we do not remember by whom. They are both from Java, and with Gibsoni and Veitchii are the parents of the very large and extensive family now cultivated. If you mean the first hybrids, they were raised at Chiswick by Mr. Bause, and the first lot was sold at Stevens' Rooms in April, 1868; the second batch, containing the first golden-leaved varieties, being sold at the same place in December, 1868.

CORDON PEARS: *B. G.* Nothing can be more satisfactory than cordon Pears grafted on the Quince. Some fine examples are to be seen in the gardens of the Royal Horticultural Society at Chiswick, which are trained on wires in the open as upright cordons planted 18 inches apart, and are about 6 feet high. Another excellent example is that at Sir H. S. Stanhope's, Holme Lacy, near Hereford. The trees here were planted about fourteen years ago, and annually bear enormous crops of splendid fruit. They are planted against a south wall, about 18 inches apart, and trained obliquely. Again there is the example of Pears so trained at Barham Court, Maidstone, the fruit from which has been commanding the highest prices this season. Maiden trees, planted this winter, will attain a length of 6 feet in three years, and in five years will cover a wall 10 feet high.

CYCLAMENS: *Sutton & Sons.* The plants are fine vigorous stock for twelve months old, and bear evidence of good cultivation. The varieties are of fair average merit, and considerably varied in character and colour.

DRACENAS DISEASED: *A. D.* We find in the leaves received this morning (Oct. 28) a very minute species of Gloeosporium, with oblong hyaline spores, and we have found the same fungus apparently in diseased leaves of a Dracena in North Wales. The curious concentric lines, which appear to arise from a peculiar disposition of the chlorophyll, we do not find in the Welsh specimen, nor does it appear to be universal. The disease in both cases appears to be the same, but we are unable to say whether the fungus is the cause or consequence; though we are inclined to think that the former is the case, as the same form of disease occurs in different localities, where we can hardly assume that the atmospheric conditions, or cultivation, are precisely the same. *M. J. B.*

"FLOWERING OAK:" *R. L.* We do not know of any flowering shrub that is sometimes called the "Flowering Oak;" but it is possible that such a misleading popular name may have been applied to the Oak-leaved Spiraea, S. quercifolia, or the Oak-leaved Hydrangea, H. quercifolia. Your question came to hand too late to be answered last week.

HOUSE SEWAGE: *Provincial.* Next to solid manure, there is no better fertiliser for vegetable crops than house sewage, but it requires to be used with some amount of judgment. Your other question next week.

INSECTS IN WATER: *W. R. W.* Without seeing the insects we cannot tell you what they are. Don't put anything in the water to kill them, but pass what you want to use with a fine rose through a hair sieve.

NAMES OF FRUITS: *H. Harpur-Crewe.* Your Pear is Beurré Boussoch.—*G. A. S.* 1, Winter Codlin; 2, Hanwell Souring.—*J. B. J.* Apple: Rhode Island Greening; Pear: Chaptal.

NAMES OF PLANTS: *M. Saxifraga crassifolia.* The plant is worth the protection of a hand-lift where the frost is too severe for its flowers.—*J. G. Mitchinson.* 1, Illicium floridanum; 2, Escallonia rubra, the white variety.—*J. C. Tallack.* The Poke-weed, Phytolacca decandra. (See p. 570 of our last number).—*R. Masters.* The Spindle-tree (Euonymus europæus).—*Alfred O. Walker.* Bifrenaria racemosa.—*R. Lloyd.* 1, Boronia pinnata; 2, Davallia bullata; 3, Nephrodium molle corymbiferum; 4, Asplenium Fabianum; 5, Begonia argyrostigma; 6, Begonia heracleifolia.—*G. S.* 1, We presume your plant is a dwarf hardy perennial, and if so, is the Winter Cherry (Physalis Alkekengi); P. peruviana, a tender plant, produces edible fruits, but the calices are not coloured as in yours; 2, Blechnum cognatum; 3, Adiantum cuneatum; 4, Maurandia antirrhiniflora; 5, Cheilanthes elegans.

PYRUS EDULIS: *Diss.* This is a Sorb, whose fruit must be eaten when blotted. The native country of the tree is not known for certain, nor have we ever met with it in this country. What is sold for it is the White Beam.

RAFFIA GRASS, OR RHAFIA FIBRE: *X.* Sagus Ruffia.

RASPBERRIES: *Lady T.* There are several varieties of autumn-bearing Raspberries, but Belle de Fontenay is, we believe, the best. They all bear on the wood of the current year, and should therefore be cut down in spring.

ROMAN HYACINTHS: *Anxious.* They should be planted just like other Hyacinths, except that, being smaller, they require less pot-room. They may be planted a dozen in a pan or half-a-dozen in a 5-inch pot, and when thus massed will be more showy. Plant in moderately enriched gritty loam, and bury under coal ashes till the bulbs have fairly rooted; then remove as required to a forcing pit, where they will come rapidly into bloom.

SURPLUS PRODUCE: *H. M.* We do not undertake to recommend commission agents.

THERMOMETERS: *W. R. W.* Apply to Messrs. Negretti & Zambra, Holborn Viaduct, E.C. Your seedsmen ought to be able to supply you with these instruments.

VINES: *J. C. T.* We should not be anxious about the Vines. The leaves will no doubt soon feel the influence of the cold weather we are getting, and fall off; you can then prune, and start them with a shorter interval between than you have hitherto in the habit of allowing.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—Dammann & Co. (Portico, near Naples, Italy), Wholesale Catalogue of Garden and Flower Seeds, Bulbs, &c.—James Cocker & Sons (Aberdeen), Descriptive Catalogue of Roses.—E. P. Dixon (57, Queen Street, Hull), Catalogue of Roses, Fruit, Forest, and Ornamental Trees and Shrubs.—S. Fox Armitage (Nottingham), Catalogue of Flower, Vegetable, and Agricultural Seeds, &c.—John Carter (Keighley, Yorkshire), Catalogue of General Nursery Stock.

COMMUNICATIONS RECEIVED.—H. W. W.—D. T. F.—Diss.—W. H.—W. W. H.—A. D.—J. R. J.—H. Trussler.—W. C.—R. L.—T. B.—W. E.—J. N. C.—C. E. F.—J. B.—W. M.—R. F. C.—W. Cobb.—G. H.—A. B.—J. T. B.—A. Bradley.—J. P.—J. H.—R. M.—F. R.—A. S.—A. M.

Markets.

COVENT GARDEN, November 4.

Business remains quiet, with scarcely any alteration in prices. Large quantities of American and Canadian Apples continue to arrive, the better sorts realising higher prices, but the bulk reaches us in poor condition, showing little signs of keeping. The supply of home-grown Apples is falling off, growers finding it pay them better to send their produce earlier to market. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0 5 0	Melons, each	2 0 3 0
Cobs, per lb.	1 9 1 10	Peaches, per doz.	9 0 18 0
Grapes, per lb.	3 0 4 0	Pears, per dozen	12 6 4 0
Lemons, per 100	6 0 10 0	Pine-apples, per lb.	2 0 5 0

VEGETABLES.—AVERAGE RETAIL PRICES.

s. d. s. d.	s. d. s. d.
Artichokes, Globe, per doz. 3 0 4 0	Herbs, per bunch . . . 0 2 0 4
Asparagus, Fr., badl. 1 6 2 0	Horse Radish, p. bun. 4 0 0 0
Aubergines, per doz. 3 0 0 0	Ficous, Cabbage, per doz. 0 6 1 6
Beans, French, p. lb. 0 6 0 0	Mint, green, bunch. . . 0 4 0 0
Beet, per doz. 1 0 2 0	Mushrooms, p. bx.-kt. 1 6 2 0
Cabbages, per doz. . . 1 0 2 0	Onions, per bushel. . . 5 0 0 0
Carrots, per bunch. . . 0 4 0 6	— Spring, per bun. . . 0 6 0 0
Cauliflowers, Eng-lish, each 0 3 0 6	Parsley, per bunch. . . 0 4 0 0
Celery, per bundle . . 1 6 2 0	Radishes, per bun. . . 0 2 0 0
Chilis, per 100 3 0 0 0	Small salad, pun. . . 4 0 0 0
Cucumbers, per doz. 6 0 0 0	Spinach, per bushel 2 6 0 0
Endive, per doz. . . . 1 0 1 6	Tomatos, per lb. . . . 0 9 1 0
Garlic, per lb. 1 0 0 0	Turnips, new, bunch. 0 4 0 0
POTATOS:—Kent Regents, 8s. to 10s.; Champions, 6s. to 8s.; Early Rose 6s. to 7s.	Vegt. Marrows, doz. 2 0 0 0

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Asters, per dozen . . 6 0 0 0	Evergreens, in var., per dozen . . . 4 0 18 0
Begonias, per doz. . . 6 0 12 0	Ferns, in variety, doz. 4 0 18 0
Bouvardias, per doz. 12 0 24 0	Ficus elasticus, each 1 6 7 6
Chrysanth., p. dozen 6 0 18 0	Foliage Plants, various, each 2 0 0 6
Cyclamen, per doz. . . 12 0 18 0	Fuchsias, per dozen 9 0 12 0
Cyperus, per dozen 6 0 12 0	Hyacinth, Rom., doz. 15 0 18 0
Dracena terminalis 30 0 60 0	Myrtles, per doz. . . 6 0 12 0
— viridis, per doz. . . 12 0 24 0	Palms in var., each 2 6 21 0
Epiphyllum, per doz. 18 0 36 0	Primula, single, per dozen 5 0 6 0
Erica gracilis, dozen 9 0 18 0	Solanums, per dozen 6 0 18 0
— caffra, per doz. . . 8 0 12 0	
— hymalis 12 0 36 0	
Eumonymus, various, per dozen 6 0 18 0	

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Abutilon, 12 blooms . 3 0 6 0	Mignonette, 12 bun. 4 0 9 0
Arum Lilies, 12 blms. 6 0 9 0	Narcissus, Paper-White, 12 sprays. . 4 0 6 0
Asters, 12 bunches . . 9 0 12 0	Pelargoniums, 12 sprays 1 0 1 6
Bouvardias, per bun. 1 0 3 0	— zonal, 12 sprays 6 0 9 0
Camellias, per dozen 4 0 9 0	Primula, double, per bunch 1 0 1 6
Carnations, 12 blms. 1 0 2 0	— single, 12 sprs. . . 0 1 6 0
Chrysanth., 12 bun. 6 0 12 0	Roses (indoor), doz. 1 0 6 0
— 12 blooms 6 0 3 0	— outdoor, 12 bun. 9 0 18 0
Epiphyllum, 12 blms. 1 0 1 6	Stephanotis, 12 spr. . 9 0 15 0
Eucharis, per doz. . . 4 0 9 0	Tropaeolum, 12 bun. 1 0 3 0
Gardenias, 12 blms. . 5 0 9 0	Tuberose, per dozen 1 6 3 0
Heliotropes, 12 sp. . . 6 0 1 0	Violets, 12 bunches. . 1 0 2 0
Hyacinth, Roman, 12 sprays 3 0 4 0	— Neapolitan, Fr., per bunch 3 0 4 6
Lapageria, white, 12 blooms 4 0 6 0	— Czár, Fr., bunch 1 0 2 0
— red, 12 blooms . . 1 0 3 0	
Lilac, Fr., per bunch 8 0 10 0	

SEEDS.

LONDON: Nov. 3.—The market to-day was thinly attended, with but little business doing. Clover seeds are still neglected; but there is more inquiry for Trefoils. French Italian commands an advance of 1s. per hundred-weight. Good Sanfoin is scarce. Owing to the improvement in the state of the weather, there is a better sale for winter Tares. Blue Peas show to-day a further rise in value. Haricot Beans are firm. Rye meets with an increasing inquiry for export. Canary seed is steady. There is no change in either Millet, Hemp seed, Buckwheat or Linseed. For wrinkled seed Peas there is a good request at rates which would prove remunerative to the grower. Some new white runner Beans have now come to hand, and are offering on moderate terms. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

HAY.

Tuesday's Whitechapel Market report states that there was a better trade for fodder, quotations ruling firm. Supplies were moderate. Prime Clover, 100s. to 128s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 110s.; inferior, 30s. to 70s.; and straw, 30s. to 40s. per load. With a fair supply of hay and straw on sale, the trade on Thursday ruled steady, and Tuesday's prices were firmly maintained, straw advancing 4s. per load.—Cumberland Market quotations:—Superior meadow hay, 100s. to 114s.; inferior, 60s. to 84s.; superior Clover, 126s. to 135s.; inferior, 90s. to 105s.; and straw, 40s. to 44s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that supplies have been good, and the trade remains quiet, prices showing no material change. Scotch Regents, 80s. to 90s. per ton; do. Champions, 65s. to 70s.; Kent Regents, 100s. to 110s.; do. Champions, 70s. to 75s.; Victorias, 100s. to 110s.—Last week's imports into London included 35,857 bags from Hamburg, 628 bags Rotterdam, 4545 Antwerp, 990 bags Harlingen, 58½ tons Harburg, 48 tons Barleue, 342 bags 389 sacks Boulogne, 10 baskets Bordeaux, and 54 baskets Rotterdam.

COALS.

The following are the prices current at market during the week:—East Wylam, 16s. 6d.; Ravensworth West Hartley, 14s. 9d.; Walls End—Bell's, 17s. 3d.; Hetton, 18s. 6d. and 19s.; Hetton Lyons, 17s. and 17s. 6d.; Lambton, 18s. and 18s. 6d.; Wear, 17s. and 17s. 6d.; Tunstall, 17s. 6d.; Harlepool, 18s.; Radford Navigation, 16s.; Haswell, 18s. 6d.; Hawthorns, 17s. 3d.; South Hetton, 18s. 6d.; Tees, 18s. 3d.

Government Stock.—There was no business done on Monday at the Stock Exchange, the 1st of November being a holiday there. On Tuesday the closing prices of Consols were, for delivery, 99½ to 99½, and 99½ to 99½ for the account. Wednesday's figures were 100 to 100½ for both account and delivery.—The closing quotations on Thursday were, for delivery, 100½, and 100½ to 100½ for the account.

THE MOST SUPERB ROSES

that money can buy.
Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Raspberry Canes.

MR. R. BATH, Crayford, Kent, begs to announce he is now looking Orders for his famous "EASTLY CANES," which will be ready for delivery in a few weeks, at 4s. per 100. Cheque or P.O.O. with order.

FOR ABSOLUTE SALE, having to give up the land, strong transplanted Deciduous TREES, up to 10 and 12 feet, 4s. to 6s. per dozen: Standard APPLES, from 6 to 8 feet, 6s. to 9s. per dozen, or from 45s. per 100; other Nursery Stock correspondingly cheap. For LIST apply to T. L. MAYOS, Nurseryman, Hereford.

SEED POTATOS.—W. DRUMMOND & SONS, Stirling, N.B., beg to offer a few Tons of Myatt's Prolific Ashleaf Kidney, and Early Fortiford Potatos. Prices on application.

LILIES OF THE VALLEY, 100,000, 3-yr. roots, extra strong, fit for immediate Forcing—best variety for Early Forcing. For price apply to T. JANNOCH, The Lily Nursery, Dersingham, Norfolk.

The Nurseries, Elgin.—Established 1822.

AND A. MORRISON offer the following

Transplanted and other Trees:—

ALDER, incana, transplanted, 18 to 30 inches, fine.

glutinosus, transplanted, 18 to 30 inches, fine.

ASH, 1-yr. seedling, strong.

common, transplanted, 9 to 12 and 12 to 18 inches.

Mountain, transplanted, 1½ to 2, 2 to 3, 3 to 4, and 4 to 6 feet, fine.

APPLES, Crab, 2-yr., fine.

transplanted, fit for working.

ELM, Scotch, 1 and 2-yr. seedlings, strong.

LABURNUM, Scotch, 1 and 2-yr. seedlings, strong.

LARCH, true native, 1-yr., strong; 2-yr. seedlings.

transplanted, 9 to 12, 12 to 18, and 18 to 30 inches, fine.

MAPLE, English, transplanted, 12 to 18 inches.

Norway, transplanted, 12 to 18 and 18 to 24 inches.

PINUS AUSTRIACA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., strong and fine.

LARICIO, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., strong and fine.

MARITIMA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr., strong and fine.

MONTANA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., strong and fine.

SYLVESTRIS (see Scotch Fir).

PEARS, 2-yr. seedlings, fine.

transplanted, fit for immediate use.

POPLARS, sorts, transplanted, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.

FIR, Scotch, true native, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., transplanted, very fine.

SYCAMORE, 1-yr. seedlings, strong.

transplanted, 1 to 1½, and 1½ to 2 feet.

ARBOR-VITE, American, transplanted last year, finely rooted, 1 to 1½, 1½ to 2, and 2 to 3 feet.

NEW ENGLISH ROSE,

H.P. MRS. JOWITT (Cranston's).

First-class Certificate awarded by the Royal Horticultural Society, South Kensington, July 27, 1880.

First-class Certificate awarded at Wirral Rose Show, July 24, 1880.

First-class Certificate awarded at Shrewsbury, July 28, 1880.

First-class Certificate awarded at Liverpool Rose Show, July 31 and August 2, 1880.

We are now booking orders for this superb New Rose, to be sent out this Autumn. For description see our new ROSE CATALOGUE, now published.

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Usual Discount to the Trade.

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COCOA-NUT FIBRE REFUSE,

3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.

LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack;

5 sacks, 25s.; 12 for 45s., or 36s. per ton.

BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 or 40s., or 34s. per ton; sacks, 4d. each.

COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.

YELLOW FIBROUS LEAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.

SPHAGNUM MOSS, 8s. 6d. per sack.

Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

174, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

FIBRE REFUSE, for Gardens, Potting, &c.

4 bushels for 1s., bag included. Orders by post punctually attended to.—G. HARDING, 23, Stepney Green, E.

SUPERIOR BAGSHOT PEAT.—Brown or

Black Fibrous Peat, of the finest quality for Rhododendrons, Azaleas, Orchids, Ferns, &c., price 4s. 4s. per 6 tons, loaded on trucks at Camberley Station, S.W. R.—Address, W. TARRY, "Golden Farmer," Farnborough Station.

PEAT, for Rhododendrons, &c., of excellent

quality, on rail, Ringwood Station, Hants, in trucks of 4 tons, 4s.; do. coarse and fine SAND, 2s. per truck; selected

Peat and compost for choice plants. Fresh gathered SPHAGNUM, &c. Chief Office and Depot, Ringwood Station, Hants.

F. G. GATERELL, Manager.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6s. per truck. **BLACK FIBROUS PEAT**, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton. Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Simple bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each. Fresh SPHAGNUM, 10s. 6d. per bag. WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, 4s. bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, free on to rail, 4s. 3s. J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

Reduction of Prices.

COCOA-NUT FIBRE REFUSE.—As supplied to all the Royal Gardens and principal Nurseries. Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; a destroyer of Slugs and Insects. Sold in bags, about 4 bushels, at 9d. per bag. Orders for 15 bags, 10s.; 30 bags, 17s.; 100 bags for 50s. (bags included). Delivered free to any Station in London. Vanloads at the Works, 2s. Ditto, delivered by our vans within 5 miles, 8s. Railway trucks filled at 18s., 2 trucks for 30s., free to any Station in London. Terms Cash. Post-office Orders payable at West Ferry Road. GEO. WHITTLE, Janet Street, West Ferry Road, Millwall, E.

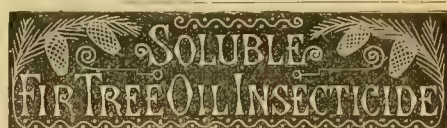
COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons, Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1s. each; 15 Sacks, 12s.; 30 Sacks, 20s. (all Sacks included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 300 bushels), free on rail, 25s. Terms cash with order.

CHUBB, ROUND AND CO.,

Fibre Works, West Ferry Road, Millwall, London, E.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).



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of all INSECTICIDES. Sold by all Seedsmen and Chemists. Bottles, 1s. 6d., 2s. 6d., and 4s. 6d.; Gallons, 12s. 6d.; Casks, 11s. per gallon.

Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

London: HOOPER AND CO., Covent Garden, W.C.

Dublin: TAIT AND CO., Seedsmen, Capel Street.

WATERPROOF TREE and PLANT

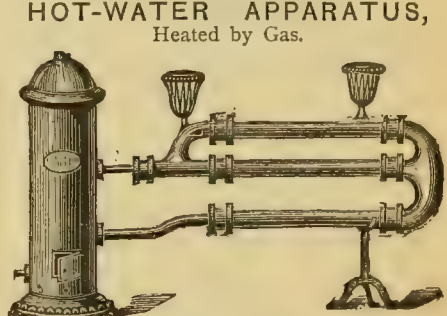
LABELS, specially adapted for Garden Purposes.

They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times.

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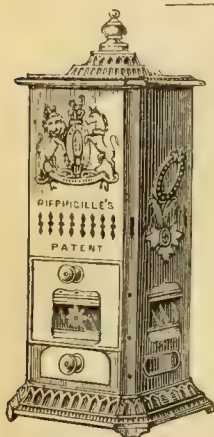
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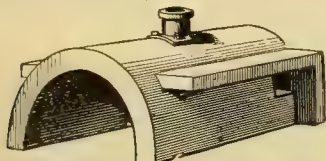
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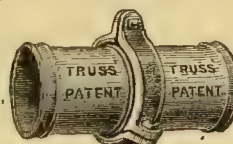
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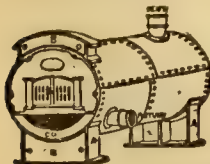
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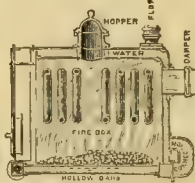
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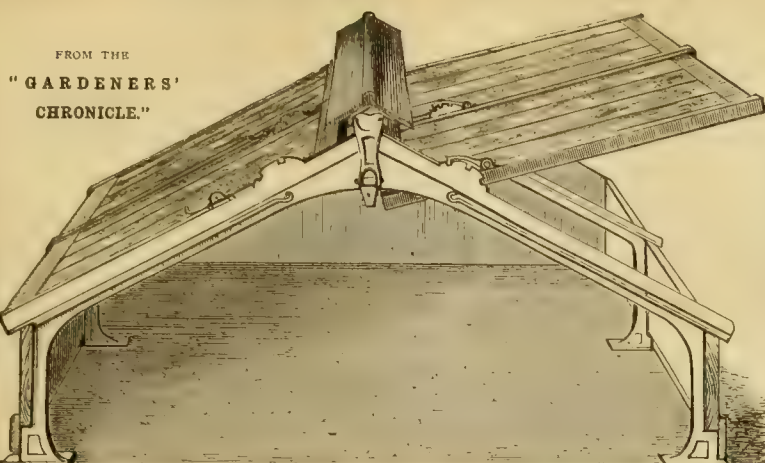
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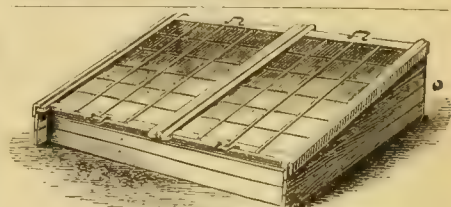
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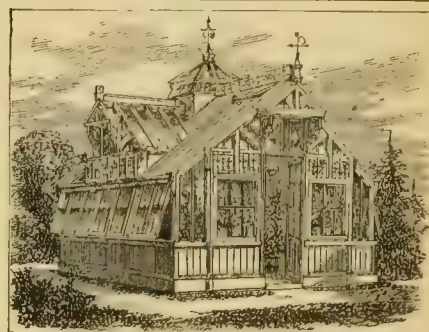
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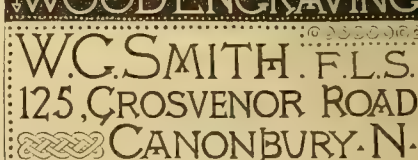
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NOTICE.—COMMITTEES' MEETINGS. Fruit and Floral, at 11 A.M.; Scientific, at 1 o'clock; GENERAL MEETING for Election of Fellows, &c., at 3 P.M., on TUESDAY NEXT, November 16. Admission 1s.
N.B.—The Special Prizes offered by Messrs. Sutton & Sons and Messrs. Hooper & Co., for Vegetables, will be competed for at this Meeting.

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H.R.H. the Princess Mary Adelaide, Duchess of Teck, and H.S.H. the Duke of Teck, have signified their intention of visiting the Exhibition. Schedules may be obtained of
ALBERT CHANCELLOR, Hon. Sec.
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APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH and CO., Nurserymen, Worcester.

RHUBARB, Victoria and Albert, 16s. per 100. Cash and packing included.
T. EVES, Gravesend Nurseries—Established 1810.

Seakale Roots for Forcing.
J. LANCASTER, Vine House, Canning Town, has some to dispose of. Good roots, 8s. per 100; extra assorted, 12s. per 100. Cash only.

TRAVELLERS calling upon FARMERS, SEEDSMEN, &c., may hear of a TWENTY PER CENT. COMMISSION upon a very Popular Commodity by addressing AGRICOLA, Mr. Robinson, 70, Farringdon Street, London, E.C.

N.B.—AGENTS WANTED in all principal Towns. Splendid opportunity for enterprising men.

GIBBS and COMPANY, NURSERYMEN, SEEDSMEN, and FLORISTS, Woodbridge, Suffolk, will be obliged if the Trade at home and abroad will kindly note to send CATALOGUES to their address.

G. & Co. will be glad if Raisers of NEW and CHOICE THINGS will communicate with them from time to time.

WANTED, MANETTI and SEEDLING BRIER ROSE STOCKS. State price per 1000, to J. BURRELL, Heighington, Darlington.

WANTED, GARDENIAS, ROSES, &c., also HOTHOUSE GRAPES.
WISE and RIDES, General Agents, Tavistock Court, Covent Garden, W.C.

WANTED, a FICUS ELASTICUS, 7 to 8 feet high. A good specimen.
G. S., 2, Edward Street, St. John's Wood, N.W.

WANTED, Offers of English and Foreign TIMBER TREES, also general CONIFERÆ and SHRUB SEEDS. The Trade are invited to send Lists with lowest quotations for Cash, to
WILLIAM NELSON, Nurseryman, &c., Thaba Nchu, Bloemfontein, South Africa.

WANTED to PURCHASE, about 40 CEDRUS DEODARA, 6 to 8 feet high; 40 GOLDEN ARBOR-VITÆ, 3 to 4 feet high; and a quantity of HIMALAYA RHODODENDRONS, about 2 feet high, all good selected trees.—Address to
The Marians, Elstree.

WANTED, IRISH YEWS, 12 to 18 inches, transplanted. State price, for cash, per 1000, to ARIE KOSTER, M.Z.N., The Nurseries, Boskoop, Holland.

Seakale and Rhubarb.
WANTED, 2 Acres of SEAKALE and 1 Acre of Champagne and Albert RHUBARB. Send particulars and price to
JAMES BARNHAM, Jun., Implement Maker and Agent, Peterborough Farm, King's Road, Fulham, S.W.

To the Trade.

SPECIAL OFFER OF SURPLUS STOCK.
JAMES CARTER and CO. can still offer magnificent, healthy, and well-grown Plants of the leading STOVE PLANTS, including Anthuriums, all the best varieties of Crotons and Dracænas, Dieffenbachias, Hibiscus Cooperi, Coffea liberica, &c. Full particulars and prices on application to JAMES CARTER and CO., 237 and 238, High Holborn, W.C.

LILIU AURATUM, splendid sound bulbs, at 9s., 12s., 18s., 30s., and 42s. per dozen.
LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 10s., or 1000.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

To Orchard Planters.

PAUL and SON, of the "Old" Nurseries, Cheshunt, offer fine 5 to 6 feet stemmed trees, with good heads, in large quantities.
Prices and LISTS on application.

CAMELLIAS, INDIAN AZALEAS, PALMS, FERNS, Dracæna terminalis, cannaefolia, and others for table and general decoration; SPIRÆAS, TUBEROUS BEGONIAS and GLOXINIAS by thousands, &c.; the whole, as usual, at very moderate prices.
Special offer on application.
A. VAN GEERT, Continental Nurseries, Ghent, Belgium.

FOR SALE, AZALEA INDICA, 14 to 16 inches broad, 11 inches high. Very cheap, for houses of first rank.
J. COENE, St. Pierre-Alost Nursery, Ghent.

Christmas Trees.—10,000 Spruce Firs.
W. JACKSON and CO., Nurseries, Bedale, Yorks, can supply the above, all sizes, up to 5 feet high, from 2½ to 3 feet, and 3 to 3½ feet, 8s. and 10s. per 100. Good in colour and bushy. For all particulars apply soon, and order before hard weather sets in.

To the Trade.

DOUBLE SNOWDROPS, for Cash, cheap.
W. A. CROWDER, Horncastle.

Chrysanthemums.
CHARLES TURNER'S Collection, in great variety, of the above, are now in fine bloom, and to which he respectfully invites an inspection.
The Royal Nurseries, Slough.

Fruit Trees, Roses, and General Nursery Stock.
W. B. ROWE and CO. (Limited) offer a large and very extensive collection of the above, in fine condition, well rooted for removal. Inspection solicited.
Barbours Nurseries, Worcester.

EVERGREEN HEDGES, in great variety, very cheap.
Descriptive Price LIST on application.
RICHARD SMITH and CO., Nurserymen, Worcester.

VARIEGATED HOLIES are the most effective of Ornamental Shrubs. In large quantities, of all sizes, and at reasonable prices, of
PAUL and SON, The "Old" Nurseries, Cheshunt.

SWEET-SCENTED RHODODENDRONS and AZALEAS, AZALEA MOLLIIS and other choice EARLY-BLOOMING PLANTS, well set with bloom-buds.
Priced Descriptive LIST on application to the Raisers,
ISAAC DAVIES, Nurseryman, Ormskirk.

Established 1855.

EUONYMUS, Golden, Silver, and Green, 6 to 12 inches high, well rooted, 8s. per 100; 70s. per 1000. Cash with order.

RICHARD ILLMAN, The Nurseries, Strood, Kent.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

KENTISH FRUIT TREES.—Standard and Pyramid Apples, Pears, Plums, and Cherries, in 200 varieties, principally good profitable Market sorts, from 65s. per 100. Gooseberries and Currants very cheap.
T. EVES, Gravesend Nurseries.—Established 1810.

To the Trade.

IMPROVED TELEGRAPH CUCUMBER.
—This strain is without exception the finest variety of Telegraph. The Seed has all been saved from handsome well-grown fruit. Price on application.
EDMUND PHILIP DIXON, Seed Grower and Merchant, Hull.

SUTTON'S MAGNUM BONUM.—For Sale, a large quantity of the above (the best Potato in cultivation), true to name, and perfectly free from disease. Sample Cwt. Bags, 6s. 6d. each; cheaper by Ton or Truckload.
J. T. SMITH, Potato Merchant, Wisbech, Cambs.

Seed Potatoes.

H. AND F. SHARPE are prepared to make special offers of all the leading varieties of Seed Potatoes, grown from the finest selected stock and free from disease.
Seed Growing Establishment, Wisbech.

STRAWBERRIES IN POTS.

Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

H. CANNELL, Swanley, Kent.

SEED POTATOS.—W. DRUMMOND & SONS.

Stirling, N.B., beg to offer a few Tons of Myatt's Prolific Ashleaf Kidney, and Early Fortyfold Potatos. Prices on application.

Raspberry Canes.

MR. R. BATH, who has just completed a heavy shipment of his famous "FASTOLF" CANES to Australia, can now supply all home orders with promptness, at 4s. per 100. P.O.O. or Cheque with order.

500,000 CARTER'S PROLIFIC to be disposed of at a very low figure, in quantities of not less than 500.

Crayford, S.E.

Spring Flowers.

RODGER MCLELLAND AND CO.'S New Special LIST of above, including double and single Primroses, Hepaticas, choice Pansies and Violets, Daisies, Phloxes, and all kinds of Spring-flowering Plants and Spring-blooming Trees and Shrubs, is now published, and will be forwarded on application to all applicants.

64, Hill Street, Newry.

Planting Season.

100 Acres to Select from.

FOREST TREES, of all sizes, consisting of Larch, Scotch and Spruce Firs, Ash, Spanish Chestnut, Alder, Quicks, &c. Also Descriptive Priced CATALOGUES are now ready of Ornamental Trees, American Plants, Conifers, Roses, Fruit Trees, &c.

HALLAMBY'S Nurseries, Greenbridge, Tunbridge Wells.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.

Lion Walk, Colchester.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

FOR SALE, 200,000 of the celebrated CARTER'S PROLIFIC RASPBERRY CANES, loaded on South-Eastern or London, Chatham and Dover Railways. For particulars, apply to

A. AND E. BATH, Colgate's Farm, Sevenoaks, Kent.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAs, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.

Descriptive LIST on application. RICHARD SMITH AND CO., Nurserymen, Worcester.

Note Prices.

FOR AUTUMN PLANTING.

CABBAGE PLANTS Warranted free from Club-rot.

Early Enfield Market
Early Nonpareil
Early (Dwarf) York
Early Battersea
Sugarloaf
Thousand-head
East Ham

At 3s. per 1000.

LETTUCE PLANTS.—Hardy Hammersmith, Hicks' Hardy White Cos, Giant Brown Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.

Testimonials and samples on application.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming, N.B.—Above Plants are from Messrs. Gibbs' Seed, and Purchasers may depend on good Plants, and true to name.
E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford. Extra Plants to compensate Carriage.

A New Seedling Pear.

DR. HOGG, 10s. 6d. A seedling from Gansel's Bergamotte, small but very rich; colour, brilliant red and brown; very prolific. Received a First-class Certificate from the Royal Horticultural Society.

THOMAS RIVERS AND SON, Nurseries, Sawbridge-worth, Herts.

To Planters on a Large Scale.

FOR SALE, to effect a clearance, thousands of CONIFERÆ in many varieties, LAURELS, YEWs, RHODODENDRONS, finest named, in largest specimens. They can be delivered to Great Northern Railway, or London and North-Western Railway, or Midland. Apply to

Rev. J. B. NORMAN, Edgware, London.

LARCH and QUICKWOOD PLANTS for Sale.

—2,000,000 Larch, 1 to 2 and 2 to 3 feet; 2,000,000 Quickwood, 1 to 2 and 2 to 3 feet; also a quantity of SPRUCE, SCOTCH FIR, and BEECH, also transplanted, at greatly reduced prices. For particulars apply to

FRANCIS BELL, Nurseryman, Easingwold.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Enfield Market and Rainham. Apply to Mr. T. DAVIES, Tangley, near Guildford.

GROS MAROC GRAPE, price 10s. 6d. to 15s. This variety has been for many years in this nursery. Berries, very large; colour, a deep purplish-black; flavour, rich and sprightly; a late keeper. Received a First-class Certificate from the Royal Horticultural Society.

THOMAS RIVERS AND SON, The Nurseries, Sawbridge-worth, Herts.

For Seaside Planting.

SPECIAL OFFER for CASH. 50,000 EUONYMUS, various sizes; 50,000 TAMARISK, 3 to 4 feet, and a quantity of VERONICAS, in sorts. All transplanted last year. To be sold cheap, the ground being required for building purposes. For particulars apply to

T. A. MORRIS, 75, Blatchington Road, Hove.

LIST of EVERGREEN and DECIDUOUS

SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

SEAKALE for Sale.—strong selected Crowns for Forcing, now ready. None superior now growing. Land specially adapted for its growth. Apply to

T. BROSAN, Market Gardener, Norman Farm, Fulham, W.

Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.

MESSRS. LEVAVASSEUR and SON, NURSERYMEN, USNY, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. K. SILBERRAD and SON, 25, Savage Gardens, London, E.C.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

Blooming Rhododendrons.

H. LANE and SON, Nurseries, Berkhamstead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

STRAWBERRIES.

Strong Roots for fruiting next year, 4s. per 100. Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade Only.

DOUBLE FRENCH RANUNCULUS.

LEONARD ROOZEN and SONS' superior strain of the above may be had in strong tubers, per 100, 1000 and 10,000, either in mixture, or 25, 50, and 100 varieties by name. Cheap quotations for large quantities. Warranted to be all double, without any single ones amongst them, as is the case in most French Ranunculus. (See Coloured Plate in "Album Van Eeden," spring, 1880.)

LEONARD ROOZEN and SONS, Bulb Growers, Overveen, near Haarlem, Holland.

FRUIT TREES of all kinds, for Gardens,

Orchards, Walls, Forcing-houses, &c. Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this."

Two Cuttings, post-free, for 1s. 2d.
One Plant, post-free, 1s. 6d.

The Home for Flowers, Swanley, Kent.

THE MOST SUPERB ROSES

that money can buy.
Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100. Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWs, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

" Golden, many thousands, 3, 4, 5 to 10 feet high.

" Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

" Golden Queen, 4, 5, 6 to 10 feet high.

" Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRs, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

" ARGENTEA, 4 and 5 feet.

LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA FISIFERA AUREA, 3, 4 and 5 feet; hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

" DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high. The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

GRAPE VINES and ORCHARD-HOUSE

TREES in POTS.—GRAPE VINES, extra strong, and warranted free from Phylloxera, Oidium, and all Disease. Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.

Descriptive Price LIST for 1d. stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade and Large Buyers.

EWING and CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and FILBERT BUSHES; ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees, MYROBELLA (PRUNUS MYROBALANA), for fencing, &c.

The Royal Norfolk Nurseries, Eaton, near Norwich.

Fruiting Trees of

APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds.

Priced LIST on application to

J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

A PERFECT HOLLY HEDGE may

eventually be formed by planting two Hollies and six Quicks in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.

Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

RICHARD SMITH AND CO., Nurserymen, Worcester.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.

JAMES DICKSON & SONS NEWTON Nurseries, CHESTER.

RHUBARB FOR SALE.—

Extra strong Roots, for Forcing and Planting. Price, per dozen, 100, or 1000, of

S. BIDE, Alma Nursery, Farnham, Surrey.

Roses, Climbers, Trees and Shrubs, Fruits, &c.

THOMAS S. WARE has pleasure in announcing that the above CATALOGUE is now ready, and will be posted free to all applicants. Copies of A B C BULB GUIDE for present season (see previous advertisement) can also still be had.

Hale Farm Nurseries, Tottenham, London.

Grape Vines and Forest Trees.

EDWARD MORSE begs to offer Fruiting and Planting Canes of the following kinds:—Black Hamburg, Foster's Seedling, Black Alicante and Lady Downe's Seedling. Price, from 30s. to 60s. per dozen.

E. M. has also to offer splendidly grown trees of Horse Chestnuts, Sycamores, Norway Maples, Limes, Walnuts, and Elms, fit for General and Avenue Planting.

Original Nurseries, Epsom.

LIST of all the EVERGREEN FIR TRIBE

suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.

RICHARD SMITH AND CO., Nurserymen, Worcester.

FOR ABSOLUTE SALE, having to give up

the land, strong transplanted Deciduous TREES, up to 10 and 12 feet, 4s. to 6s. per dozen; Standard APPLES, from 6 to 8 feet, 6s. to 9s. per dozen, or from 45s. per 100; other Nursery Stock correspondingly cheap. For LIST apply to

T. L. MAYOS, Nurseryman, Hereford.

Seakale—Seakale.

RHUBARB and ASPARAGUS for Forcing. The best house in the Trade. Also DUTCH BULBS and FLOWER ROOTS.

H. THORNTON and CO. (late A. Dancer), NURSERYMEN and SEEDSMEN, Fulham, London, S.W.

HYACINTHS, TULIPS, CROCUS, and other BULBS of the very best quality. Priced CATALOGUES free on application.

N.B. We make the Growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can possibly be procured in the Trade.

To insure their being supplied, we beg that our Customers may give their orders early, to prevent disappointment, as we are continually receiving orders from all parts, which will be strictly executed in rotation.

Best MILLTRACK MUSHROOM SPAWN.

MATS, very good for covering Mushroom Beds, 25s. per 100.

Dancer's Nurseries, Fulham, S.W.

CLEMATIS for BEDDING and CLIMBING.

JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.

Seed Growing Establishment, Wisbech.

A. M. C. JONGKINDT CONINCK has to offer large quantities of the following Hardy

Plants, at very low prices:—

Saxifraga granulata, fl.-pl. Tradescantia virginica alba.

Selaginella helvetica. " " corulea.

Spiraea Aruncus. " " rosea.

" filipedula, fl.-pl. " " rubra.

" palmata elegans. " " violacea.

Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

ANTHURIUM ANDREANUM, small

seedling plants, four to five leaves, well rooted, 12s. each,

£5 for 10, £45 per 100; price per 200 on application. MAXIL-

LARIA LEHMANNI, ODONTOGLOSSUM ALEXAN-

DRE, Lehm., MESOSPINDIUM ROSEUM, ONCIDIUM

ROSSII MAJUS, ODONTOGLOSSUM CIRRHOSUM,

EPIDENDRUM VITELINUM, MESOSPINDIUM

SANGUINEUM, TRIGOBOLIA MARGINATA, 5s. each.

Price per dozen or 100 pieces of all sorts, on application.

All Orchids imported April, 1880.

E. POLKO, Nurseryman, Bitterfeld, Germany.

DUTCH AND OTHER BULBS.

WM. CUTBUSH & SON'S
CATALOGUE

Is now ready. Post-free on application.

HIGHGATE, LONDON, N., or BARNET, HERTS.

NEW CATALOGUE

FOR
AUTUMN, 1880,

OF THE BEST

PLANTS, TREES, BULBS, ROSES,

&c., REQUIRED FOR

Garden or Conservatory Decoration,

Post-free.

The prices are much lower than goods of the same first-class quality are usually offered at. Comparison and inspection of stock invited. For names and description see Catalogue.

ALL OUR SELECTION.
BULBS FOR GARDEN.

The most showy and finest sorts, specially selected for the purpose.

	Per doz.	Per 100.
HYACINTHS, in separate colours ..	3 0	21 0
ANEMONE, finest mixed ..	0 6	6 6
CROCUS ..	1s. 4d. to	3 0
RANUNCULUS ..	0 6	3 0
TULIPS ..	1 0	7 0

BULBS FOR CONSERVATORY.

Will produce a beautiful display at about two-thirds of the usual cost.

	Per doz.	Per 100.
HYACINTHS, 12 fine named sorts ..	5 0	40 0
" 12 extra named sorts ..	7 6	60 0
" Roman ..	2 6	18 0
ANEMONE, finest named ..	1 0	7 0
CROCUS, finest named ..	1s. 6d. to	2 6
RANUNCULUS ..	0 6	3 0
TULIPS, finest named ..	1s. to	2 6

For prices and description of Dutch, French, and Miscellaneous Bulbs, in great variety, see Catalogue.

SPRING FLOWERING PLANTS.

About 100,000 now ready of the best and finest plants for the Spring Garden, including the best Show and Fancy Pansies, Violas, the newest and most showy varieties; Daisies, of all colours; Polyanthus, Sweet William, Canterbury Bells, Wall-flowers, Arabis, Aubrietia, Silenes, the finest Double and Single Primroses, Hepaticas, Sweet Violets, Alyssum, Cheiranthus of sorts, Christmas Roses, Iberis, Forget-me-Not, including the new variety "elegantissima," Sedums, Saxifrages, &c. All in good plants, to stand the winter and produce a fine spring display. For prices, &c., see Catalogue.

HARDY FLORISTS' FLOWERS and HERBACEOUS PLANTS.

A stock of many thousands of good plants, in good named varieties, and at low prices, including fine Double Pyrethrums, Potentillas, Delphiniums, Pæonias, Antirrhinums, Phloxes, Pansies, Show and Fancy; Carnations, Picotees, Pinks, fine Polyanthus to name, Double Primroses, and about 500 species and varieties of the finest Herbaceous Plants in cultivation for garden decoration. For List of sorts, prices, &c., see Catalogue.

WINTER-BLOOMING PLANTS for INDOOR.

A large stock of fine, well-grown plants of Bouvardias, Cyclamen, Solanums, Camellias, Azaleas, Ericas, Epacris, Primulas, Cinerarias, &c.; also of the finest plants and roots procurable for forcing, Spirea japonica, Spirea palmata, Lily of the Valley, Dielytra, Deutzia, Azalea Mollis, Ghent Azaleas, Rhododendrons set with buds, Kalmias, Andromedas, &c.; a large stock of the best Stove and Greenhouse Plants, in robust health, perfectly clean and very cheap.

DWARF ROSES.—A fine lot of well-grown plants of the leading varieties.

FRUIT TREES.—Apples, Pears, Plums, Cherries, &c., well-grown and splendidly rooted.

STRAWBERRY PLANTS.—A Collection of Sixty Varieties, true to name, good plants and cheap.

CONIFERS, &c.—Pretty pyramidal plants of the best varieties, for winter bedding.

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ROBT. F. DARBY

Has to offer the following:—

ELM, Chichester, 8 and 10 up to 20 feet.

Narrow-leaved English, 6 to 8 and 10 feet.

SPRUCE FIRS, 1½ to 2, 2 to 3, and 3 to 4 feet, twice transplanted and bushy.

HAZEL, 3 to 4 and 4 to 5 feet.

HORNBEAM, 5 to 6 feet.

POPLAR, Black Italian, 10 to 12 feet.

SYCAMORE, 6 to 8 and 10 to 12 feet.

EVERGREENS.

ARBOR VITÆ, American, 6 to 8 feet.

" Lobbii, 3 to 4, 5 and 6 to 10 feet.

BAYS, Sweet, 1½ to 2 and 2 to 3 feet.

BOX, Tree, 2 to 3, 3 to 4, and 4 to 5 feet.

IVY, Irish, strong, 4 to 5 feet.

JASMINUM ARBORESCENS, large white.

NUDIFLORUM.

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APPLES, a fine lot of bush trees, well grown, and in bearing, excellent for Market Garden purposes.

GOOSEBERRIES, strong, of best varieties.

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PEARS, strong, 6 feet standards, very straight and in bearing, a fine Orchard lot.

" handsome bearing bushes.

" handsome bearing pyramids.

QUINCES, very strong, standards and good stems.

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NOTICE.

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GENERAL HORTICULTURAL CO.

(JOHN WILLS, (Limited),

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FRUIT and FLOWERS, for SHOOTING and OTHER PARTIES, will be forwarded to any part of the country on receipt of Letter or Telegram.

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ALL THE LEADING VARIETIES, GUARANTEED
TRUE TO NAME.

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Roses, Fruit Trees, &c.

WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.

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Own Root and Manetti Roses.

J. J. MARRIOTT begs to offer, from his Nurseries at Matlock, strong ROSES on their own roots, in about forty established varieties, at 9s. per dozen. Strong plants on the Manetti, in over 100 choicest and best sorts, 7s. 6d. per dozen. Standards 15s. per dozen. Packages free. Lime Villa, Walsall, Staffordshire.



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OUR GUINEA BOX

Choice Hardy Flower Roots
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Contains the following liberal assortment, all in sound picked bulbs, with full Instructions for Cultivation. Case, packing, and carriage free to any Railway Station in England or Wales:—

- 250 Hyacinths, choice mixed
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- 12 " La Reine
- 12 " Double, mixed
- 12 " Single, mixed
- 12 " Parrot, mixed
- 25 Anemones, double, mixed
- 12 " scarlet
- 25 " Single, mixed
- 12 Polyanthus Narcissus, mixed
- 12 Double White Narcissus
- 12 Pheasant-eyed Narcissus
- 6 Campanelle Jonquils
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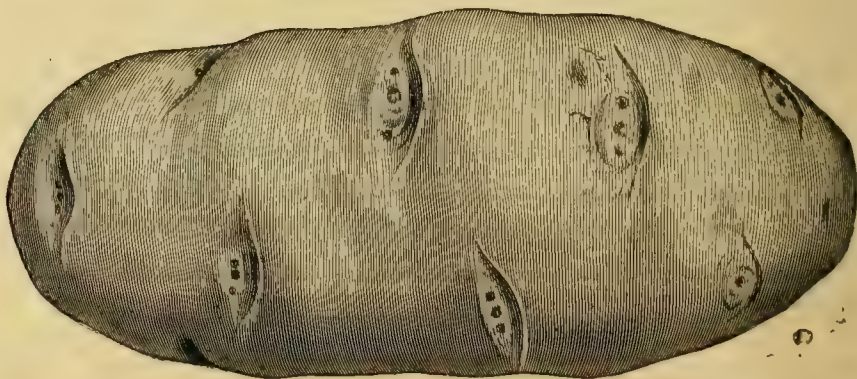
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From R. MORRIS, Esq., Rushon, April 6, 1880.—"I am highly pleased with the box of bulbs sent. The Hyacinths and Tulips are really splendid, and quite a show in our neighbourhood."

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This variety, first introduced by us in 1879, and which is already a standard sort in the United States, was also thoroughly tested in England the past season, and from all sides we are in receipt of the most flattering reports in regard to it. The "St. Patrick" Potato is a direct descendant of the "Garnet Chili" and "Early Rose," and is the best result of the raiser's (Mr. Goodale) careful experiments for the past twelve years in the production of new varieties. In appearance the "St. Patrick" is undoubtedly one of the handsomest Potatoes ever grown; it has a smooth white skin, and white flesh, few and shallow eyes; in shape it is rather oblong than round, and has no core and is not hollow; it is also a strong and hardy grower, and is entirely free from disease. It produces but few small tubers, ripens medium early, and, finally, it is enormously productive and of fine quality.

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All the best sorts in every style of growth, true to name, and of unexceptionable quality.

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One thousand species and varieties, including EVERGREENS, CONIFERS, AVENUE, ROADSIDE, and PARK TREES, WEeping TREES, AMERICAN PLANTS, CLIMBING and WALL PLANTS.

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The largest and best Stock in England.

Plants, well set with bloom-buds, from 2s. to 10s. 6d. each; Specimens from 15 to 30 guineas each.

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Imported from the best Growers, and sold at the lowest remunerative prices.

Hyacinths for bedding, 21s. per 100; fine named varieties for pots and glasses, from 6s. per dozen.

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JOHN BULL.—A very large, handsome, prolific, and fine flavoured main crop, blue wrinkled variety. Height 3 feet. The best of all of T. Laxton's introductions. Price 5s., in sealed half-pint packets.

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No 1, EARLY MAPLE.—Three weeks earlier than the old Maple, and in all other respects possessing the esteemed qualities of that variety. Price 10s. per sealed quart; £3 3s. per peck.

To be had Retail of all the Principal Seedsmen in the United Kingdom.

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TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4 1/4-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

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H.P. MRS. JOWITT (Cranston's).

First-class Certificate awarded by the Royal Horticultural Society, South Kensington, July 27, 1880.

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We are now booking orders for this superb New Rose, to be sent out this Autumn. For description see our new ROSE CATALOGUE, now published.

Extra strong ground plants, 7s. 6d. each.

Usual Discount to the Trade.

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KING'S ACRE, HEREFORD.



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INCLUDING

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HARDY CONIFEROUS and TAXACEOUS
PLANTS, EVERGREENS,

DECIDUOUS ORNAMENTAL TREES and
SHRUBS, HARDY CLIMBERS,

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Is now ready, and will be sent free on application.

The Nurseries, Huntingdon.

FIRST EARLY PEAS, DAY'S "EARLY SUNRISE."

A distinct new variety AS A FIRST EARLY, being A LARGE, WHITE, WRINKLED MARROW.

Now sent out for the FIRST TIME, in Scaled Quarts, at the very reasonable price of 3s. 6d. per Quart.

DESCRIPTION.

"Sunrise" is a large White Wrinkled Marrow, very hardy, robust in growth, and of a size and quality hitherto unknown as a first early. Haulm, $2\frac{1}{2}$ feet high, very strong and vigorous; bearing, in pairs, long, large, well filled pods, in great profusion, almost from the ground (seven to ten Peas in each).



By its grand size and quality it is calculated to supersede other varieties for early sowing, and is specially adapted for podding for early market and for field culture. Rapidity of growth, and quickness of coming into bearing, render "Sunrise" also suitable for LATEST SOWINGS.

AMONG MANY TESTIMONIALS MAY BE QUOTED:—

From Messrs. SUTTON & SONS, Reading, Oct. 21, 1880.

"Your 'Sunrise' Pea is very early, of good quality and a great cropper."

From Mr. JAS. COLLARD, Hardacre, Preston (a large Market Gardener), having by desire planted 2 acres specially for trial this year.—Sept., 1880.

"Your new early Marrow Pea has surpassed anything I have ever seen or known as a first early for market gardening. The short, thick haulm, and the enormous crop of large, well-filled pods, renders it particularly suitable for market garden or field culture. The flavour, when cooked, is delicious. Let me give result of trial:—Planted in February, same day as my 'Kentish Invicta', under exactly the same conditions, 'Sunrise' came to pick THREE DAYS EARLIEST,

grew me 300 bushels (slightly over) per acre, which I sold at 5s. per bushel, average; 'Kentish Invicta' produced 200 bushels per acre, averaging 3s. per bushel, or £30 against £75. I sent my first consignment to market on June 1, from an open field. I shall want 500 quarts next season, and shall plant no other sort for early picking."

From Mr. JAMES FORD, Gardener to His Royal Highness the Duke of Edinburgh, Eastwell, Oct. 1, 1880.

"The new variety of Pea you have named 'Early Sunrise' is of splendid quality, robust and quick in growth, and as early as 'Ringleader.' A large Wrinkled Marrow as early as this requires little recommendation, and is what all gardeners have long wanted."

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See their Catalogues.

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GEO. COOLING & SON

Have pleasure in offering the undermentioned

NEW VARIETIES OF VEGETABLES,

which they have every confidence in recommending as being desirable improvements in their respective classes :

NEW

DWARF FRENCH BEAN,

"NE PLUS ULTRA."



Although Dwarf Beans are already numerous, this variety will prove to be a great acquisition.

Quite distinct in seed and growth to any other variety; habit dwarf and compact; very delicate in flavour, and very early. As a forcing variety we believe it will have no equal. It is enormously productive, both indoors and out. Ninety-three pods were at one time gathered from a pot containing three plants last Spring.

Under the name of Cooling's Early Forcing Bean, it was awarded the only First-class Certificate at the Chiswick Trials in 1877, when nearly 200 varieties of Beans were grown.

We have placed samples for trial in the hands of the leading Gentlemen's and Market Gardeners in this neighbourhood; all are unanimous in opinion that it is in all respects the finest Dwarf Bean they have ever grown.

The engraving is a fair representation of a single plant in pot.

Owing to a much larger demand than we anticipated for this New Bean, we can only send it out this season in the smaller sized packets Advertised, viz. :—

Sealed Half-pints, price 3s., post-free, 3s. 3d.

NEW

BEETROOT,

"OMEGA."



As a variety for salads and culinary purposes, the Omega Beet must excel all others. It will not be useful as a decorative plant (the foliage during the greater part of the season being green in colour), but one trial will be sufficient to commend itself to all who desire a really rich-flavoured and handsome Beet. It is quite distinct, and has been carefully selected by ourselves for many years.

The chief characteristics of this Beet are the small amount of top it produces; the remarkably handsome shape of its root, which is of medium size; its colour, which is of the richest crimson; and more especially its flavour, which is delicately sweet, and will be found far superior to any variety yet introduced.

Retail Price, per Packet, 1s. 6d.

TRADE PRICES ON APPLICATION.

Electros may be had of both the above blocks.

A List of Firms who have Ordered Supplies will be Advertised in December and January.

GEO. COOLING & SON,
NURSERYMEN AND SEEDSMEN, BATH.



THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 13, 1880.

THE CHRYSANTHEMUM.

IT would be very interesting if we could obtain a series of plants, showing the successive development by which this beautiful winter flower has been brought to its present stage. The wood engraving (fig. 119) shows flowers with double or triple courses of ray florets; this would be the first stage from the wild uncultivated form. *C. sinense*, the reputed parent of our fine incurved varieties, was introduced from China about the year 1764; but probably long before that the Chinese gardeners had cultivated it in their gardens, without working for any definite end. One can imagine the original wild species with a disk like our own *C. Leucanthemum* (the great white Ox-eye) and a single course of ray florets.

While writing of the Chrysanthemum from a botanical point of view, our own *C. segetum* or Corn Marigold deserves a passing word. Its rich yellow flowers are really very pretty, and it seems to have been cultivated at a very early date. Philip Miller, writing of it a quarter of a century before the Chinese variety was introduced, gives directions for its culture by seeds and cuttings, describing fine varieties with single and double flowers; this of course could never be so popular as the Chinese variety. Owing to its flowering in summer, it could not supply a real want as a November flower does. It is the time of the year at which the Chrysanthemum flowers, and also its very hardy constitution, which braves the smoky and impure atmosphere of large towns with impunity which have made it so very valuable to us; it can also be grown with less trouble and expense than many other flowers not nearly so beautiful, nor of such lasting properties.

Persons of small means who love beautiful flowers to place in their greenhouses, or to cut and make presents of to their friends, to make birthday or bridal bouquets, and to place on the graves of their dear departed ones at this dreary season of the year, will look at the Chrysanthemum as a florist's flower, and know how to appreciate such varieties as *Empress of India*, *Mrs. Rundle*, *White Venus*, *Fleur de Marie*, *Mademoiselle Marthe*, &c., which are amongst the most beautiful of white flowers.

Many, nay the largest proportion of Chrysanthemum growers near London, know nothing of botany, and look upon the flower from a florist's point of view only. The incurved bloom illustrated in the woodcut (fig. 119) is a model of what a perfect flower ought, in their opinion, to be, and needs no description. It is to obtain such flowers that florists have been devoting their time during the last half century. There is one objection made to the incurved flowers which ought not to be lightly passed over, and that is that the back instead of the front part of the petals is turned to the eye of the observer; now the back part is of a much duller colour than the other in some varieties, but the white and yellow coloured sorts are not open to this objection.

By mutual consent florists seem to have arrived at one conclusion as to the standard to

be arrived at, and all the varieties that fall short of this drop into second or third positions. The general public, too, seem to appreciate this arrangement of the florists, and the varieties that naturally take the incurved form without any dressing or extraneous aid are most esteemed. The one that most naturally takes this form is Mrs. G. Rundle, and it is the variety which obtains the best price in Covent Garden Market, and the one which is most extensively grown for sale. White Eva is a very good variety, but it is not perfectly incurved, and though it is sometimes shown in stands of cut flowers does not help the exhibitor much. The raising of incurved varieties seems to be at a standstill, not, I believe, because it would not be desirable to introduce new colours and better varieties of colours than we already possess—for we are very far from perfection; I believe it is because there is great difficulty in obtaining seeds: in fact, I am not aware that the best varieties produce seeds at all in this country. One would think the difficulty could be overcome by sending plants of the best varieties to warmer latitudes, as the late Mr. John Salter used to do. It was a great treat to visit his collection annually, and to have some conversation about the new varieties which were to be sent out the following season. His aim was always to obtain sorts with broad incurved petals. It was a great loss to the flower loving public when his establishment at Hammersmith was swallowed up by the Metropolitan Extension Railway and all his fine flowers dispersed.

It would be a great improvement if we could get flowers like Mrs. Rundle and some others, that would enable exhibitors to show their flowers when cut with leaves and stems attached, and without the aid of "cups" to support the petals. What we lack very much is good flowers of a crimson or purple colour. A year or two before Mr. Salter had to give up his collection he sent out a flower named Crimson Velvet; it is of the colour of Julie Lagravère but larger, and the petals have a tendency to incurve. Seedlings should be raised from this to give better flowers of the same colour. Progne is another flower of a very distinct purple shade with a decided scent of Violets.

It is quite as necessary that such flowers as these should be improved upon, as it is that advances should be made on the incurved section; for after all but a small portion of the public look at flowers from the point of view of the exhibitor. Such really pretty flowers as Progne and Crimson Velvet will be valued wherever bright coloured flowers are valued for cutting, or to give effect to groups in greenhouse or conservatories. Then we have Dr. Sharpe, now in flower in our collection—a variety that used to be exhibited very much as a specimen plant by Mr. Forsyth, late of Stoke Newington, but which is now seldom seen. It ought to be grown in every collection for its colour—the flower is also of a large size. It will thus be seen that the question, How are we to improve? can be answered in various ways from a liberal as well as conservative point of view. Flowers possessing decided merit are speedily recognised, and raisers of seedlings would do well to work for novelty in colour, better habit in the plant, or any other quality that may be wanting. *Jas. Douglas, Loxford.*

THE LARGEST VINERY IN THE KINGDOM.—The *Builder* states that the largest vinery in the kingdom is being built by Mr. George Bashford, of St. Saviour's, Jersey, the eminent Grape grower. It is to be 1100 feet long and 30 feet wide. It takes 42,000 feet of glass, and is to be glazed on Helliwell's patent system of glazing without putty. This vinery is to be heated with hot water, and will take 10,000 feet of 4-inch pipes. It is intended for the production of early Grapes for the London market.

New Garden Plants.

ONCIDIUM CHRYSORNIS* and O. MELANOPS,†
n. spp.

These two species were discovered in Ecuador—the first by Mr. Ed. Klaboch, and later on by Mr. Houdea, I believe one of the numerous Roelian nephews; the second was sent by the second mentioned collector. They both belong to the curious group of *Oncidium pyramidale*, Lindl., which has swollen, by-the-bye, to a rather considerable company.

Both have rather small narrow bulbs, ligulate and shouldered, with one or two cuneate-lanceolate acute leaves; the first has long ones attaining a span's length, the second bears them 4—5 inches long. The inflorescence is a wide zigzag panicle with very numerous flowers. There are no short flowers in the specimens before me.

Oncidium chrysornis has flowers nearly equalling those of *Oncidium pyramidale*, of the finest yellow colour with four or five cinnamon blotches, one on each side of the isthmus of the lip, one constant one on each petal, and sometimes one on base of each sepal. The system of calli is adorned by a curious bifid callus in the middle of the anterior series. The wings of the curved column are hatchet-shaped, sometimes bilobed, toothed outside.

Oncidium melanops shows a very distinct lip. It is much broader at the base; the whole base, excluding the retrorse auricula, up to the anterior bilobed top, is blackish-purple, as well as the inferior parts of the sepals and petals. I guess that those parts of the flowers which are not blackish-purple are light yellow. Specimens of both were kindly forwarded by Mr. F. Sander, of St. Albans. *H. G. Rehb. f.*

BULBOPHYLLUM INOPS, n. sp.‡

A new relation to the old *Bulbophyllum recurvum*, with a very few-flowered pendulous raceme of small greenish triangular flowers, which bear a remarkably nice purple lip. The leaves are red underneath, green on the upper side. The bristles of the column are unusually well developed. There is nothing like this either in the Lindleyan or in my own collection. I obtained this modest novelty from Messrs. Henderson, Pine-apple Nursery, Maida Vale, London. *H. G. Rehb. f.*

LOROPETALUM CHINENSE, R. Br.

This is a very ornamental, free-flowering shrub, that has been recently introduced from China by Messrs. Veitch through Mr. Maries, and, being hardy, is a doubly welcome addition to the list of good flowering shrubs, and it will no doubt become a favourite when better known. It forms a much branched bush about 4 or 5 feet high, with alternate, stipulate, short-petioled, oblique elliptic or elliptic oblong, acute, dark green leaves 1—2½ inches long, which, when mature, are rather rigid; the young shoots, petioles, and edges of the leaves are clothed with harsh stellate hairs. The flowers are in small heads terminating the branchlets; the calyx is pale green, and the long linear petals are white—not yellow, as described by Mr. Bentham in Bentham and Hooker's *Genera Plantarum*, p. 668.

Loropetalum chinense was originally described and figured by Robert Brown in Abel's *Narrative of a Journey in the Interior of China*, p. 375, under the name of *Hamamelis chinensis*, but at the same time he proposed for it the name of *Loropetalum*, if it were erected into a separate genus. The plate in the above quoted book appears to be the only one yet published of this interesting shrub—interesting as being a member of that curious order of plants, the Hamamelidæ, of which the genera *Liquidambar*, *Parrotia* and *Hamamelis* are the most familiar examples. This

* *Oncidium chrysornis*, n. sp.—Affine *Oncidium pyramidale*, Lindl. Pseudobulbus ligulatus acutius apice attenuatus mono seu diphyllus; folio cuneato ligulatus acutis; paniculæ magnæ ramis densis fractiflexis; sepalis ligulatis acutis; tepalibus latioribus; labello pandurato auriculis basilaribus magnis obtusis retrorsis paulisper latioribus parte antica; callis triseriatis basilaribus obscurissimis, medianis geminis seu quinis, externis constantibus abruptis bidentatis, anticis ternis, callo mediano antico fornicato bidentato; columna cava gracili, buccis magnis, rostellis ornatioribus; alis dolabriformibus denticulatis nunc lobatis. Flores xanthini maculis paucis cinnamonæ. Ecuador. Ed. Klaboch! Houdea! *H. G. Rehb. f.*

† *Oncidium melanops*, n. sp.—Affine *Oncidium pyramidale*, Lindl. Pseudobulbus ligulatus compressis monophyllis (semper?); folio cuneato ligulato acuto; paniculæ ramis fractiflexis; sepalis ligulatis obtusis, tepalibus paulo latioribus; labello pandurato basi multo latiori, auriculis semiovatis obtusis retrorsis, isthmo antrorum angustiori, lacinia mediana antica biloba, callis triseriatis obtusis papuliformibus, geminis in basi, quinis in medio, ternis anticis; columna gracili curvæ buccis magnis, rostellis ornatioribus; alis dolabriformibus lobulatis crenulatis. Flores intense atropurpurei exceptis apicibus sepalorum, tepalorum labelli ejusdemque auriculis retrorsis. Ecuador. Houdea! *H. G. Rehb. f.*

‡ *Bulbophyllum inops*, n. sp.—Aff. *Bulbophyllum recurvum*, Lindl. Pseudobulbus ovoides nunc trigonis, nunc rotundatis monophyllis; folio cuneato oblongo acuto, discolori; pedunculo cruri deflexo medio univaginato, apice paucifloro; bracteis ovatis pedicellata æquantibus, mento angulato bene evoluto; sepalis impari lanceo, sepalis lateralibus triangulis; tepalibus ligulatis acutis uniuersis bene brevioribus; labello a basi rotundata triangulo ante medium obscure utrinque angulatis, lineis carinatis a basi in unam carinam medianam confluentibus; aristis columnæ bene evolutis. *H. G. Rehb. f.*

small order is remarkable for the large number of genera it contains relatively to the number of species, there being twenty genera, and only about forty known species; nine of the genera contain but one species in each, eight have but two species each, two have four species, and one has five or six species. Most of them are natives of China, Japan, the Himalayas and North America; one genus is confined to South Africa, another to Madagascar, and a third to Australia. Several of the species of this order are remarkable for the brilliant colouring of their foliage in autumn, but we do not know if *Loropetalum* has that quality united to its other excellences. *N. E. Brown, Kew.*

AERIDES REICHENBACHII (Lind.) COCHINCHINENSIS,
Rehb. f.

The typical species has come but three times into my hands during twenty-two years—once through Director Linden, who kindly inscribed it to me (1858), telling me it was introduced (two plants only) by the Messrs. Low from Borneo, having the habit and foliage of *Aerides quinquevulnerum*; then it was flowered at Ottensen, near Hamburg-Altona, by Mr. Kuhne, the gardener of Mrs. Heine, in 1862; and later on (1867) it was sent by Mr. S. Low. Now I have, after thirteen years, a grand inflorescence, introduced by Sir Trevor Lawrence from Cochin China with *Aerides Houlettianum* (lately named A. Ellisii by a clerical mistake). It has all those characters which were described in *Xenia Orchidacea*, ii., p. 14. The sepals, however, are not blotched at their tops, but neatly striped in the way seen in that grand *Pescatorea* just discovered by my friend F. C. Lehmann. The inflorescence is much denser, and the yellow of the lip is of a far deeper orange. It is a wonderful beauty, and I candidly confess I cannot help feeling very pleased at its bearing my name, thanks to Director Linden. It is very interesting that it made at Burford Lodge just the same impression as in the Jardin Zoologique at Brussels; the foliage is more after the style of that of A. quinquevulnerum than anything else.

If somebody should suggest, from the Cochin Chinese habitat, that *Aerides Houlettianum* or *Reichenbachii cochinchinense* were the same as A. odoratum of Loureiro, I may state that, thanks to the liberality of the botanical authorities of the British Museum, I was permitted to make a scrupulous investigation of the type there preserved, no doubt an unique treasure, and that I found it to be quite distinct. *H. G. Rehb. f.*

ASPARAGUS.

At the meeting of the International Congress of Horticulture in Paris, M. L'herault, of Argenteuil, gave the following account of his method of culture of this popular vegetable, reproduced in the lately published *Bulletin* of the Congress:—

"I will not speak of the ten sorts of *Asparagus* that I am acquainted with—of their twenty varieties, nor of their twenty-five sub-varieties that I have experimented upon from every country. I will content myself by saying, that, in 1856, after four or five years of experiments, I thought it well to select three varieties, viz., the early, the intermediate, and the late. After sixteen years of cultivation the Central Horticultural Society of France acknowledged the superiority of these varieties, and accorded to me an award. The *Asparagus* plants must be planted near the surface of the soil, contrary to the general custom; and, also contrary to the general practice, they should also be planted wide apart. They must be earthed-up in spring to have them tender and white. Earthing-up is absolutely necessary, not only from a culinary point of view, but as a natural protection for the shoots, and to prevent the *Asparagus* from being blown over by the wind. That is the object fulfilled by the mound of earth in the culture of *Asparagus*. Afterwards, when the leaves appear, it is necessary to tie the *Asparagus* to stakes. This protection is of great importance, for when the wind knocks over the *Asparagus* it breaks and splits their stems, so that there is no hope of saving them. The shoots do not grow again, the plant ceases to grow, decomposes, and the cultivators of Argenteuil then say that the *Asparagus* *tourment au gras*, i.e., rots. They do not turn to fat, as that expression might lead you to expect, but, the plants being killed, they decompose.

"The method of culture of *Asparagus* may be thus summed up:—Plant them very near the surface of soil, earth them up in spring, cut them moderately. As to the gathering of *Asparagus* let me say that no steel instruments should be employed, but the fingers alone should be used, for otherwise there is a great risk of damaging the neighbouring shoots and spoiling a great part of the crop."

THE THEORY AND PRACTICE OF ROOT-PRUNING.

(Concluded from p. 593.)

THE TIME, MODE, EXTENT, AND RESULTS OF ROOT-PRUNING.

THAT root-pruning saves time, economises space, and hastens and augments fertility, no one who carefully reads the last paper, or notes the practical and necessary results of root-pruning, can deny; that it does all this by changing the form and modifying the functions of the roots is equally obvious. Roots are not simply the foundation of trees, but to so great an extent are trees controlled by the roots, that such as these are so are the tree and its products. Change the form and place of the roots, you change the character and produce of the trees. Those that have been wholly or mostly wood-makers become chiefly fruit-bearers after the use of the pruning-knife upon their roots. These assertions are as true as they are bold and explicit; they rest, as we have seen, on the soundest theory. They have been confirmed



FIG. 114.—PEAR TREE NOT ROOT-PRUNED.

by a long and tolerably successful practice. At a time when both theory and practice alike are challenged, it is the duty of all who have tested the merits of root-pruning to speak out in no faltering terms. The discovery of its merits marked a new era in horticultural practice; its decadence would show that horticulture—though it rarely does—occasionally takes a retrograde step. But from these general principles it is time to descend to practical details.

The first, and one of the most important of these, is the time to root-prune. If "there is a tide in the affairs of men, which taken at the flood leads on to fortune"—and there is—so is there also a tide in the annual life of trees, which taken at the flood is the season for root-pruning them with the best results. Immediately after the fall of the leaf has generally been considered that favoured flood-tide. This seems to be a mistake. There is a time, probably about three weeks before the leaf falls, which is the more favourable for root-pruning. The upward flow of the sap has then become languid, if it has not been arrested by its stiffening into cambium. Still the work and action of the leaves have not altogether ceased. The chief vital currents of the trees are, however, reversed. The energies of vitality seem concentrated in returning the semi-finished products of the plant for depo-

sition in the stems and roots. Cambium is being deposited in all directions, and has not yet been solidified into wood: that cambium is the most potent power known for the healing of wounds and the restoration of lost parts or organs. Wound wood or bark above or under ground during its passage: they heal as if by the magic touch of a skilful surgeon. Cut a root: this flowing mass of organisable matter calluses it over and causes the new healed wood to emit fresh roots at once.

With such facts before us by the thousand it is impossible to misread the lesson they teach, and that is, that a fortnight or three weeks before the fall of the leaf is the best time to root-prune. Time the practice by condition, and not by the calendar. The former is a guide as safe as it is steady; the latter is a mere *ignis fatuus*, too often leading the practitioner in our climate into the sheer quagmire of irremediable failure. In general terms, however, and for the guidance of those who may not be able to read the book of conditions, it may be added that in an average of seasons, the last fortnight in October is the best time to root-prune. Should the still persistent leaves flag slightly afterwards, refresh them with an overhead sprinkling in dry weather. On no account permit them to shrivel up or become wilted, but see to it that they mature and drop naturally, for it may be accepted almost as an axiom that the ministry of the leaves in this condition of the plants is wholly one of healing and of restoration.

The mode or method of root-pruning is vitally important to its success. Had trees not possessed a feline capacity of endurance and power of life, and had root-pruning not rested on a solid basis of philosophical facts, neither the tree nor the practice could have survived its reckless application. Trees to be root-pruned should be approached from a considerable distance and at an average depth of from 18 inches to 2 feet. Begin from 3 to 4 feet from the bole of an ordinary-sized tree, double that distance from large ones, and work out the soil in a semicircle as far as the bole, and 1 foot beyond it. It is best to begin operations on the south side of the tree, as there the strongest roots are generally found. Cut off clean all the vertical roots found at that depth. The object in going beyond the bole is to make sure of finding and pruning off any tap-roots (fig. 109, p. 593) that may have proceeded downwards from the centre of the tree. Should a good many roots be found, leave the tree for another year to test the results of this root-pruning. Before, however, filling in the soil see that all the roots cut off are removed out of it. Few things seem more distasteful to trees, or more likely to induce fungoid or other diseases, than their own dead roots. Before filling in, too, it may be well to note the character and condition of the soil, as well as of the tree. If the former is too heavy, lighten it by the addition of a little fresh fibrous sandy loam; if too light, a little marl or stiff loam may prove useful. If the soil is suitable, simply return it; if the tree seems weakly, enrich the soil with a little compost or rotten manure. Should few or no roots be found on one side it will be both prudent and safe to test the other. It is, however, good practice to fill in one side before digging out the other, otherwise root-pruning goes to the length of transplanting—the most severe form it can take. Some attempt to root-prune in various ways without removing the soil. The roots are cut down within 2 feet or so of the bole, this often severing all the best of them. Attempts are then made to thrust sharp-cutting draining spades and other implements under the trees, in the hope of severing all vertical roots. Such haphazard methods cannot be too severely condemned; roots are far too valuable to be thus stabbed or hacked to pieces at random in the dark.

Besides, it is not always needful to prune the roots at all. The mere disturbance of the soil around them, the lifting those found too low into higher and consequently better positions, may afford sufficient check to the tree and improve the roots for all time coming; the mode of root-pruning, in a word, can hardly be too cautious and tentative, the modification of root-force—not the limitation of its power—being the controlling motive. Practised in this spirit root-pruning becomes as safe as it will prove profitable. Properly carried out no one need lose a crop through root-pruning, while all future crops should be increased in weight and improved in quality by the practice.

The extent of root-pruning may almost be gathered from the mode of it here advocated. It almost seems needful, however, to remind some horticulturists that root-pruning does not mean the cutting away of all

the roots of the trees. Examples of trees or bushes have sometimes been met with as cleanly shorn of their roots as a monk's crown or a shorn lamb. These are not illustrations of root-pruning, but of root destruction. As well or better cut off the top of a tree and call it pruning as slaughter the roots in such a fashion. Skilful cultivators in depriving their trees of any excess of roots, like kind and humane aparians in depriving their bees of honey, are careful to leave an ample sufficiency of roots or honey to carry their stock or trees through their respective crises in safety, and without any undue reduction of their strength. It is also far safer to under than over-prune the roots. The process is easily repeated and carried further, but roots once removed cannot be replaced. Two points will go a long way in determining the extent to which root-pruning should be carried; one is the condition of the top of the tree, and the other the number and size of the roots. If the wood is strong, as in fig. 114, and the roots thick and vigorous, as in figs. 107 and 109, they may not only be severely cut back with safety, but to the great benefit of the tree.



FIG. 115.—PEAR TREE ROOT-PRUNED.

But should the roots be already fibrous, as in figs. 108 and 115, they should be lifted nearer to the surface, and on no account be pruned off; for though a strong advocate and a constant practiser of root-pruning, I have never yet found a tree larger than a cordon that had an excess of fibrous roots. What such trees require for their future prosperity, and in the interest of their fortunate possessors, is not the curtailment of their valuable root-power but the enlargement of their tops, and increased crops of fruit to convert the root-force into gold. Some also make great mistakes, not only in carrying root-pruning too far, but in repeating it too often, and continuing it too long.

The practice should be looked upon as a surgical operation for an exceptional purpose. Having fulfilled this purpose—that is, forced sterile trees to become and continue fertile—it is at once foolish and improvident to indulge in root-pruning again, unless the occasion for it should afterwards arise. A great deal of the unpopularity of root-pruning has, in fact, arisen from the making it an annual or biennial, instead of a merely exceptional practice. The object attained and continued, the roots of fruit trees often need richer feeding rather than more root-pruning. The wheelwright who refused to let well alone, at the

bidding of his more experienced master, and gave the spoke one blow more, to the shattering of the nave into fragments, has many successors among novices in root-pruning. They seem as if they never could have enough of it. But the skilful pruner, like the wise surgeon, is niggardly alike of the knife and of medicine.

The results of root-pruning may be seen in fig. 115. There is no difference whatever between these two trees—only the vital one, that while fig. 114 was not root-pruned, fig. 115 was. These are not fancy sketches—any number of them may be seen in most gardens by the score or hundred. The secret sources of fertility lie in the roots. How it is that those large undivided roots (figs. 107 and 109) favour sterility, and those fibrous roots (figs. 108 and 114) develop fertility, no vegetable physiologist has yet arisen to fully explain. But the fact is as obvious as that the sun shines or twice two are four. The results of root-pruning have left the regions of speculation and become condensed into concrete facts, absolute truth. These cannot be argued out of our fruit rooms, gardens, orchards, any more than the sun can be argued out of heaven, or the solid basis of mathematical or natural facts be overthrown by the dreamy fancies of transcendental philosophers. The results indeed vary in the ratio of the wisdom with which the practice is carried out. The fair promise of plenty, the direct result of root-pruning, is also all too often blasted by our unpropitious seasons. More, these seasons, by relieving the trees of their natural burdens, may to some extent neutralise the good effects of root-pruning, or render its repetition necessary. Now the destruction of a crop of fruit in embryo may affect a tree very much as the throwing of its rider would a spirited steed. The pace would become more reckless as it ceased to be handicapped by the weight of its master; and thus trees in fruitful condition may run into sterile ways through such persistent fruit failures as have resulted from the weather of the last few years.

Root-pruning is however useful as an antidote to such failures, as has recently been shown in a notice of its effects on the maturation of wood and buds. It has also a sensible restraining influence in checking the dangerous precocity of fruit blossoms. Every day that these can be kept closed in the early spring-tide the better their chance of being developed into perfect fruit. Every precaution possible should be taken to ensure continuous fertility, not only for the profit of the fruit grower, but also for the good of the trees.
D. T. Fish.

BLACKADDER HOUSE,

THE seat of Sir George H. Boswall, Bart., is some 10 miles from Berwick-on-Tweed, and about 6 miles from the Border town of Dunse. The house, or mansion, is a very elegant and commodious Elizabethan structure, picturesquely placed upon the south-eastern bank of the River Blackadder, and in such close proximity to it as to appear to almost overhang its rippling tide. The estate is of considerable extent, and at an early period appears to have belonged to a family of the name of Blackadder, and somehow came into the possession of a branch of the powerful Border family of Home, celebrated in Border history at a period when right and might were generally regarded as synonymous terms, and when was well understood and almost universally acknowledged:—

"The good old rule . . . the simple plan,
That they should take who have the power,
And they should keep who can."

From the family of Home the estate appears to have passed into that of Renton, and it has been in the possession of the family of its present owner for somewhere about a century. Of late years it has been very considerably augmented by the purchase of the adjoining estate of Allanbank, formerly the seat of an old family of the name of Stuart.

The principal entrance to the mansion is from the Dunse road, on the north, by a handsome iron gate, with ornate lodge or gatehouse, and is approached by a broad and well-kept coach road or drive upwards of a mile in length, which crosses the river by a neat stone bridge some quarter of a mile more or less from the mansion, and from this point an excellent and picturesque view of the west front of the same is to be obtained, as at a very considerable altitude it looks down upon the stream which washes the base of the rock upon which it stands. The eastern approach to

the mansion is from the village of Allanton by handsome iron gates with stone pillars, and a neat lodge or gate-house on each side, while a third entrance gate is some half mile south-west from the mansion, the principal or park front of which faces the south. In close proximity to it on the north side is a somewhat unique conservatory, constructed entirely of cast iron and glass, which was erected at a great cost more than fifty years ago, and which is said to have been the first erection of the kind in Scotland. It is still in excellent preservation, and has all the appearance of continuing so for very many years to come. It was constructed by a firm of hothouse builders, at that time in business in Leith Walk, Edinburgh, and was temporarily erected or put together on their premises; and this so greatly attracted public attention that they were, it is said, induced to charge for the privilege of admittance to view it. Since that time the structure has withstood many storms, securely placed as it is upon the summit of a perpendicular rock; where from its open lights the swift flowing river is seen through the foliage of ornamental trees, 100 feet or more below.

The structure contains a fine collection of the most ornamental kinds of greenhouse plants, including Australian species of considerable dimensions, to and the lofty character of the house allows considerable development. A fine plant of the *Acacia verticillata* or *juniperina* occupies the central position, and is said to have been planted soon after the erection of the structure. It still continues in excellent health, and blooms profusely, and when in flower is a most attractive object, although periodically subjected to a severe trimming or cutting back, to prevent it occupying more space than would be consistent with the well-being of other inmates of the place. The structure is somewhat cruciform, with one end facing due south, or nearly so; the west side overhangs the river, and the north end contains a very ornamental stained glass window. Taken altogether, although far from being modern, it is nevertheless exceedingly ornamental, and so far as I know unique in its character.

The west front of the mansion is approached from the river side by a gravel walk, with low parapet walls, and ascends the bank or rock on which it stands in a zigzag form, while a neat scroll border or flower garden occupies the space between the wall of the mansion and the top parapet wall. The gardens lie some half mile west from the mansion, and are also in close proximity to the river. They are reached by a gravel walk which passes through a grove of remarkably tall and fine Beech trees, and are surrounded by a substantial brick wall, some 12 or more feet high, and they enclose upwards of 2 acres of land, not, however, of first-rate quality, but where, notwithstanding this drawback, by skilful culture excellent culinary vegetables and fruits of all kinds are produced in abundance. But in addition to the land enclosed by walls there are also useful outside slips or borders, for the purpose of producing early crops of vegetables, with nursery grounds, &c., to a considerable extent, including an enclosed Melon ground adjacent to the south-east corner of the garden, containing glass structures of various kinds, where Melons, Cucumbers, &c., are successfully cultivated.

The glass structures in the gardens consist of a range of lean-to vineries and Peach-houses, in which fruit of the best quality appeared to be produced in abundance; and in close proximity to this range of glasshouses, with its lower apartment communicating with the central vinery, is a hexagonal tower or summer-house. From the windows of the upper storey of this building an excellent view of the gardens is obtained, while the apartment itself is decorated with mural paintings of great beauty, chiefly representing Chinese or Japanese subjects, and which were executed, I believe, by the late Mrs. Boswall. The flower garden department is in the form of a semicircle, immediately in front of this range, and the flower beds at the time of my visit (late in September) were well filled with the choicest varieties of bedding plants, including varieties of the *Viola* and bedding Pansies, which appear to succeed so much better in most parts of Scotland than I have ever seen them do in the South. In addition to the range of vineries and Peach-houses alluded to, there have more recently been erected two span-roofed plant-houses running north and south and communicating with the flower garden. They are each 36 feet long by 15 feet wide. One is devoted to the culture of stove or hothouse plants, while the other contains a collection of

greenhouse species. Both structures contain collections of small but remarkably healthy and well grown plants, mostly intended for the table and other decorative purposes, such as the most ornamental varieties of Palms, Crotons, Dracaenas, Gardenias, Alocasias, Begonias, Ficus, Marantas, Pandanus, &c. I also observed in flower a fine plant of the *Allamanda Hendersoni*, *Lapageria rosea*, and a good plant of the beautiful Dove Orchid (*Peristeria alata*) carrying two fine spikes of bloom. A nice collection of the *Amaryllis* is also well grown here, and the present gardener (Mr. Reid) contrives to have them more or less in flower throughout the entire year, and finds them exceedingly useful.

The gardens and grounds at Blackadder suffered in a remarkable degree from the severity of the last winter. It will of course be fresh in the recollection of your readers that a very unusual depression of temperature was experienced throughout the entire country, and in many parts of England the temperature fell under zero, but this depression appears to have been greatly intensified in various parts of the Border counties of Scotland. But in no instance does this appear to have been so severe as that experienced at this place, where, on at least one occasion, the mercury fell to 23° below zero, indicating no less than 55° of frost. This very unusual depression of temperature was so unprecedented that meteorologists not unnaturally entertained doubts as to the accuracy of the instruments showing this extraordinary result, and they have consequently been subjected to more than one critical examination, in all instances resulting in admission of their correctness, and if further confirmation of this should be deemed necessary, it is furnished by the melancholy testimony of many victims to the intensity of the frost. Peach, Apricot, and other fruit trees, which had retained their position and healthy condition upon the garden walls for a long series of years, were killed outright; evergreen shrubs of nearly all kinds were killed to the ground, including even the hardy English Yew, a commemorative specimen of which, planted on the nativity of the present Lady Boswall, had attained to considerable dimensions, and was killed outright. Even the common English Oak (*Quercus pedunculata* and *sessiliflora*) sustained the loss of the previous summer's shoots, and in many instances even the last two years' wood was killed.

Sir George and Lady Boswall, treading in the steps of the late Mrs. Boswall, have always taken a praiseworthy interest in the welfare of their more humble neighbours, particularly as regards those resident upon their own extensive property. Many years ago the late Mrs. Boswall built and endowed, at her sole expense, an excellent school in the village of Allanton, and some years later Lady Boswall built a school for girls in the same village, and in which she continues to take the most lively interest. And as a noble act of public-spirited generosity Lady Boswall built, at her own expense, amounting to not less than £7000, a substantial stone bridge over the River Whiteadder, near to the above-named village. A few years later Sir George H. Boswall erected a similar structure over the River Blackadder; these splendid bridges were much required, and are highly appreciated by the public. The little village of Allanton is pleasantly situated near to the confluence of the Rivers Whiteadder and Blackadder, and the principal water supply of the inhabitants was obtained from the rivers, the water of which, on account of their not unfrequent flooded condition, was often hardly fit for use. Sir George Boswall a few years since, at his sole expense, generously constructed efficient waterworks, affording a constant and abundant supply of pure filtered water for the benefit of the inhabitants. Altogether Sir George and Lady Boswall may be said to have expended more than £10,000 for the sole benefit of those residing upon their extensive estates, an example which might be worthily followed by many other extensive landowners. *P. Grieve.*

THE METEOROLOGICAL SOCIETY.—At the ordinary meeting of this Society, to be held at 25, Great George Street, Westminster, on Wednesday, the 17th inst., at 7 P.M., the following papers will be read:—"Table of Relative Humidity," by Edward E. Dymond, F.M.S.; "Rainfall in South Africa," by John G. Gamble, M.A., M.Inst.C.E., F.M.S.; "The Meteorology of Mackay, Queensland," by Henry L. Roth; "Thermometrical Observations on board Ship," by Captain W. F. Caborne, F.M.S.

THE PHYLLOXERA.

[THE following extracts are taken from M. Max. Cornu's Report to the authorities at the Cape of Good Hope with reference to the measures to be taken to prevent the introduction of the Vine-louse into the Cape of Good Hope. So far as regards Vines, or parts of Vines, or even plants grown in the vicinity of Vines, there cannot be much difference of opinion as to the prudence of the measures proposed. The absurdity and mischief of the legislative enactments lies in their application to plants other than Vines, and coming from districts where there are no Vines. True it cannot be said there is absolutely no risk even in the introduction of Dutch bulbs or Potatoes from a locality scores or hundreds of miles away from any infected locality, but the risk is so small that it is folly, and worse, to inflict an injury on the commerce in these subjects—to give one illustration—because there is a possible risk of importing Phylloxera. Why, in the interests of one class of cultivators, should so much uncalled for injury be done to others with collectively, if not individually, as great or greater right to the consideration of the Governments as the wine growers?]

1. The Phylloxera vastatrix lives only upon the Vine; the insect is the sole cause of the disease of which it is the sign; it is only by acting upon the insect that the disease can be successfully treated.

2. The disease cannot be attributed to degeneration, exhaustion of the soil, bad cultivation, excess of humidity or dryness; the weakest Vines succumb first, but all die in the end.

3. Every Vine that the insect attacks is lost,* unless aided by treatments.

Notwithstanding all that has been said, I am not aware of a single authentic example of a Vine which, having been attacked by the Phylloxera, has recovered without treatment.

4. Means of cultivation and manures that do not actually destroy the Phylloxera have but a passing good effect.

5. The Phylloxera causes special and characteristic swellings upon the roots of the Vines, which are visible when the plants are being dressed; it is the first and most important sign of the disease; the Vine is still luxuriant—this is a deceptive condition.

6. The exhaustion of the plant is only a secondary effect; when this is observed it is getting very late to deal with the disease.

7. During the dry season the swollen rootlets all die at the same time, and the Vine is deprived of its absorbing organs.

The rootlets may form again in the following year; the Phylloxera again settles upon them, and the Vine becomes more and more exhausted.

8. The Phylloxera destroys the rootlets, organs of absorption; this is a characteristic sign, by which Vines that have been attacked by the insect are to be recognised. Suppose a Vine dies, showing every outward symptom of exhaustion; such symptoms are not characteristic. If suffering from exhaustion through some other cause, the Vine will present the same appearance, whilst possessed of its rootlets.

9. If an affected vineyard is replanted, it is not long before the parasite attacks the new Vines.

10. When the temperature of the soil descends below 10° Cent. (50° Fahr.) the Phylloxera winters; the young cease to grow, the adults die.

When the temperature of the soil once more rises above 10° Cent., the Phylloxera awakes, grows, moults, lays, and again multiplies.

11. It is to be concluded from this that in cold countries the winter sleep begins earlier and ends later than in warm ones; this has been superabundantly shown by observation. The insect is much influenced by being exposed to the air, or by the varying temperature of the soil.

In the department of Hérault (Montpellier) the sleep lasts on an average from November 1 to April 15, in that of Charente (Cognac) from October 15 to May 1.

The ravages of the insect increase with the duration of active life, and with the temperature, in an enormous proportion.†

* This is applicable only to non-resisting Vines, that is to say plants coming from European stocks, *Vitis vinifera*, known in France under the names of Chasselas, Muscat, &c., and in England under corresponding names, analogous or different.

† Some idea of the increase may be gathered as follows:—Say one laying a month takes place, and that there are 200 eggs for each laying, the progeny resulting from a single egg would

At the Cape of Good Hope the effects of the Phylloxera would be terrible.

Means of Discovering whether a Vine is Diseased through the Phylloxera.

This can only be ascertained by examining the roots.

1. Vines only lately infected (the vegetation is good, or pretty good). Numerous excrescences on the roots; these excrescences disappear during the very hot season.

2. If the date of infection is less recent (feeble vegetation). There are no rootlets.

Besides this the actual presence of the parasite upon the delicate roots should be observed, either with the naked eye, or, better still, with the aid of a lens.

Memorandum on Laws of Protection, and Conclusions, addressed to Captain Charles Mills, C.M.G., Under-Secretary of the Colony of the Cape of Good Hope.

Memorandum on Laws of Protection.—Measures of protection have a scientific basis; it will be useful to call attention to certain facts enabling one to give a conclusive reply to any objection which might be raised.

I am anxious to show that by following, step by step, the natural history of the Phylloxera, and the practical results which are derived therefrom, one is led, step by step, to make laws of gradually increasing stringency.

Prudence demands that every contingency likely to bring about the introduction of the pest should be taken into account, and that the greater rigour should be exercised in proportion as the country is better protected by its geographical position. This was the course we adopted with regard to Algeria.

1. The Phylloxera lives on the leaves of American Vines and on the roots [and leaves] of European Vines; various egg deposits are made on the organs of vegetation.

Conclusion.—It is very dangerous to allow the free importation of Vines with their roots attached, of cuttings, and of leaves coming from countries where the Phylloxera exists—North America, Central America, France, England, Portugal, Switzerland, Germany, Austria, Spain, Italy, &c.

This importation might be forbidden, except under the restriction of full and special guarantees.

2. Roots or parts of roots, when detached from the plant, can nourish the Phylloxera for several months, especially if they are preserved from desiccation. The insect may be kept alive in glass jars from September to May; similar results are observable in its natural state; upon detached roots the Phylloxera lives easily for more than a month at any season.

It is then possible inadvertently to import portions of Vine roots infected with the Phylloxera, in removing plants with their roots attached, and the clod of earth adhering, in cases where such plants have been cultivated in close proximity to Vines.

In order to avoid the introduction of the insect by these means the International Convention of Berne, paragraph 3 (Acts of the Congress, p. 66), provides that plants shall travel packed in a special casing, with their roots divested of earth.

Italy and Spain admit no vegetable products whatever from France, and lay an interdict even upon cut flowers: this is evidently a little too severe.

In any event it is highly necessary that the custom-house officers should exercise the strictest vigilance, and that they should satisfy themselves accurately as to the nature of imported plants.

3. The wingless Phylloxera (*Phylloxera aptères*) which lay, are virgin mothers, that is to say, that a single Phylloxera or a single egg, can produce a fertile and very numerous progeny.

This justifies the fears of the wine growers, and the rigorous laws which they desire to have applied as regards the colony.

The eggs offer a stronger resistance than the insects themselves to any unfavourable influences. They are particularly dangerous, whatever may be their nature, but natural history enlightens us as to the precise nature of the danger.

4. The Phylloxera, in its young state, will readily migrate; it can travel comparatively considerable distances whilst in dissociation from the Vine; but it does not seem to be able to live for more than four or five days without nourishment, and in any case it must be protected against desiccation.

increase according to the powers of 100; the increase would be very great for the last few months, 100, 10,000, 1,000,000, &c.

The insects, when removed in a living state, without Vine roots, will die at the end of five days; they can, moreover, subsist only upon the Vine.

5. Ordinary eggs take about fifteen days to hatch, at the mean temperature of 15° Cent. (59° Fahr.); this is the limit: a lower temperature retards, a higher temperature accelerates their hatching.

Ordinary eggs, when removed in adhesion (for the Phylloxera does not lay in the soil, but only on the roots of the Vine) will be hatched after about fifteen days; the young will perish five days afterwards.

The most favourable conditions for the introduction of the insect would be as follows:—

A Phylloxera is removed in the soil, say a pregnant mother, which survives for a period of five days; it lays an egg before dying; the egg takes fifteen days to hatch, and the young insect which is produced five days to die. This makes in all twenty-five days. This period would appear to be quite sufficient, particularly with the condition of a slightly elevated temperature.

A quarantine of a few days might be enforced for additional security.

6. The winged Phylloxera produces from four to six eggs of unequal sizes, from which proceeds a special generation of minute Phylloxeras of both sexes; the female lays a single egg.

This single egg exists through the winter without hatching, and indeed only commences to develop at the return of the fine weather. M. Balbiani has named it the winter egg (*œuf d'hiver*).

This egg, which has the faculty of retaining its vitality for so long a period, is particularly to be dreaded.

7. The minute Phylloxeras of both sexes have no digestive organs or sucker; they do not feed, and are therefore not necessarily attached to the Vine; their function is to pair; the female lays her egg on the stem or branches of the Vine, on the surrounding objects, &c.

It is this special egg (winter egg) which is the most to be dreaded, and it is to this egg alone that the introduction of the Phylloxera in packing-cases, straw, &c., could be attributed; this would, however, require confirmation; in fact, I am not aware of any well-authenticated instance of the introduction of the Phylloxera resulting from the transmission of the winter egg.

Such introduction is nevertheless possible from a scientific point of view; propagation takes place in the natural state by this means (from 6000 to 8000 per annum). The accidental removal of the winter egg by human means might clearly take place, it seems somewhat improbable that such removal should be effected by means of articles in general; but the importation of all materials for a vineyard—of stakes, supports, boughs, and remnants from vineyards—should be strictly forbidden.

Is the winter egg to be dreaded through the importation of fruits and seeds of any kind, of Grape stones, or of Grapes divested of leaves? The International Convention of Berne concluded that it was not, but more vigour should be exercised in a land free from the scourge, and removed from its seat, than in European countries.

Two points were particularly mentioned by Captain Mills, Under-Secretary of the Cape Colony.

a. Cereals are clearly to be placed in the category of seeds, fruits, &c. The introduction of the Phylloxera in its natural state is impossible; that of the winter egg is not very probable, the egg would no doubt be destroyed in the many handlings incident to ship transport.

It cannot be said that there is absolutely no danger, but it would require a concatenation of circumstances which it is difficult to imagine to bring about the misfortune of the insects introduction.

b. Potatoes* cannot carry portions of roots with them unless gross blunders are made, as they are always divested of earth. They might possibly carry some stray Phylloxeras, as well as their eggs.

Neither the eggs nor the insects will be able to give birth to any progeny if an interval of about thirty days takes place between the time at which the crops are gathered (or, better still, the time at which they are shipped) and that of their arrival.

The Phylloxera Commission (of France) several years ago considered the question of the importation of Potatoes into Algeria; notwithstanding serious apprehensions, the Commission sanctioned this impor-

* The Colorado Beetle (*Doryphora*) is to be feared, as is well known; I have no concern with it here.

tation, in the fear of depriving our colony of a most important resource in years of distress, but they reported in favour of disallowing the importation of living plants.

On Saturday, June 5, 1880, before the representatives of the horticultural societies of France, the Commission maintained its full concurrence with the Protection Proclamation of Algeria (Proclamation of the Governor-General).

General Conclusions.

It cannot be denied that it would be dangerous to authorise the importation of cereals, but this danger, which is theoretically shown to exist, is comparatively slight, and might well be overlooked when the difficulties likely to result from absolute prohibition are considered.

The importation of Potatoes, though completely divested of earth, presents a more serious difficulty; but the length of the voyage must diminish the chances of introducing the Phylloxera, if an interval of thirty days at least takes place between the time at which the crops are gathered (or shipped) and that at which they are landed.

Nevertheless, the immediate proximity of these products to vineyards, and especially their importation, are always to be dreaded.

As a rule fruits and seeds might be admitted, but the introduction of all parts of the Vine, of everything connected with its cultivation, of plants grown in its neighbourhood, &c., should be strictly prohibited.

It would even be well, if such a course were possible, to imitate the example set by Algeria, and to forbid the introduction of all vegetable products whatever, with the exception of those which are absolutely required for consumption.

It is on the presumption that the Phylloxera does not exist at the Cape of Good Hope that these stringent measures are recommended.

There is an essential distinction to be established between the districts in which the Phylloxera exists and those where it does not. The above remarks are applicable to districts in which it is supposed or suspected that the Phylloxera exists.

Captain Mills seemed disposed to consider that such was the case with regard to all the wine districts. *Maxime Cornu, Paris, June 9.*

DISEASE IN PLANTS.

(Continued from p. 600.)

WOUNDS, &c.—Perhaps the strongest contrasts may be seen in the wounds or strippings of trees that go down to the layers of wood; or, in what will follow the amputation of a branch from a tree and of a limb from a man. You may see in front of St. Catherine's College some Elms from which branches were cut yesterday, and not far off, at Addenbrooke's Hospital, I dare say you may see patients from whom parts of limbs have been amputated; and, if the stumps have been treated after the manner advised by our distinguished President, they will have been left to be repaired by Nature as truly as are the stumps of the branches of the Elms. The stumps in the hospital have been cut in better shape for healing; but those in the garden have the advantage of more perfect rest, and, in whatever shape they might have been cut, the result would have been the same. Now, it is most probable, nearly sure, that the human stumps will be healed in a few weeks. But it will need a very long life to see the healing of any stump of the same size on the trees. The wood cut across will die, and its necrosis will never be repaired; rotting, like a caries, may extend from it into the trunk, but it will not be repaired. Year after year the annually formed rings of new wood and bark will overlap the borders of the wound; each year they will grow thicker and will converge, and at last after many years they may, perhaps, meet and coalesce and cover in the wounded surface; but they will not unite with it, there will always be a cavity over the dead wood: a stump so ill-healed as would be a shame to any hospital. I must not imply that there are no better healings after amputations in trees than you may see in Elms; some trees heal better, as do Beeches and Planes; but I think it may be said generally that the stump of any branch will need more years for its healing than the stump of a limb of the same size will need of weeks; and that, in the end, the work of the weeks will be far more reparative than that of the years. And in this reckoning I

would include not only the limbs that have been surgically cared for, but those that have been violently crushed or mutilated in animals left to themselves.

This slowness and defect of repair are observed in other things besides the healing of wounds. Dead portions of leaves, or of wood, or other structures, are not cast-off unless by external force.* We have borrowed the word "exfoliation" to tell of the separation of dead bone; but, as I have said, it is only living leaves that can exfoliate. Dead pieces of young wood remain where they were killed, as they often are, without external wounds, by hailstones† or any accidental blows. The structures adjoining them may become hard or corky, but they do not separate from them, there are none of the reparative changes which are seen in even a "quiet necrosis." Similarly you may often see dead tips of leaves perfectly defined from the living parts by colour and by texture, yet without any groove or other sign of process of separation, the dead and the living epidermis remaining still continuous. And as to recovery from diseases I believe it may be summed up in saying that no vegetable structure altered by disease ever reverts to its original healthy state.‡

through at the injured part, where there was still a deeply depressed scar, the concentric rings of wood proved the growth of fifty years before, and 150 after, the injury, and even now the healing was not complete; there was still a cavity between the old wood and the new. The healing was not such as we should call good in any similar case in an animal. Still, there was healing; the "intention" was maintained for a century and a half.

Surely, in our familiarity with the processes of repair we overlook their wonder; the wonder that there should be in anything an inherent power of repairing the consequences of accident; that, for instance, in any one of us, after living for many years, with only those timely regular changes, the methods of which we have inherited from our ancestors, an accident, some quite unlikely event, such as may never have happened to an ancestor, such as no conceivable process of selection or of inheritance can have prepared us for, some mere chance as we must call it, should bring out an increased power and a new method of organising structures exactly adapted to the repair of the consequences of that chance. And let me remind you that this power of repair is



FIG. 116.—JAPANESE CHRYSANTHEMUM. (SEE P. 628.)

Now let me commend to you this subject of the repair of injuries in plants, not only for illustrations of our pathology, but as a part of the study of what may be called the philosophy of healing. They heal very slowly and imperfectly; they may need many years for the healing of small injuries—eight or nine years for a frost-crack in a young branch§—yet they do heal; the intention, as Hunter would have called it, is not given up. Let me relate one case. || A Fir tree, fifty years old, had a large piece of bark stripped from its trunk. The wound extended round nearly a fourth of the circumference of the trunk, and laid bare the wood. It was not dressed or guarded; the outer layer of the exposed wood died as usual, and then every year the successive annular growths of new wood and bark extended a little further over the bared place. In 150 years these growths met and coalesced, and the wound was covered in. When the tree was felled and cut

not a property of living things alone—it is evident in crystals.

It may seem unreasonable to say that we may study principles of elemental pathology in the apathetic inorganic world, or in things that we call dead. But certainly we may study them in crystals. The experiments of Jordan, which I repeated many years ago, and related in lectures at the College of Surgeons* have been extended by Pasteur,† Karl von Hauer,‡ and others, and this chief fact has been abundantly proved—that if a portion of a crystal be broken off, or filed or dissolved away, and if then the mutilated crystal be replaced in a solution of the same salt or of an isomorphous one, the lost part will be replaced, the damaged form will be repaired. In this process of repair the whole crystal will be enlarged, new crystalline matter will be formed on every surface, but the quantity formed on the injured part will be greater than that formed on any other part, and repair will be more active than mere growth till the proper form of the crystal is regained. Then, when the repair is complete, growth alone will go on and each part of the crystal, if it remain in the same solution, will increase in due proportion with the rest.

* A partial exception must be made for the tips of the fibres and vessels divided in some cuttings. See Arloing, "Sur le Bouturage des Cactées," *Ann. des Sc. Naturelles: Botanique*, B. iv., p. 24, 1876.

† Goethe, *Ueber den Krebs der Apfelbaume*, 1873, p. 2.

‡ "It is confessed that diseases in the vegetable kingdom, when once established, are, for the most part, uncontrollable." Berkeley, *Gardeners' Chronicle*, Jan. 21, 1854, p. 37.

§ Goethe *loc. cit.*, figs. 3 and 4.

|| From Ratzburg, *Die Waldverderbnisse*, vol. i., p. 98, pl. 21-22, and 31a-32.

* *Lectures on Surgical Pathology*, p. 118, ed. 3.

† *Ann. de Chimie et de Physique*, t. xlix., 1857, p. 6.

‡ *Sitzungsbericht der K. Akad. der Wissenschaften*, B. xxxix.; Wien, 1868, p. 611.

It seems impossible, by any just definition, to separate this process from those which, as pathologists, we study in the repair of the accidental injuries of living bodies.

But while, in the widest survey of repair that we can take, we may thus see an instance of so simple an expression of the Divine Will as we call a general law, yet in the degrees of apparent observance of that law we find differences very wide and, so far as I know quite inexplicable. We do not find equality of reparative power in all formed bodies, nor any rule of proportion between that power and their less or more simplicity of structure. There are some rules of such proportion among animals, but they are very partial, and the rule fails completely when we compare the reparative processes in plants with those in animals.

Let me revert to this comparative defect of healing powers in plants, though it may be only to tell my ignorance of all relations between it and any other of their properties or the conditions of their life. It is not related to any immunity from injuries enjoyed by them, for they are far more exposed to injuries than are animals; nor to any absence of necessity for healing, for, after wounds, they suffer severely, and often fatally, from the attacks of parasites of all kinds. It is not because of any lack of productive power at the injured part, such as we might be disposed to refer to the

INFLAMMATION.

The resemblances which, in human pathology, we trace between the processes of repair and some of those of inflammation are well marked in plants. Of course, in speaking of inflammation in plants, we must be nearly limited to the essential parts of the process. In ourselves, we look to its so-called signs—heat, redness, pain, swelling, and disturbed function: but these are not of the essence of inflammation, and, even in ourselves, one or more of them may be absent when yet the real process of inflammation is active. For the elemental pathology of inflammation, as for that of decay and of repair of injuries, we must study the altered relations between the elemental formed parts and the varying formless materials about them; and these, let me repeat, may be seen more nearly in plants than in animals, in which it is hardly possible to isolate any parts from the influence of stagnant or wandering corpuscles or of circulating blood and nervous systems.

The signs of inflammation, I have implied, cannot well be observed in plants. Increased heat in the part has not, I think, been noticed; yet I suspect that, with so rapid organisation as sometimes ensues in gall-formations, it might be detected. Redness is often present, as in the galls and curled leaves of which I shall speak presently; but it is in a fallacious

any wounds, the cell-structures actually involved in the injury perish and dry up; that those most nearly adjacent suffer degeneration, indicated by their protoplasmic contents becoming turbid, and their chlorophyll becoming yellow or brownish; while in those next to them, and within distances varying according to the injury and the texture of the part injured, enlargement of cells ensues, and increases by division and thickening of the cell-walls.

In these changes you may study, with comparatively easy experiments, imitations (as near as difference of texture will allow) of the most constant constituents of inflammation in animals, especially those of the least acute of the productive interstitial inflammations, leading to thickening, opacity, induration, and other such changes. The defective maintenance of some of the natural structures of the part is evident; so is an increased afflux of nutritive material; so is an increased production of lowly organised structures, not widely different from the natural structures. *From Sir James Paget's Address to the British Medical Association.*

(To be continued.)

AN AMATEUR GARDENER'S EXPERIENCES.—V.

ROOT-PRUNING OR LIFTING FRUIT TREES.—I think it will not be without its use if I devote this paper to a statement of my experiences on the subject of the root-pruning of fruit trees. I gained my earliest knowledge on the subject from Rivers' *Miniature Fruit Garden*, and some very able articles by Mr. Errington which appeared in various publications. The reasonableness of the practice commended itself to my judgment, while it was to me merely a matter of theory. At an early stage of my gardening life I determined to test the theory, and twenty years' experience of the practice justifies me in saying that I am of opinion that, when properly conducted, root-pruning is the royal road within human reach to outdoor fruit growing in gardens.

I remember once seeing in a famous garden a lot of trees which had been root-pruned and pinched to a state of death in life. They had been debilitated to such an extent that they barely existed, and when they bore fruit at all it was of the most stunted and inferior character. I am inclined to think that it is trees treated as badly as those were, or to trees in an approximate state, though perhaps less advanced towards the final stage of extermination, which has caused some practical gardeners, who write in this and other journals, to express views which prove that they can never have seen trees properly root-pruned. And by root-pruning I wish it to be understood that I mean no wholesale demolition of the roots, but only such a diminution of their number and length as takes place when a tree is lifted out of the ground after the soil around them has been carefully loosened with a fork, and as much of it as need be removed in order to enable that to be done.

The object of root-pruning established fruit trees is so to affect them as to check their dominant tendency to luxuriant growth and to modify their habit, so as first to arrest their energies, and next to divert those energies towards a fruit-bearing tendency. Trees growing in a state of Nature grow for many years, increasing in bulk according to their individual circumstances and surroundings before they get into a fruit-bearing condition. It was to a Pear-tree grown in this way that the old distich, doubtless, specially referred to—

"He who plants Pears
Plants for his heirs."

Root-pruning, as a general operation, is decidedly modern in age, and its results falsify this concentrated expression of the wisdom of our forefathers; for though Switzer in his *Practical Fruit Gardener* clearly shows that his eyes were fully opened to the fact that root-pruning was a process to be used with hopefulness, and a few other gardeners in the early part of the present century adopted the practice to some extent, and with successful results, it is only in comparatively recent years that the principles on which it is based have been thoroughly understood, or prominently advocated and recommended for general use in this country. In China the somewhat analogous process of dwarfing trees is, as is well known, of great antiquity.

Looking at the operation from the point of view



FIG. 117.—THE DRAGON CHRYSANTHEMUM. (SEE P. 628.)

want of circulating blood or of nerve-force; for from many wounds of plants, as the art of grafting and of multiplying by slips or cuttings may show, entire new plants may grow; and yet these are not reproductions; they may, in one sense, replace that from which the slip was cut away, but they do not reproduce it; they are not continuous with its remains, and they commonly become much more than that which was lost would have become. Again, the increased growths, which injuries may produce in plants are not to their own advantage, though they may be so to that of a successor or a parasite; and on many wounds of wood hard and heaped-up masses of new wood may form, such as may be roughly compared with our cheloid scars and excesses of bone-callus. Neither can the defective repair be ascribed to any general tenacity in the regular methods of growth in plants, or to any general want of pliancy or of ability to adjust themselves to new conditions; for the art of horticulture abounds in instances of changes in methods of growth completely adjusted to changes of condition. There are in plants ample powers for enlarged growth and ample range of pliancy in method; but that special change in method of growth, which is familiar to us in ourselves and other animals, and which, as with design and on purpose, is adapted to the speedy healing of injuries, is in them comparatively defective. Which of you will work so as to find the explanation of what seems so strange an inconsistency?

likeness to the redness of congestion of blood; it is only the colour of imperfection which one sees in many immature and many decaying leaves. Pain we cannot suppose in plants; and yet it may be through some change like to that of transmission of nerve-force that we must explain what I find told by Frank;* that in many green parts of plants there appears, some few minutes after wounding them, a change in the normal position of the chlorophyll-grains and the protoplasm in cells at a distance from the wound—a change which, as he says, must be regarded as due to the transmission of a stimulus of some not well known kind from the wounded to the intact living cells. Slight slowly ensuing swelling is often evident in the inflamed parts of plants, and is due, as in animals, to new formation and to increased afflux of nutritive matter—an afflux, be it observed, not due to any vaso-motor nerve-change. Disturbed function is evident enough.

But the likenesses between the inflammations in plants and in animals are best shown in their visible structural changes; and these have been admirably traced by Waldenburg.† He has applied various irritants to leaves, fruits, and stems—such as foreign bodies, setons, crushings, cauteries, and others. The results, speaking very generally, are that, as in ordin-

* *Encyclopædie der Naturwissenschaften*, Abth. i., Lief. 12, p. 338, from a paper by him in *Fringsheim's Jahrb. für wiss. Bot.*, viii., p. 220.

† *Virchow's Archiv*, Band 27, 1853, p. 145.

of an amateur gardener who has only a small garden, but who at the same time has a large desire for growing a variety of fruit trees and making them fruitful as early as possible, and also with such experience as I have had, which I may fairly describe as successful, I can say, without the slightest reservation, that root-pruning is a process of the greatest possible value. In a garden within 3 miles of a large town not more than a quarter of an acre in extent, the soil of which was naturally poor sandy stuff overlying a hungry gravel, though improved by the yearly addition of good turfy loam, I have fifty pyramid trees in full bearing which I have grown from maiden plants fresh from the nurseries, some of which for years past have borne large and good crops of fruit. I have Pear trees which have yielded 50, 100, 200, 300 Pears in a season; Apples equally prolific; and though I have not been quite so successful with Plums—due, as I think, to insufficient root-pruning and a bad climate—even of Plums so far as the kind called Victoria is concerned, I have had crops of fine quality which have compensated me for failures with some of the less prolific kinds.

When a fruit tree shows a tendency to produce an undue quantity of vigorous shoots it exhibits a habit inimical to fruit bearing which root-pruning can at once check, for it shows that the roots are in a condition to yield a supply of fluid food which is too much for the tree, unless it be desired to enlarge the size and number of its branches. Gardens are usually too small to warrant a persistent development of the size of the trees in it, and an indefinite postponement of their fruit-producing powers. On the contrary, early fruitfulness is the quality most desired, especially where the trees are numerous. And it is in such cases that root-pruning is of the greatest possible value; for by its aid, judiciously employed, the growing tendency of any tree can be both arrested, with little or no injury, and directed towards the development of a fruit-bearing tendency.

My usual practice is to lift the trees biennially. This is done as carefully as possible towards the end of October, or earlier if the leaves have commenced to fall. If I find any of the roots grown excessively long I shorten them to the average length of the remainder, cutting off the superfluous portions with a long slanting cut underneath, always using a sharp knife; this, however, is rarely necessary if the trees are lifted every other year. I have trees twenty years old, which it takes two strong men to lift, so furnished with fibrous roots that when they are raised from the soil they will stand upright unsupported. Large as these trees are they can be lifted with the utmost confidence; they have undergone such a course of training that the following season after being lifted they show no signs of suffering; the chief visible effect is a shorter style of growth and the invariable development of a plentiful supply of fruit and fruit spurs.

A very great number of advantages attend on this operation of lifting fruit trees at intervals of two or three years; first, it prevents the roots going down deep away from the surface, and thus one of the causes of gross watery growth in the tree is avoided; second, it admits of the removal of exhausted soil, and its replacement by such as contains stores of food ready for use when wanted; third, it keeps the ground in a state of cultivation, which admits the free passage of rain, air, and warmth, and thus assists the trees to bear the vicissitudes of our variable climate with more or less impunity; fourth, it undoubtedly encourages the formation of fruit-spurs and their subsequent development; and fifth, it reduces the necessity for branch-pruning to very narrow dimensions.

Some writers contend that the process I am advocating stunts the trees and makes them unhealthy. Carried to excess it may do so; like everything else in this world it is capable of being used to an immoderate degree; but this abuse of an admirable method is no argument against its use. The great point for the cultivator is to be able to discern when his trees are growing so luxuriantly as for the time to overpower any tendency towards fruit-bearing. It is but rarely that both characteristics exist simultaneously in a tree, and where the one or the other prevails it is easily recognised by the trained eye. It would be very injudicious to lift a tree to check its growth when it was obvious that it was too much checked already; it is equally injudicious to adopt such a system of winter pruning with an over-luxuriant tree as will tend to make it still more

luxuriant, and yet this is what is too commonly done where the only pruning after the fall of the leaf is that of the branches. With the joint use of gentle root-pruning in the autumn, and by moderate pruning of the branches by finger-and-thumb in the summer, the energies and capacities of trees may be utilised to the advantage of the cultivator, and the need for branch-pruning in the winter reduced to a minimum. *Philanthes*.

Florists' Flowers.

SEASONABLE NOTES.—AURICULAS.—The weather has set in very cold—snow one night and sharp frost the night after—this, we hope, will keep the plants quiet, and prevent any more trusses being thrown up. The weather previous to the cold setting in on the 19th ult. was mild, and we left the plants up to that time behind the north wall; we shall presently put them into a more open place. Now is the time to get rid of all insect pests. The greenfly is rather torpid, but it shows signs of life, and we are trying to destroy them entirely by fumigating; when this is well done now we seldom have any trouble with them until after the blooming period. Look out at night for slugs, caterpillars, &c. Whenever the weather is favourable during the winter the small seedlings continue to appear in the seed-pots from the seeds sown in August. Keep the plants as dry at the roots as possible without quite drying up the ball. Shut up the frames close at night when the frost is likely to be severe. There is seldom any need to cover with mats this side of January.

CARNATIONS AND PICOTÉES.

This has been the best season we have had for many years; nearly all the layers were well rooted before taking off, and it is pleasing to see the young roots forming on the surface of the soil in the small pots; almost every plant has taken readily to the new potting material—we do not seem to have lost 1 per cent. of them. There was the advantage of mild weather when we were potting up the layers, and this lasted for about three weeks, so that the plants are now well prepared for colder weather. The treatment now is to keep the glass lights over them whenever the weather is rough and stormy, merely admitting a little air at the back of the frames. During fine weather we pull the glass lights off altogether. Water any plants that require it, they need more water than Auriculas. Fumigate for greenfly. The perpetual flowering section are very useful now; they produce very clean and beautiful flowers, in a temperature of 50° to 55° at night with a dryish atmosphere: the blush Miss Joliffe and the pure white La Belle are amongst the most useful for early flowering.

DAHLIAS.

The roots must be taken up on the first favourable opportunity, and if it is not possible to dry them out-of-doors take them into a shed, vinery, or Peach-house, and drain the water from the hollow stems, by standing them with their crowns downward for some time. Store them away when dry in a frost-proof shed. Pot-roots may also be stored away. Pack the pots on their sides one above another in any of the houses from which frost is excluded. They should be dry at the time of storing them away.

HOLLYHOCKS.

See p. 430 for instructions about potting up and wintering old stools. They may be protected in frames or glasshouses from rain. They do not suffer from frost if they are dry at the roots. The plants struck from eyes of the side shoots, which may now be in small 60-sized pots, should be potted into small 48's. They will continue to grow slowly during the winter. Such plants succeed well if the pots are plunged in cocoa-nut fibre refuse in a cold frame.

PANSIES.

It is very desirable to pot up a number of plants for flowering in pots; we could not do ours last month because they were not ready. They have now been done. The fancy Pansies have approached near to the named sorts in form and quality, and surpass them by their rich colours; we have few more beautiful spring flowers than these, and if a cold frame can be spared for them they will repay the cultivator for any trouble and attention they require during the winter. Keep the plants clean, and give plenty of air.

PINKS.

The beds were no doubt planted early in October, but if they were not planted at that time, and a favourable opportunity can be obtained, they may yet be planted. It would be well to place some dry loam that has been kept under cover round the roots, which should be disturbed as little as possible during the operation of planting. If convenience exists, it may be safer to lift the plants, put two in a 3-inch pot, winter them in frames, and plant out in March.

PENTSTEMONS.

These are still producing their bright-coloured flowers freely, and they will do this until the weather is too cold if the precaution is taken to remove the seed-pods. We have just taken off the cuttings, and put them in pots under a hand-light; they will form roots during the winter, and scarcely require any attention.

PHLOXES.

The old stems should now be removed, and the surface of the soil round the plants covered with rotten manure; dry spent stable-manure from the Mushroom-beds answers as well as anything. Those possessed of young plants in pots, and who have no room for them in frames, would do well to plant them out in well prepared beds. Well established plants do not die off in the winter. Plants intended to flower in pots may either be potted now or in the spring.

POLYANTHUSES.

These require much the same treatment as Auriculas, except that they are more exposed to the weather. Our plants were out-of-doors quite exposed to the rain and even snow; but when we found them covered with a sheet of white they were taken under glass. They are thoroughly exposed in this way to destroy the red-spider, which is exceedingly troublesome in our dry atmosphere and light gravelly soil. Do not allow the soil in the pots to become quite dry or even so dry as the Auriculas. Air must be admitted to the frames very freely.

PRIMULA AMENA, ETC.

These are as liable to be attacked by red-spider as the Polyanthuses are, and in many cases the leaves are quite destroyed during the month of August. Ours were potted at that time, and although the leaves were quite gone we found plenty of healthy crowns. When it is intended to increase the stock as much as possible each of these crowns should be separated from the others, and be potted in rather lighter soil than some others of this tribe. The hardy Primulas grown in pots, such as *P. rosea*, *P. farinosa*, *P. scotica*, &c., lose all the old leaves naturally at this season and form a hard crown. They will stand any amount of frost, and merely require to be kept cool. *P. farinosa* more than any other suffers from too much water at the roots when grown in pots, and yet it is found naturally in marshy places. *P. denticulata*, *purpurea*, *cashmeriana*, and all of that section, owing to the mild weather in September and early in October, have their trusses of flowers too far advanced, and in many cases they were in flower a month ago.

ROSES.

We ought to remember that the early frosts last year were most destructive, and as the frosts have again set in early it will be well to place a good mulching of rotten stable manure round the roots. We did not lose a single Rose where they were on their own roots or budded on the seedling Brier or Manetti stocks. Some good Rose growers are taking to strike Roses from cuttings to a large extent; now is a good time to put them in. Let the ground be deeply trenched and well manured; take the cuttings off with a heel, and make them about 6 or 9 inches long; insert them firmly in the ground a foot apart and 2 feet between the rows. They should be put into the soil about 4 inches, two or three buds above the ground will be enough. *J. Douglas, Ilford, E.*

COOKING RABBITS IN AUSTRALIA.—The Australian Meat Preserving Companies, which have during the last year or two taken to cooking and "preserving" the rabbits which have been killed in such enormous numbers, have found their resources unequal to the task of boiling and tinning in a fresh state all the rabbits which have been offered to them. The Colac Preserving Company, for instance, whose works are situated about ninety miles from Melbourne, had, on an average, 7000 of these rodents brought in every night for the first four nights of the past season's operations. How the supply would have increased as the season advanced it is impossible to say, but orders were given to limit the daily quantity to 2700 pairs. This number cooked and "canned" for five days a week, and during a season of twenty-five weeks, gave 675,000 rabbits as the return for one establishment—a quantity which is 50 per cent. more than was dealt with in the season of 1879. *The Colonies and India.*

Garden Operations.

FLOWER GARDEN.

The weather has recently been all that could be desired by those having to furnish the flower-beds with shrubs and other hardy plants for winter effect, or with bulbs and other spring-flowering plants for a spring display. Such work will therefore be finished, or if not, should be at the earliest moment, the final touch of neatness being imparted to the beds by surfacing with cocoa-fibre refuse all the bare soil between the plants, and in the case of entire beds of bulbs the whole surface should be covered with it. The effect will be greatly enhanced if the edgings of grass verges of both beds and walks be newly trimmed, and the walks brightened up by a sprinkling of fresh gravel and well rolled down after rain, as the turf also should be to keep it free of worm-casts. Plants of uncertain hardiness that are to be risked out should be given some little protection, and here again cocoa-fibre is invaluable. *Phormium tenax* safely wintered with us here last year, by merely having about 4 inches in thickness of this material round about the base of the plant—the tops were not protected; and though, in one instance, the plant seemed quite dead, strong new shoots pushed through the fibre early in April, and to-day it is one of the best plants we have. The success of the fibre as a protector in this case will suggest how profitably it may be applied to other plants of like nature, no matter in what situation, as its use is never an eyesore. It will not be a great sacrifice of flowers—should the herbaceous borders require rearranging—to do them now; and there will be the advantage of a better growth and bloom next season. Where such rearrangement or transplantation is not intended to be done, the borders should be freed of dead stems and flowers, fresh pegs and labels put to such plants as require it, and the ground neatly forked. A few small evergreen shrubs planted at regular intervals over the borders would add to their appearance during the winter months. As soon as the leaves are down, shrubby borders should be “pointed” over. Continue to plant shrubs and trees so long as the weather continues open; they should all be immediately secured to supports, and also surface-mulched. The late snowstorm so weighed down some of the more upright-growing shrubs as to cause the branches to part in the middle, these should be at once drawn together with tarred cord, or another storm may cause them to be irretrievably injured. All upright formal growing plants, of which the Irish Yew and Irish Juniper may be named as types, ought from the very first stages of growth to be kept to single stems, the danger of injury from storms of snow or wind would then be reduced to the minimum point. From the present time to the end of the year is the most critical period as regards bedding plants, more particularly where there are not proper structures from which damp and frost can be excluded. Under such circumstances it is well to remember that “prevention is better than cure,” therefore water most sparingly, and that in early morning when the day is likely to be fine, to dry up all superfluous moisture before the houses or pits are closed up at night. Alternantheras and Coleus must have plenty of heat and be kept well up to the light; shelves over pipes in Pine or plant-stoves suit them thoroughly. Protection should be in readiness for covering up the cold pits containing the young stock of *Calceolarias*, *Violas*, *Gnaphalium*, *Euonymus*, *Leucophyton*, *Echeverias*, and *Semprevivums*. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

The weather, which is at all times so uncertain, is for the present everything that can be desired for pushing forward ground operations of all descriptions. It is a well authenticated fact that success in planting depends largely upon the condition of the ground at the time planting takes place, always of course providing that ordinary skill is used in carrying out the details. There are, perhaps, other conditions also which are equally essential to success which are not always under control and difficult to secure under certain circumstances. I refer particularly to the atmospheric conditions to which the roots of trees are exposed during their transfer from one place to another. There is no operation to which fruit trees are subjected where it is necessary to uncover their roots that should be undertaken, except in very pressing cases, in unfavourable weather, whether it be frost or severe drying winds, the latter being nearly as injurious in their effects upon the roots as the former. Where trees are being removed from one portion of the same garden to another, opportunities occur which may be taken advantage of, and a few hours each day may be snatched for the work, even in changeable weather; but where trees have to come from the nursery the complexion of the case is changed. In any case it is desirable to secure the best conditions the weather affords, as, for example, when it is dry

overhead and the atmosphere is mild and humid, as it has been during the past week.

Now is a good time to make plantations of small fruits such as Gooseberries, Currants, and Raspberries, or to transplant old bushes into fresh quarters. I prefer planting Gooseberries in quarters by themselves, at about 7 feet between the rows, and the same distance from plant to plant, and the early and late bearing kinds would be best kept in their respective sections, in order to facilitate protection from birds when the fruit is ripe. A selection of kinds which will give a good succession would be as follows:—Early Sulphur, Beaumont's Smiling Beauty, Green Gascoigne, Broom Girl, Early White and Green Walnut. These would be succeeded by Ironmonger, Red Champagne, Yellow Champagne, Whitesmith, Rough Red, and Red Warrington, and if very large kinds are desired, the Lancashire Prize varieties will furnish fruits of enormous size under ordinary cultivation. Red and Black Currants require to be planted about the same distance apart as the Gooseberries, and I have seen and grown both very well in an orchard under the shade of Pears and Apples which were not planted too thickly. Of Black Currants Lee's Prolific and Black Naples are the best, the former being a wonderful cropper, and is very appropriately and truly named Prolific. Young trees of this variety planted in rich open soil will yield astonishing results, both as regards size of fruit and quantity, and the trees will require little or no pruning as long as they fruit freely. Champagne and Defiance are the best kinds of reds.

In addition to making new plantations of small fruits it is a good plan to give old bushes a change of soil by removing them to fresh quarters. We are at present employed at this kind of work, which is done in the following way:—A plot of ground is chosen, and lines are laid at the required distances between the rows, a stick indicating the place of every plant along the line; a hole of suitable depth and width is then made prior to lifting the plants. The bushes have each a couple of barrowloads of fresh soil put to their roots, and over this a layer of well rotted manure is laid, and this is covered with the natural soil of the garden which is in turn heavily mulched with refuse or litter, such as the remains of a spent hotbed. The unsatisfactory state that small fruits are frequently seen in is entirely owing to their being left in the same piece of ground, where they exist for a long time with surface-dressings, but gradually deteriorate as the roots extract from the soil all those elements that are conducive to their welfare. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

CUCUMBERS.—Add some more soil to the hillocks of late plantings as soon as the roots show through the surface of the mounds, and complete, if not already done, the landing up of the first autumn planting, and then put on a mulching of well-rotted dung, which will not only prove beneficial to the plants by maintaining the roots in an equable condition, but will also act as a stimulant by its substance being washed to the roots at each successive watering. These should be copious and frequent, according to the special circumstances of each individual plant or house, and at a temperature of from 75° to 80°, bear in mind, however, that a superabundance at one time cannot compensate for a deficiency at another; hence the necessity of knowing when to apply and to withhold water to the roots, a knowledge that can only be acquired by possessing a practical knowledge of the wants and conditions of the plants, and even then the wants (the application or non-application of water to their roots) must, as has been stated in former Calendars, be determined by a variety of circumstances, foremost amongst which is the mode by which bottom-heat is obtained, and the scope of root-action possessed by the plants, as also by their condition and appearance generally. Let the fires be stopped by 8 o'clock on bright mornings, by which time solar will have taken the place of artificial heat. This should be done on bright mornings, even though the thermometer does not register the minimum degree of heat at the time above indicated, for the obvious reason that if the fires had been driven on until a medium day temperature had been attained, the sun, meanwhile, as well as the fire-heat, would have increased in force, thereby rendering almost immediate ventilation necessary—thus letting out the very thing (heat) that labour and fuel had been wasted in getting up in the house, and admitting, to a great extent, the very thing that a short time before had been sought to be kept out. The fires should be again started in the afternoon as the sun is going off the houses and decreasing in force, so that by the time the heat husbanded by entrapping the sun's rays by shutting up early has declined to 65°, the heat radiated from the hot-water pipes may be sufficient to maintain that temperature in the house during the night; but in the event of severe frost a night temperature of 60° will be ample, and to obtain and maintain even this low temperature in a moderately large-sized house the supply of piping

must be liberal. Under these circumstances it will be advisable, not only for the sake of economising fuel—which is a consideration of no small import—but of obtaining and maintaining a more genial heat, to cover the Cucumber-house at night with mats or other protecting material when it is convenient to do so. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

CONSERVATORIES.—Now that roof-climbers are taking their rest, root-action is at a very low ebb, and the borders should therefore be kept almost without water from this time till quite the turn of the year. The advantages of allowing the soil to become partially dry at this season are manifold, one of the chief among them being the sweetening process it undergoes, as no sooner does moisture escape from it than air rushes in, and the ameliorating influence of this is so great as to be of incalculable benefit to the health of the plants. In cases where these are affected with insects, as often happens with *Tacsonias*, which are always more or less subject to scale, the present will be found a good time to take them in hand, and the best way to assail them is first to severely thin out the shoots by cutting off all the older ones that have done flowering, and then give the bark of the remainder and that of the stem a good dressing with a strong solution of nicotine soap, put on by means of a brush or syringe, taking care when doing so to wet every part, so that their destruction may be ensured.

As regards Camellias, the safest course to adopt with them when they want cleansing is to make use of the garden engine charged with clear soft water, which, if sent into them with some force will so wash the foliage as to leave it in a fresh polished condition most pleasing to look on. The stage at which plants of these have arrived is a critical one, and renders much watchfulness necessary to guard against their being subjected to undue excitement, as now that fires have to be applied to keep out frost and maintain the houses in anything like an enjoyable state, there is always a risk of the temperature running too high, which if it occurs very often ends in a shedding of the buds, or if it does not absolutely cause them to fall, the blooms when hastened on out of their ordinary course are sure to be puny and small. Camellias will bear slight forcing, but the degree of heat must be low, and the atmospheric moisture well regulated, for if they lack this latter they will show their resentment at once by easing themselves of their load. Dryness at the root will bring about the same result, and I would therefore urge the importance of thoroughly examining the soil to ascertain its condition below, as, although the tops may appear all right, it is often very misleading, and the plants go on suffering from want. These remarks of course refer to those planted out or in large tubs, and to make sure of such having a proper soaking, the best way is to form a basin-like receptacle round their stems at a good distance from them, by placing a ring of earth, which, by confining the water within its bounds, prevents the escape of any through cracks or fissures leading away to the drainage. These cracks, when detected, should always be blocked up by ramming fresh soil tightly into them, as it is impossible to keep the roots properly supplied where they exist.

STOVES.—These will soon be gay with winter flowering stuff, but to have the plants serviceable for decorative purposes in cooler structures or in rooms, they must have their heads well elevated so as to bring them up near the glass, where they can have the full benefit of sun, light, and air, which will not only improve the colour of the blossoms, but will render them of much greater substance of petal, and, therefore, considerably more lasting when cut. Such things as *Poinsettias*, *Thysanacanthus*, *Sericographis*, and other soft-wooded subjects of that class, will be greatly benefited by frequent applications of weak liquid manure, as also any *Crotons*, *Dracenas*, or such-like that are pot-bound, by the help of which stimulant they can keep up their colour. *Gardenias*, too, stand and enjoy the same treatment, and more especially those that are old and lack vigour, which, if they are healthy, it quickly stimulates and assists them materially in developing their buds.

GREENHOUSES.—*Chrysanthemums* will be the great feature here, and to prolong their beauty to as late a period as possible it will be necessary to give plenty of air so as to keep up a free circulation and prevent damp, which if allowed to condense on the flowers, as is sure to be the case in a confined atmosphere, will injure them to such an extent as to bring on rapid decay. Gentle fires on dull and foggy days are a great safeguard against this, but whenever these are in use, the ventilators should always be open just a crack, and no more heat kept up than is sufficient for the purpose of creating a current, as beyond this it will be found to be productive of more harm than good. Next in point of importance to preserving the blossoms from damp is the due feeding of the plants with doses of manure-water, which if weak and clear may with advantage be given daily, as it is quickly absorbed by the plants. *J. Sheppard, Woolverstone.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Nov. 15	Stoke Newington Chrysanthemum Show Borough of Lambeth Chrysanthemum Show Sale of Dutch Flower Roots, at the Auction Mart, by Frotheroe & Morris. Sale of Dutch Bulbs, at Stevens' Rooms. Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M. Scientific Committee, at 1 P.M. Chrysanthemum Shows at Southampton, Putney, and Walton. Sale of Plants and Bulbs, at Stevens' Rooms.
TUESDAY, Nov. 16	Borough of Hackney Chrysanthemum Show, at the Aquarium. Chrysanthemum Shows at Finsbury Park, Ealing, Dartford, Gravesend, and Bristol. Royal Jersey Horticultural Society's Chrysanthemum Show.
WEDNESDAY, Nov. 17	Chrysanthemum Shows at Shrewsbury and Kingston-upon-Thames. Meeting of Linnean Society, at 8 P.M. Sale of <i>Odontoglossum Alexandrar</i> , at Stevens' Rooms.
THURSDAY, Nov. 18	Sale of Plants and Bulbs, at Stevens' Rooms.
FRIDAY, Nov. 19	
SATURDAY, Nov. 20	

IF we may be excused for launching an Ibernicism, we should be disposed to call the CHRYSANTHEMUM the last Rose of summer.

sider the garden Chrysanthemums as really such, and not to regard them as species of *Pyrethrum*, as some do. The only distinction between *Pyrethrum* and *Chrysanthemum* is that the seed-vessels of the former are slightly striated, while those of the latter are more prominently ribbed.

Mr. BENTHAM being of opinion that the distinction in question is not of sufficient importance to constitute a distinct genus, relegates *Pyrethrum* to a section of *Chrysanthemum*. The genus so constituted comprises a large number of species, some annual, others perennial. We may mention a few among these relatives of our Chinese Chrysanthemums, as they have some interest for gardeners. No one will deny the beauty, weeds though they be, of *C. Leucanthemum*, the Ox-eye Daisy, nor of *C. segetum*, the Corn Marigold. Then there is *C. Willemetii*, which appeals to our sympathies

The Paris Daisies, as it is the fashion to call the *Marguerites* of which the French are so fond, took issue from *P. frutescens*, a native of the Canary Islands. Of late a race of yellow-flowered forms of great beauty have been raised from this, the finest being *Etoile d'Or*, a specimen of which, from Mr. HOWARD, of Southgate, was figured by us at p. 561, vol. iii., where its history will also be found.

Even in so rapid and fragmentary a survey as this we must not forget the introduction of Golden Feather, *Chrysanthemum Parthenium* var. Few plants we imagine won such general popularity as this, modest though its advent was, and its value was enhanced when it was discovered that the seedlings retained the golden hue of the parent plant. The history of this plant is given in our pages at p. 690, vol. xiii. We would especially call the attention of our readers to the flowers of this plant. Though it



FIG. 118.—JAPANESE CHRYSANTHEMUM AS FIRST INTRODUCED.

It is, indeed, the last link in the floral chain that begins with the Hepaticas and Snowdrops, passes on through Roses and Lilies to Asters and Dahlias, the immediate precursors and near allies of the Chrysanthemum. When once its bright and many-hued flowers are over there is nothing before the gardener of moderate means for a time but a few starveling Van Thol Tulips or Roman Hyacinths; even Cyclamens, beautiful as they are, are not everybody's flowers in the same sense that the Chrysanthemum is. At any rate, none of the forced flowers that come in after the Chrysanthemum flowers are faded and gone mark the season so sharply as do these gorgeous Eastern relatives of our Ox-eye Daisy and Corn Marigold.

Botanically there has been some difference of opinion as to the limits of Chrysanthemum, *Pyrethrum*, *Matricaria*, and some other genera. The best course for us to follow, it seems, is to fall in with Mr. BENTHAM'S views, and con-

in another direction, as forming one of the best insect averters. *C. coronarium* and *C. carinatum*, with their numerous varieties, are favourite garden annuals, the form known as *Burridgeanum* being especially beautiful with its white ray florets, banded with purple in the middle, yellow at the base, and dark purple ray. Under *C. roseum* are included the many forms of the *Pyrethrum* of gardens, with their finely cut foliage and gay flower-heads. *C. Mawii*, *Bot. Mag.*, t. 5997, is of too recent introduction to be much known, but its beauty is such as to lead us to hope great things from it in the future. Then there are one or two fine hardy perennials which must be mentioned in this connection: such are *C. lacustre*, very like our common Ox-eye Daisy, but with thicker, more fleshy leaves; *C. uliginosum*, or *C. serotinum*, one of the finest of tall autumn-flowering perennials, figured in the *Gardeners' Chronicle*, p. 492, vol. x., 1878.

is the fashion to pinch them off, save when wanted for seed, yet their small white circular discs are probably familiar to every gardener. We call attention to them here because of such shape and size are the flowers of the original wild plants of *C. indicum* and *C. sinense*—little Daisy-like flowers, flat, yellow or white, and hardly half an inch across. Compare them with the gigantic snowballs, the particoloured varieties of the present day!

This brings us to the Chrysanthemum *par excellence*—the Chrysanthemum that brightens our houses in the duldest time of the year, that sends thousands into the dingy recesses of the Temple Gardens to admire and be thankful, or the more airy regions of the Parks, where the wisdom and good feeling of the authorities have provided a greatly appreciated boon for the poor as well as the rich—that sets in motion special flower shows by the score, and inspires the pen of many a horticultural scribe. Our

present races of *Chrysanthemums* seem all to have descended from *C. sinense* or *C. indicum*, or from the crossed union of these two species. *Chrysanthemum sinense*, a native of Japan and China, has glaucous leaves and white flowers; while *C. indicum* has leaves of a green colour on both sides and yellow flowers. In both instances the flower, before its powers have been elicited by the skill of man, does not greatly, if at all, exceed the diameter of a sixpenny-piece. Japanese and Chinese gardeners have exercised their skill, perhaps for centuries, on these two forms, and their efforts, seconded by those of their European *confrères*, have made the *Chrysanthemum* what it now is. The introduction of the Chinese varieties into European gardens

on the *Chrysanthemum*. Mr. FORTUNE, writing in our columns in 1849, tells us that the Chinese gardeners excel us in the cultivation of this flower, which they strike from cuttings, which, when rooted, are potted off at once into the pots in which they are to grow and bloom. The richest soil is used and plenty of manure-water given in the growing season, the plant being trained to a single stem, which is induced to give out numerous laterals, the smaller flower-buds being picked off so as to obtain large flowers. Even at that time (1849) Mr. FORTUNE remarked that the varieties grown in Europe from Chinese origin were superior to those grown in China; and he adds that "it is a curious fact that many of those kinds which

gave us some remarkable information, which was published in our columns in 1867, and which is the more interesting when connected with his previous statement regarding the raising from European seeds of kinds grown in China. Mr. FORTUNE collected several kinds from Japanese gardeners, which he brought over to Shanghai, where he left them in the charge of a Chinese gardener while he went northward to Peking. On his return he found that many of the roots he had collected were dead, and that only a few remained, some of which were imported safely into England. Of these two or three kinds only fell into the hands of Mr. SALTER, at Hammersmith; but, from seeds of these two or three, seedlings were produced



FIG. 119.—STAGES IN THE DEVELOPMENT OF THE CHRYSANTHEMUM.

is attributed to M. BLANCARD, of Marseilles, who in 1789 introduced three varieties, white purple, and violet, into France; though before that time, viz., in 1764, a plant of the small yellow-flowered variety, *C. indicum*, was in cultivation in the Physic Garden at Chelsea. SABINE, in the *Transactions* of the Horticultural and of the Linnean Societies respectively, gave the history of the plants up to his time, but long before his time RUMPF, in his *History of Amboyna*, vol. v., t. 91, had figured and described the Indian variety, which was also known to BREYNIUS, KÄMPFER, LINNÆUS, and THUNBERG, and it was, as we have seen, cultivated at Chelsea.

Its history as a florist's flower is traced from this period onward by Mr. SALTER, in his work

were raised from seed in Europe are also met with in the North of China."

Of all the varieties the nearest to the original type is the small-flowered variety, known as the Chusan Daisy, introduced from China by Mr. FORTUNE in 1846—a variety which from its small size met with little favour here, but which was more highly thought of in France, where it became the origin of all the Pompon varieties now in cultivation.

In 1861 Mr. JOHN GOULD VEITCH sent home some specimens of the type now known as Japanese. We give at pp. 624, 625, 628, illustrations of these flowers as taken at the time from Mr. VEITCH's specimens; and here again we may remark that, if the Japanese set us a good example, we have improved upon the originals. Concerning these Japanese forms Mr. FORTUNE

which yielded flowers not only differing from those of the parent plant, but identical with those which Mr. FORTUNE had collected in Japan, and which were lost in China. This could be no case of hybridisation, for no flowers of the kind had been previously seen in Europe. It was a case of pure seminal variation. Mr. FORTUNE speaks in high terms of these Japanese varieties, and he did not scruple to express pretty freely his opinion of the superior beauty and variety of the tasselled varieties over the globose forms with recurved florets which the taste of the florists leads them to consider as the "correct thing." Be this as it may, we earnestly trust the Japanese, in their eagerness to imitate European customs to the detriment of their own natural good taste, will not think it necessary to copy the forms which

British florists think the *ne plus ultra* of perfection. In this country, now, we have varieties to please all tastes, and we should not be much surprised to find the florist's standard of the future very different from what it now is.

— A WHITE ELEPHANT.—England has been from time to time the recipient of many questionable gifts, such as obelisks, Arabian ponies, monster bouquets, big guns, and other lumber, but so far no one has sent to us the traditional white elephant. It is stated in Eastern story that when a certain monarch wished to punish a subject he made him a present of a white elephant, as the animal was so voracious that it would consume presently all the substance of the unfortunate recipient. Our promised white elephant is not a visitant of that kind, and so far from being a source of injury it is promised rather as a blessing. Few perhaps will recognise in this white elephant the name of a new Potato, and perhaps when such discovery is made they will conclude that our American friends who propose to send us this monster are indeed hard up for happy or suitable designations for their Potato progeny. Could they have been familiar with the tradition of the white elephant, and have felt a sort of grim joy in sending a Potato that should when eaten sit upon our stomachs as heavily as a nightmare? If they have conceived anything so diabolical, their new Potato will be a white elephant indeed. We prefer to banish the dread thought, and rather imagine that the name, happy or unhappy according to the tastes of its sponsors or of the consumers of its produce, is but a freak of our Transatlantic cousins' eccentricity, and means no harm. The new tuber is white, hence, perhaps, one of its appellations; and it is a big one, and hence, perhaps, the elephant. Judging by the specimen illustration sent us it might not inappropriately have been called the hippopotamus.

— MANGABA RUBBER (*HANCORNIA SPECIOSA*).—In a recently issued report by the British Vice-Consul at Paraiba, he tells us some small experimental shipments, *via* Pernambuco, have been made of the india-rubber obtained from the Mangaba tree, *Hancornia speciosa*. A small parcel was sold at Liverpool, for 1s. 6d. per pound, and the report as to its quality was favourable, but the peasants have not yet learnt the proper method of preparing it for market, that is, coagulating the milk, so that the loss in weight by the time it arrives at its destination is very great, ruling at from 30 to 40 per cent. This of course will be remedied as the trade develops, and now that the peasants have discovered this rich source of profit, the supply of which is unlimited, there is no reason why india-rubber should not become one of the staple articles of export at Paraiba. Already for good dry rubber 1s. per pound on shore has been given. In connection with this subject the Vice-Consul at Rio Grande do Norte also reports:—"I have to register the initiation of the working classes in the extraction of india-rubber from the Mangabim and Maunisoba trees, and have reason to believe if the product is thoroughly explored it may become an export of some importance."

— RACING FLOWERS.—Yet not flowers, but simply flowers of nomenclature—for flowers would, with all their sweetness and purity, seem rather out of place amidst the hubbub, strife, and villany of the race-course. Mr. GEORGE TRIMMER, of Farnham, a well-known Hop-grower, is also an owner of racehorses, and being possessed with a love for flowers gives to his stud names culled from the plants that bedeck his gardens. Hopbloom and Hopbine are horsey appellations very familiar to the racing fraternity, and readers of the report of Worcester Races of Friday last could not fail to have remarked that Mr. TRIMMER won twice with Zinnia and with Hoya, and got a second place with Primula. This looks as if there was a special racing luck in floral names. Mr. TRIMMER is wise in selecting simple designations. The "talent" are not an over-educated class, and sometimes in their hideous shoutings make a terrible hash of names that are difficult of pronunciation. It would be amusing no doubt to hear how they would offer 3 to 1 on Ixiolirion, or Chrysanthemum, or 7 to 4 against Odontoglossum. Probably plant lovers would find it difficult to recognise their old acquaintances after they had gone through the betting mill. Not a few readers, however, will perhaps agree in thinking that the introduction of the names of beauti-

ful flowers—emblems of all that is pure, sweet and guileless—in association with the unmitigated blackguardism, foulness, and crime that exist in the betting-ring, is rather the worse for the flowers and does not improve the racing associations. Racing men are, however, very superstitious, and if they find the horses possessing floral names scoring wins they will regard flowers as emblems of luck, and plenty of imitators of Mr. TRIMMER will result.

— SOUTHWARK PARK.—We have received a complaint as to the unfair manner in which the election of a Superintendent to this park was conducted. There were no less than 145 applicants, twenty-two of whom were invited to attend in person, and of these three were ultimately selected to appear before the Board on the 29th inst. If the report which has reached us be true, the hundred and odd gardeners who were not invited have reason to congratulate themselves.

— THE "HORTICULTURAL DIRECTORY."—The twenty-second annual edition of this useful publication has just been issued. (171, Fleet Street.)

— STEARINE PAPER.—Messrs. MULLORD BROTHERS, Penn Street, New North Road, have sent us a sample of their stearine paper in sheets 20 inches by 15 inches, and which seems to us specially suitable for sending plants by post. For small specimens which it is desired to send in a fresh state this paper appears to us preferable either to oil-silk or to gutta-percha membrane. It might be used also around the stalks of cut flowers, as in a bouquet or "button-hole," a little damp moss being placed around the stalks and the paper round the whole. Messrs. MULLORD are also the publishers of some amusing round games, which will be appreciated by the youngsters.

— FRITILLARIA MELEAGRIS.—"S. H." writes in the *Gardeners' Magazine*:—"Does anybody grow, and does anybody know, two hundred varieties of *Fritillaria meleagris*? Having lately ordered in a lot of bulbs, I am delighted to find that I gave an open order for varieties of this charming plant, and a very considerable collection has reached me. Where, you will ask, are the two hundred varieties? Now that the question is thrust home, I must confess I do not know, for in truth I suspect I have made a mistake in the number. But I well remember spending an agreeable forenoon in the early days of May, 1878, in the nurseries of Messrs. KRELAGE, at Haarlem, and there I met many friends, and had some agreeable conversation. And now it is all clear to me. We saw on that occasion, in the nurseries aforesaid, a collection of varieties of *Fritillaria meleagris*, not indeed numbering two hundred, but there really were one hundred and sixty varieties! They were grown as commercial plants, and we may assume, therefore, that somebody buys them. But the fact is, I think, to be reckoned amongst the curiosities of the bulb garden."

— FORCED ROSES AT MR. LADD'S.—To grow Roses continuously all through the winter of such excellence in the size of their flowers, leaving out of the question the immense numbers produced, would in the not distant past have been looked upon as an impossibility, and we consider what is being done with this, the greatest favourite of all flowers, by some of the best market growers, a performance in gardening second to none that has hitherto been accomplished. Roses no doubt have been long forced so as to produce flowers more or less in number, and varying in quality, but to see the long street-like-looking houses at Bexley containing the thousands of plants required to fill each from end to end as full of thick healthy foliage, and as evenly furnished with buds and flowers as if the whole had been tied on by hand, every plant as much a counterpart of the rest as usually seen in a houseful of Pelargoniums, is indeed viewing a feat in plant growing. The quantity now cut six days in the week is from fifty to over 200 dozen a-day. Besides the London trade, they are sent to several of the large towns in the provinces. Longer details of what is done in Rose growing in this gigantic flower manufactory were given at p. 72 of our present volume. In addition to the three houses, each 300 feet long by 24 wide, and three others of 200 feet long each, already devoted to Roses, two more are now being built for them, each 300 feet

long by 24 wide. Each house has a 9-foot wide centre bed, enclosed by a brick wall; the path round this is sunk, the soil excavated going to fill up the centre bed, the surface of which is about 7 feet from the glass. A wide stage runs round each side up to the walls: these, like the roof-bars, are all of the best Pitch Pine, as full of resin as it can be selected, with scarcely a knot to be seen in it. No paint is to be used on the inside, as on this resinous wood it is found to be quite useless. These houses have each six rows of 4-inch pipes. The number of Pelargoniums grown for the last season has been increased to over 100,000, and a considerably greater quantity than this of Zonals is being prepared. The *Gardenias* planted out in the long house devoted to them have so grown that it is difficult to pass through. One half are about to be thinned out, and another house, 160 feet long by 35 wide, is to be planted with them.

— EFFECT OF LOW TEMPERATURE ON DORMANT SEEDS.—It is well known that seeds will bear a very much lower temperature without injury, when dormant, than they will after germination has commenced. As long ago as 1834, EDWARDS and COLIN published the results of some experiments showing that Wheat, Rye, Barley, and the Broad Bean germinated freely after having been exposed to a temperature so low as to congeal mercury. They also determined the degree of heat perfectly ripe and dry seeds of various kinds would bear with impunity. DOYÈRE proved that grains of Wheat dried in the exhausted receiver of an air-pump would bear heating up to 212° without one failing to germinate. This experiment has been verified recently by KRAUSS. But seeds are incapable of resisting great heat or cold associated with moisture. Dr. GOEFFERT has lately published the results of similar experiments, in so far as cold is concerned, in REBEL'S *Gartenzeitung*. His first set of experiments was conducted in 1829, and repeated in 1871. He submitted various dry seeds, growing mosses, *Protococcus pluvialis*, soaked seeds, branches of Conifers, &c., to 81° of frost, or 49° below Fahr. zero. The dry seeds and the mosses grew afterwards, and the branches of some of the Coniferae appeared uninjured, but the moistened seeds were killed and soon began to decay.

— RHODODENDRON CHAMPIONÆ.—Mr. C. FORD, Superintendent of the Botanic Garden, Hong-Kong, writes, under date of Sept. 18:—"At p. 168 in the *Gardeners' Chronicle* for Aug. 7, where, in the extract from my annual report, *Rhodoleia Championi* is mentioned, a slight mistake has occurred. It was not *Rhodoleia*—which has been in cultivation for many years—but *Rhododendron Championæ* that I referred to. I notice, however, that the specific name was printed with the termination *i* instead of *e* in the copies of my report, and probably that may have misled you and caused you to think that *Rhodoleia* was meant. *Rhododendron Championæ* is a beautiful object when in flower. The flowers are white, tinged with yellow at the base and dotted with ochre, about 4 inches across. It is a most profuse bloomer in its native habitats, amongst the rocks at an altitude of about 1000 feet. It is not known out of Hong-Kong, and was never, I believe, propagated and introduced to cultivation until last year."

— HYACINTHS IN GLASSES.—Already there are indications that the long, tall, unsightly Hyacinth-glass yet remains, and is used by cultivators, notwithstanding it has become superseded by many handsomer and much more convenient designs. They are appearing in windows, and it is to be feared with the usual disregard that follows on the practice—the bulbs are placed in the water, the glasses placed in the window, and there they remain, too often long unnoticed, till by chance they are observed, and the half-empty glasses refilled. Any thoroughly earnest grower of the Hyacinth will have discarded long ago the old-fashioned Hyacinth-glass. In a bit of pleasant autobiography left us by the late Mr. G. P. TYE, of Birmingham, he relates how, "many years ago, his attention was drawn to a few specimens of Hyacinths which had been cultivated by a very skilful amateur. They were well grown, had fine heads of bloom, and the flowers delighted all who beheld them; but, owing to the imperfect manner in which they were supported by the liberal use of sticks, wires, string, &c., the appearance they presented was anything but agreeable. The long, ill-shaped glasses, moreover, seemed to increase the length of the plants,

and to destroy the proportion and harmony of effect which the cultivated eye of taste always delights to retain upon." It was this which suggested Tye's Hyacinth-glass. The originator lived long enough to see his design reproduced in many and most artistic patterns, till they have become handsome drawing-room ornaments. Hyacinth culture in water gained tremendously by the substitution. Would that the old tall glass could be relegated to that limbo of obscurity to which so many horticultural inventions have been committed. Perhaps ignorance has something to do with their retention, but it is hardly a pardonable transgression.

— INFLUENCE OF RAINFALL ON DECIDUOUS TREES.—It is a rare occurrence for deciduous trees to retain their leaves in a fresh green state so late as they have done this autumn. In most parts of the kingdom this is apparent, especially so on the northern side of London, on the confines of Middlesex and Hertfordshire. As those who are acquainted with the district know, it is well clothed with timber, much of it Oak and Elm, the greater part old, and which has reached the stage when little further growth can be expected, a condition which generally results in a somewhat earlier leaf-fall than occurs where the trees are younger; added to which the usually smaller rainfall here than takes place in some parts of the kingdom tends to an over-dry condition of the roots, a state that never fails to hasten leaf-shedding. Now, within a week of dreary November, the trees were as full of green foliage, and showed as little sign of autumn, as they generally do near the close of September. At a time like the present, when so much is said about planting trees in and about towns, those who have the control of such work would do well to profit by the lesson taught by seasons like this and the last in the manifest influence which moisture has upon tree life, particularly after they have reached an age and size so as to fully fill the ground with their roots, and to produce a corresponding quantity of leaves. It is then that enough moisture in the soil becomes a question of vital import. We have continually before our eyes the struggles that plant life under adverse conditions will make for existence. Deficiencies in the natural constituents of the soil, impurities in the air, and other matters inimical to the well-being of a tree, often impede its growth, and prevent it reaching its natural size, but the absence of sufficient water to its roots never fails to cause premature dissolution. Young trees that when first planted have enough space for their roots to extend in frequently grow on fairly for a time, although there may be a deficiency of moisture in the ground, as the roots whilst thinly dispersed through the soil make wonderful efforts to supply the branches and leaves; but as their roots increase and penetrate every portion of earth within their reach, and the leaf-surface in like manner extends, with its constant evaporation requiring more moisture than the roots can find, the result is inevitable. A tree can no more continue to live in a healthy condition with less water than its nature requires than it can exist in a soil that contains more moisture than is natural for it to bear; though death will often not so soon follow in the former as in the latter instance, it is nevertheless certain.

— SMALL SAVINGS BY POSTAGE STAMPS.—The Postmaster-General writes:—"In consequence of the expense involved in receiving very small deposits in Post-office Savings Banks, no deposit of less than a shilling is accepted. As it had been repeatedly urged that the maintenance of this limit placed very serious obstacles in the way of saving by those who could only put aside a few pence at a time, it was stated at the close of last session that a plan was about to be tried experimentally in certain counties which would enable small savings to be effected by the use of ordinary postage stamps. The plan was brought into operation on September 13 in ten counties situated in different parts of the United Kingdom, and during the seven weeks it has been in operation the success obtained has been so marked that it has now been decided to extend it to the entire country. This decision will take effect on Monday, the 15th inst. On and after that day, at every post-office in the United Kingdom, forms for the making of small deposits in Post-office Savings Banks will be issued gratuitously. Each of these forms, which are about the size of an ordinary cheque, will have twelve divisions, in each of which a penny postage stamp can be placed. When a form has thus

been filled with twelve stamps it will be received at any post-office at which there is a savings bank as a deposit of a shilling. During the seven weeks that the experiment has been in operation more than 14,000 of these forms have been received, and more than 7000 new accounts have been opened through their agency. As the selected counties contain less than one-tenth of the entire population of the country it may be fairly assumed that if the plan had been applied in the first instance to the whole country, it would, during the period referred to, have led to the opening of more than 70,000 new accounts. The following are the ten counties in which the experiment has been tried, and they are arranged in the order in which it has been most successful in proportion to the population of the respective counties:—Cardiganshire, Ayrshire, Kent, Aberdeenshire, Cumberland, Somersetshire, Norfolk, Leicestershire, Down, and Waterford. The forms, after being received at the local post-offices, are transmitted to the General Post-office; they have come to hand in remarkably good order, most of them presenting the appearance of a perfect newness, and it has not been necessary in a single instance to return any of the forms on account of their being damaged or defaced."

— A NEW VEGETABLE DYE: ERICINE.—Under the name of "Ericine" a new dye, of a fine golden-yellow colour, is said to be now made in America from the young wood of various species of Poplar, as well as from that of the Heather, the generic name of which latter (Erica) is said to have suggested that by which it is known in trade. The process of manufacture is very simple, and is thus described:—"Young branches and shoots of Poplar are cut off, crushed, and brayed, and are then boiled in alum-water, the proportions allowed being 1 lb. of wood and 1 lb. of powdered alum to each three gallons of water. The liquor is boiled from about twenty minutes to half-an-hour, and then filtered. In cooling it thickens and clears, throwing down a greenish-yellow deposit of resinous matter. When sufficiently clear, the liquor is again filtered, and then left exposed to the air for three or four days or more, according to the weather and the state of the atmosphere. It quickly oxidises under the action of the light and air, and assumes a rich golden tint. In this state it can be used for dyeing fabrics of all descriptions. For yellow and orange-yellow shades it is used alone; mixed with prussian-blue, it gives green; with oak-bark, brown and tan; with cochineal, &c., orange and scarlet shades; or the colouring matter can be precipitated, and then makes a fine and perfectly innocuous yellow body-colour for wall-hanging and such like purposes."

— PEA PRIDE OF THE MARKET.—We are informed by Messrs. CARTER & CO. that the very useful new dwarf Pea alluded to by us in our number for August 14 last (p. 212), under the name of "Strength," then provisionally applied to it, is to be distributed next season under the name of "Pride of the Market."

— THE WEATHER.—General remarks on the weather during the week ending November 8, issued by the Meteorological Office, London:—"The weather has been rather fine on the whole in nearly all parts of the kingdom; on the 6th, however, rain fell at several stations, and on the 7th slight rain fell in nearly all places. Bright aurora was seen in nearly all parts of the kingdom during the evening of the 3d. The temperature was again below the mean in all districts; over England the deficit ranged from 4° to 6°, and elsewhere from 2° to 3°. The thermometer was generally lowest during the first few days, the lowest readings of all occurring on the 2d, when the temperature went down to 18° at Shrewsbury, and 19° at Glenalmond; in most other places the minima varied from 20° to 24°. The rainfall was considerably less than the mean in all districts. Bright sunshine was more prevalent than during last week in all except the Irish districts. The percentage of total possible duration ranged from 22 in "Ireland, N." to 46 in "Scotland, E." The wind until the 5th was generally light from the eastward at the southern stations, and from the westward over the northern parts of the kingdom, but by the 6th it had shifted to the westward on all our coasts, and continued to blow from the west or north-west during the remainder of the period. In force the westerly current was generally moderate or light, but on the 9th it increased to a fresh or strong gale over Scotland and the north of England and Ireland.

PUBLIC CHRYSANTHEMUM DISPLAYS.

FINSHURY PARK.—A most spirited and successful attempt at Chrysanthemum growing has been achieved at Finsbury Park, and is daily being visited by hundreds of spectators, who flock in and through the temporary glass structure which has been fitted up for the reception of the plants. The plants are now in their prime, and are the admiration of all who have seen them; those, however, who have not had that pleasure should lose no time in paying them a visit, for, to say the least, they are worth a journey from any part of London. This is the first of what may prove to be the commencement of a series of annual displays of these lovely flowers; the plants are large and very robust, the leaves themselves having a decided coriaceous appearance, which tends to show at a glance that their cultivation has been attended by no lack of talent and energy. Of course these plants have many advantages which the growers of Chrysanthemums cannot at all times give to their plants, viz., a comparatively pure and healthy atmosphere above them, which is most essential to their successful culture. I was also pleased to notice that Mr. Cochrane, the Park Superintendent, has thought fit to adopt the simple, though beneficial, means of a little artificial heat for his plants, by means of a small erect stove at one end of the building, and to which is attached a flow and return pipe. Chrysanthemums, though at no time heat-loving, are at this their flowering season greatly benefited by its application, so as to exclude the frost, dry up any damp or excessive moisture that may be lurking around, and likewise assist in developing and properly maturing the blooms. The plants, which are now in flower, number about 1100, and from either end of the house have the appearance of one dense bank of divers coloured flowers of large proportions. New varieties, however, are few, and, probably, were they more numerous, they would fail to surpass, either in brilliancy of colour, size and substance of bloom, the great majority of older varieties. Among Japanese varieties, which by the way seem always to excite peculiar interest with their singular shades of colour and curiously twisted petals, James Salter still holds a prominent position as an early variety. Cry Kang, rose-magenta, is distinct and good; Peter the Great is a large showy flower of lemon-yellow colour; Gloire de Toulouse, claret colour, very attractive. Fair Maid of Guernsey is probably one of the best among "whites." Elaine, though not purely a Japanese variety, is of whiteness unsurpassed and of the best of useful varieties. Ethel is another also in this way, and pure white. Among Anemone-flowered kinds Gluck, of a golden-orange, is good and showy.

Foremost among the long list of incurved petalled varieties are Mrs. G. Rundle, and White and Golden Beverleys, of which a number of plants have a fine display of large globular ball-like flowers: these are exceptionally fine. Alfred Salter is also good, as is also Eva. Antonelli, a bronzy-orange, is distinct. Among the best of other large-flowering varieties, bronze and yellow Jardin des Plantes hold their usual place with fine full flowers; Progne, of distinct amaranth, is good; Refulgence, rich purple-maroon; Lady Talfourd, rosy-lilac, full flower; Julie Lagravère, velvety-crimson; Dupont de l'Eure, orange and carmine; Empress of India, large white, is exceptionally fine; Guernsey Nugget, primrose-yellow; Prince of Wales, Mrs. Haliburton, Nil Desperandum, and a host of others are all good. The show, as I have said, is now at its best, and will last for a considerable time longer.

INNER TEMPLE GARDENS.—Chrysanthemums at the Inner Temple Gardens are, as of yore, good and in great variety. It is matter for thankfulness that within a stone's-throw of the Strand and the Thames, a show of such an extensive character has become established, and most pleasing and effective are the specimens arranged for the public view. There are now some 500 of these one blaze of flowers and, what is more, they have been grown in Mid-London—a fact not altogether beneficial to their well-being. Among new varieties of the large-flowered group Gazelle is attractive, with crimson flowers and golden-orange tips; of incurved varieties of older kinds, Dr. Rozas, crimson; Ensign, cinnamon, shading to yellow; Eva, primrose-sulphur; Fingal, rose and purple-violet, a good and noble flower; Golden Beverley, Nil Desperandum, large

dark red, is both attractive and good; Prince of Wales, of which too many cannot be grown where plants of free blooming qualities are required, has large dark purple-violet flowers. Antonelli, salmon-orange; Beethoven, bronzy-red with gold tips, and many more, are all good. Of varieties not incurved, Dr. Sharpe, crimson-magenta, is good; Lady Talfour, rosy-lilac and silvery back; bronze and yellow Jardin des Plantes; Plenipo, rose-purple; Prince Alfred, rose-crimson, a large and full flower; Progne, amaranth and Violet-scented, is distinct and good; Refulgence, rich purple-maroon, are the best.

Conspicuous among Anemone-flowered kinds are Gluck and Lady Margaret, the latter a good white. Among the newer varieties of the Japanese are Madame Bertier Rendatler, nankeen-yellow, large and fine; Peter the Great, large showy blooms. Of older varieties Garnet, with vivid red-scarlet flowers, is one of the best; Elaine, Fair Maid of Guernsey, James Salter, one of the most useful; Bismarck, bright orange with amber tint, a free flowering and good variety; Gloire de Toulouse, Red Dragon, chestnut-red, with yellow tips, flowers very large. These are among the best of the varieties; many others, however, of equally good qualities, are to be found in different stages of development, and are a most creditable assortment: the proof of which may be gleaned from the fact that hundreds of visitors are daily frequenting the gardens.

The collections at Victoria Park and in the Middle Temple Gardens are not yet at their best. *Y.*

Home Correspondence.

Pumpkins.—I have just weighed four Pumpkins, grown here under very ordinary cultivation: the weights are 162, 132, 117, and 97 lb.—total, 1388 lb. These and Vegetable Marrows we grow here in quantity, and have cut this year about 4000 fruits (about 6 cwt. are required here for a meal); they make a nice change for the inmates of an institution like this, and are grown with a very small amount of labour. My plan of culture is to have holes dug in the winter 9 feet apart every way, the holes 3 feet in diameter and 18 inches deep; in the spring a good barrowful of dung is put into each hole, a portion of it being kept well to the sides for planting autumn-sown Cauliflowers in five rows round each hole; these are fit to cut just as the Marrows are beginning to run, and serve as a shelter to them during the early stages of their growth. In the first week of May the Pumpkin and Marrow seeds are sown, six in the middle of each hole, to be thinned eventually to three. They give little more trouble all the season, for we never water them, and yet they produce abundantly. I have sometimes planted a row of early Potatoes between each row of Marrows; these are dug as soon as fit, and the ground is clear for the Marrow vines to run at will. There are some good recipes for making Pumpkin pies, puddings, preserves, and soups in Cassell's *Dictionary of Cookery*. In America they are a frequent dish, and I anticipate that they will come more into use with us as their usefulness becomes better known. *Robt. Lloyd, The Gardens, Brookwood Asylum.*

New Early Peas.—For those who like a dish of early Peas there is something yet in store. Having some new sorts sent me this year on trial, which are not yet in commerce, I may state that two of them deserve special notice, but what they are to be called I know not, as I had no names with them. They were sown on February 13, and gathered from on June 6; the others were kept to ripen, and sown again on July 29; these were fit to gather in seven weeks, thus producing two crops in one season, being both valuable sorts. I hope to grow them again. Grown against No. 1 wrinkled, 1½ feet (which is one of Mr. Laxton's best Peas), they were several days in advance; one is about 4 feet, the other 15 inches, and will be useful for forcing. Both are good croppers, and good in quality. *W. Divers, Winton.*

Violet Marie Louise.—Allow me to say a word in favour of the above. We grow here several thousands of it, and have almost discarded every other variety in its favour; for of all the Violets I know it is the earliest to bloom, and the latest to leave off; in fact, we can get bunches of flowers of it any time, even in midsummer, and throughout winter and spring they are a perfect mass. Many of your correspondents from time to time bring to our notice really good things, if not new, and I for one would be glad if a few more did likewise, as such would be of more benefit to us than trying to select from puffed-up novelties, a large percentage of which turn out

worthless to us matter-of-fact family-supplying gardeners. *Y. R.*

Protecting Young Trees from Rabbits.—As the season is again near when hares and rabbits do much damage to young plantations of trees, I would suggest that a trial be made of a plan which I believe was originally suggested or employed by that veteran fruit grower, the late Mr. Thomas Rivers, and which consisted of making small stakes about 20 inches high, at the upper end of which a cleft was made in the stick to hold firmly pieces of calico, in size about 9 inches by 4 inches. The ends of these strips were then dipped into boiling brimstone, and the so-called brimstone-flags, fixed at about 7 feet apart around the objects which it was desirable to protect, were said to do their work admirably. *William Earley.*

Autumn Leaves.—Our planters are as a class too chary in their use of noble foliage trees—trees noble in habit, in the form of their foliage, and in their gorgeous colouring. Take, for instance, the Hickories, such as *Carya alba*, *C. porcina*, *C. tomentosa*—grand trees, whose foliage is glowing golden at this season. The Tulip tree and the Virgilia, the



FIG. 120.—THE COMB-LEAVED OAK, *Q. ROBUR PECTINATA*.

American Oaks, especially *Q. coccinea*, *rubra*, *palustris nigra*, may also be mentioned among many others. Of smaller size are the Parrotia and the Liquidambar, small leaves of which latter are shown at fig. 121, as a reminder to gardeners, and whose colour at this season is a rich crimson. If smaller subjects be wanted, there are the Claret Vine and the *Vitis rubescens*, the Sumachs, the gorgeous *Pyrus arbutifolia*. For lists of the best of these gaily tinted trees and shrubs we must refer to an article in our pages, on October 12, 1878. Now, we have only space to allude to one more, the singular pectinate variety of the common Oak, fig. 120; and which, in addition to the singularity of form in the foliage, presents a golden-yellow tint at this season.

To Protect Trees from Rabbits.—I have under my charge an extensive wood adjoining the pleasure grounds, &c., which is by degrees being thinned of the existing timber, viz., Oak, and planted with Conifers, Rhododendrons, and a variety of evergreen and deciduous trees and shrubs, but unfortunately rabbits abound to an alarming extent, and among other things they appear to have set as objects for destruction some nice specimens from 6 to 9 feet high of *Cryptomeria japonica*, of which we have several hundreds. This time last year they commenced destroying wholesale by peeling the bark all around

the stems, so to put a stop to their depredations, without of course killing the depredators, I had to find a preventive. I had used or seen used for the purpose, dead Spruce twigs, Gorse and straw-bands. The latter, considering the current price of straw, the labour of making bands, as well as their short duration, would have been a serious item in the garden expenses, and the two former were not available without going a distance for them, and even then I should have run the risk of being blamed for disturbing game in the covers, &c., so I decided to try an experiment, and never having known rabbits to eat either the leaves or bark of Rhododendrons, and having large clumps of *R. ponticum* overgrowing choicer varieties, I at once commenced to thin and prune them, had the prunings of all thicknesses, cut into 18-inch lengths, put round the stems of *Cryptomerias*, *Hollies*, &c., and tied rather loosely top and bottom with tarred cord (when doing any more I shall use wire, as being more durable). I had every plant I knew rabbits had a partiality to protected in the same way, and I am happy to say the results are quite equal to my most sanguine expectations, for not a single plant so treated has been touched. I do not claim credit for this being a new plan, or consider myself the originator of it, but I think if it were more widely known many valuable trees would be saved. May I add a word of caution? Previous to my taking charge here, the forester had been dressing some plants with the usual preparations for preventing rabbits—viz., tar, grease, soot, &c., which proved effective for a short time, but I regret to say it at the same time killed every branch to the height the trunk was dressed, so it is advisable to be careful. *J. Roberts.*

Wheat-eared Blackberry.—A curious monstrosity was exhibited on Thursday last at the Linnean Society. The inflorescence was entirely replaced by a number of prolonged branches covered with bracts, each little branch occupying the position of a flower. The bracts were narrow, pointed, and downy, and contained minute leaf-buds in their axils—at least they were present in those of the lowermost bracts. The apical portions of each shoot were compressed, so that they became fasciated like the common Coxcomb in miniature. This change from flowers to a multiplication of bracts is exactly similar to the so-called Wheat-ear Carnation, figured by Dr. Masters in his *Teratology*, p. 372, where the author alludes to several other plants, including *Rubus fruticosus*, as having been found thus occasionally metamorphosed. *George Henslow.*

Liquidambar styraciflua.—There are few trees that equal in beauty the American Liquidambars at this season, and yet how little they are grown. At all times beautiful when in leaf, they are especially so in the autumn, when their leaves are so richly coloured that they are conspicuous objects as far as they can be seen (fig. 121). I had no idea, however, of their intense beauty until a few days ago, when, coming in a southerly direction, the sun suddenly broke out and reflected its rays through the leaves of the Liquidambar. For a moment the tree looked as if it had been set on fire, and I think a more striking sight I never saw. To enjoy the full beauty of those trees they ought to be planted as single specimens away from the shade of other trees. A single specimen standing in the front of a group of green Cedars with a background of large Elms colouring to a deep yellow is a sight which ought to convince us that autumn, as well as spring, is not without its interest to the true lover of Nature. *H. C.*

The Square-fruited Capsicum.—Pimenta is a Spanish word signifying pepper, but the Spaniards also apply it to all kinds of Capsicums, and in some instances to strong spices. In this way it became a name for the Jamaica Allspice (*Eugenia Pimenta*). The beautiful fruits figured in the *Gardeners' Chronicle* last week are called in Spain Pimento dulce, or *Capsicum tetragonum*. It is much cultivated in the tropics and in southern Europe, for although wanting in the hot taste of its allied species, it imparts an agreeable flavour to salads. *T. C. A.*

Capsicums for Ornament.—Your remarks on Mr. Morgan's fine square-fruited Capsicums recall ideas that I have long held concerning the wisdom and economy of growing Capsicums in pots for ornamental purposes, and have carried this out to some extent, and think a well furnished pot of Capsicums or Chillies about as beautiful as one of berried Solanum. The fruits would be as useful afterwards as now. No doubt the square-fruited Capsicum figured at p. 597 would prove a noble addition to our all too limited class of berried or fruited ornamental plants. But there are many other Capsicums, of different sizes and colours, that would be equally or more useful probably, and no doubt were a demand for Capsicums for ornamental purposes to arise, our seedsmen and nurserymen would speedily meet and satisfy it with improved and

more fruitful forms. The Capsicum is rather subject to thrips, red-spider, and fly, but these might be prevented by good culture or destroyed by the usual remedies. It is essential in growing them for ornament to preserve the foliage intact, to have enough of it, and as green as may be. The contrast between the rich scarlet or yellow fruits and the fine green leaves forms one of the best features of Capsicums for ornament. Well grown and properly selected there seems little reason why Capsicums should not to a considerable extent supersede Solanums, meanwhile it seems almost a pity that the berries of the *S. Capsicastrum* in its many varieties cannot be eaten in some form. Is it quite certain that they are poisonous, and has any one tasted or tried them? Surely, too, something might be made of the Cherry Tomatoes for ornamental purposes; I tried them this year, but they made too much growth and too many leaves to be very effective. *D. T. Fish.*

Glaucium luteum.—One feature of the curious large seed-pods of this hardy Poppy not mentioned by Mr. Dod, is their applicability to domestic floral decoration. These pods are often quite 9 inches in length and bent in an elegant form. Cut whilst yet unripe they may be thus employed, and would give an element of interest to other common things. As a hardy foliage plant I can speak of it highly. It with-

affording a choice shade of colour to set off a bouquet. If seed were sown now, and the plants nursed on in gentle heat during the winter, they would be in bloom by May or June, but to keep them from drawing up weakly after this it will be necessary to stand them on shelves well up to the glass, where they can get a full share of light and have plenty of air passing around them. *J. S.*

Neat Annuals for a Rockery.—No rockery should be without *Ionopsisidium acaule*, a dwarf cruciferous annual, half an inch high, producing abundance of neat mauve-coloured flowers for at least eight months in the year, according to the time of sowing. I first saw it at Kew in full flower in June, and having at once obtained seed from that treasury of choice seeds, Mr. W. Thompson's shop at Ipswich, had it in flower on my rockery by the end of July, where the same plants, after all the frost we have had, are still (on November 8) as full of flower and as healthy as ever. The effect is not unlike that produced by *Arenaria balearica*, the flowers of which are white instead of mauve. Another neat annual growing in the same way close to the surface is *Saxifraga cymbalaria*; it has bright yellow flowers, and may be had in flower nearly every month in the year according to time of sowing. *C. Wolley Dod, Edge Hall, Malpas, November 8.*

your correspondent has beat us in quantity, as our crop was deficient this year, the points of the young shoots being much killed by the severe frost of last winter. The trees are not coddled, as Mr. Fish terms it, being grown in a natural way; but if I had to plant Figs again I certainly would coddle the roots, as I find some of them at a distance of 16 feet or more from the stem, and under such circumstances the wood does not ripen thoroughly in bad seasons. *W. Divers, Wierton, Maidstone.*

Dimorphism in *Ficus repens*.—It may be of some interest to your correspondents, the Rev. H. N. Ellacombe and Mr. Garnier, to hear that we have in the cool part of our large conservatory a specimen of this in which the dimorphism is very distinct. The plant is growing around a large *Phoenix dactylifera*, completely covering the stem; the large-leaved branches hang loosely, as also do many of those of the typical form. It has been planted more than thirty years, but has not developed the large leaves until within the last five or six years. There are no rootlets on the branches bearing the larger leaves, neither are there any signs of fruit on any portion of the plant. I have been told by some authorities that this is the adult form of the plant, but I am not certain if this is correct; it certainly is no improvement on this most graceful creeper. *William Coomber, Royal Botanic Gardens, Regent's Park, N.W.*

The American Plane.—I would call your attention to a statement recently made, to the effect that "all the large Plane trees in the London squares are *Platanus occidentalis*, or the American Plane." The species of *Platanus* and their distinctive characters were described by Sir William Hooker in your journal, 1856, p. 69, and in your next impression "T. R." follows on the same side, and remarks, "I used to tell my old friend Loudon that he was wrong in his description and identification of it, but I was then young, and I suppose not weighty enough to move him." "T. R.," however, writes again in your journal after an interval of thirteen years (1869, Oct. 23, p. 1114), and encloses a leaf of the true *occidentalis*, on which you remark, "The tree at Chiswick nearest to the Council-room seems to us to be nearer to the true *occidentalis* than any other we have seen, if, indeed, it be not that species. Its leaves are like those of the specimen sent, but are not so downy on the under surface. No doubt 'T. R.' is perfectly right about the park Plane trees. They are not of the American breed (see p. 940). EDS." I will not occupy your space with further quotations, but remark that there used to be young trees of *P. occidentalis* at Kew, from which I have two leaves, taken in 1856. These leaves are different both from *P. orientalis*, of which the leaf is figured by Loudon (*Arb. et Fruticet. Brit.*, iv., p. 2033, fig. 1952 b), and from *P. acerifolia* (as it would be rightly called), fig. 1952 a. If you would in your journal give figures of the leaves of each of the three species—*P. orientalis*, *P. acerifolia*, and *P. occidentalis*, taking the last from the trees at Chiswick or at Kew, and referring your readers to those places for live specimens of the species, you will do much to correct the popular error on the subject. And on reference to your journal's pages you will find that I have told you nothing but what has been written by Hooker, Lindley, Rivers, and others who knew much more on the subject than your obedient *Diss.* [The Park Plane is no doubt *P. acerifolia*, an Oriental species or variety. The species are not to be distinguished by their leaves, which are too variable for that purpose. EDS.]

Orchid Growing and Boot Cleaning.—Taking a cursory glance at the advertisement columns of your last week's issue, I was somewhat struck by an advertisement requiring a gardener to clean knives and boots, and preferring one who has a knowledge of Orchids and Ferns. Will not any one having such a knowledge think this a curious combination of requirements? Considering there is such disparity between Orchids and boots I, being jealous for my craft, could not let this pass unnoticed. *J. D. Richards, Gledhow, Leeds.*

Potato Scotch Champion *versus* Magnum Bonum.—The conflicting testimony concerning the merits of these two kinds of Potatoes led me this season to thoroughly test the one against the other, and so both kinds have had exactly the same treatment, as regards culture, from the preparation of the seed tuber to the lifting of the crop; the result being, that I have no longer the shadow of a doubt in my own mind as to the superiority in every particular of *Magnum Bonum* over *Champion*. Neither are true to their character of "disease-resisters," but whilst *Magnum* is diseased to the extent of perhaps 3 per cent., the proportion in *Champion* is certainly not less than 25 per cent.; and as regards cropping, the produce of *Champion* is a third less than that of *Magnum Bonum*. Another advantage that the latter possesses is that the crop matures a month earlier than the former, and the tubers, though not handsome in a general way,

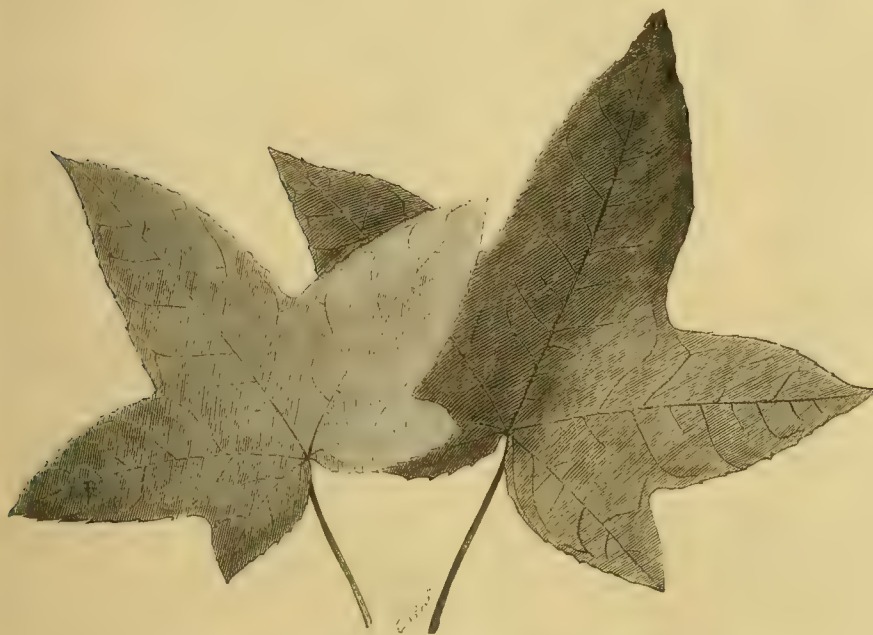


FIG. 121.—*LIQUIDAMBAR STYRACIFLUA*: BRIGHT CRIMSON IN AUTUMN. (SEE P. 632.)

stood all the hard weather of last winter well here, and I heartily join with Mr. Dod in advising its use in beds for winter decoration. Single plants dotted about on a carpet of red Daisies or purple *Aubrietia* would look very pretty, and help to light up the dull greenness of the leafage of the carpet plants before the bloom expanded. *A. D.*

Duchess Favourite Apple.—It would be interesting to learn whether an Apple grown in this locality by some of our market gardeners under the above name is identical with Mr. Killick's *Duchess of Gloucester*, or with the *Duchess of Oldenburg*, or whether it is distinct from either. I cannot give its description now as it ripens fairly early: it is of a rich colour, medium size, and very handsome. It does well, is quite hardy, and is a decided market favourite here. *A. D.*

Centaurea Cyanus.—I am glad to see the *Cornflower* brought under notice, for unquestionably it is one of the most serviceable plants we have, yielding as it does flowers of a shade of colour not to be obtained in hardly anything else. Much as I prized it before, this season I have been more than ever struck with its beauty, as in a field near here, sown with Flax last spring, it sprang up in quantity and was very attractive. Valuable and telling as this *Centaurea* is in patches in borders or beds, where it is always unrivalled for the deep rich blue of its blossoms, it is doubly so in pots late in the autumn or early summer for the embellishment of greenhouses or for

Celery-fly.—Mr. Morgan is very fortunate in being able to chronicle such exceptional freedom as he has enjoyed this season from that great pest to all Celery growers—"the maggot." Lest, however, his single testimony should go down to posterity uncontradicted, I write to say that, unfortunately, Mr. Morgan's favourable report must prove the exception and not the rule. It is the more necessary that this subject should be discussed, owing to the fact that your correspondent gives, as a probable cause for the immunity which he has enjoyed, the moist season, &c., experienced. In this district and others that I have visited this pest is exceptionally bad, and much Celery has its leaves all but entirely destroyed by it. The suggestion regarding the season does not hold good, therefore. I have two rows planted between sparsely-planted Apple, Pear, and Plum trees, and between what was a crop of early Potatoes, and it is almost the only "plant" hereabout which is free from the maggot. Is it likely that the Potato haulm, whilst growing, proved a deterrent to the gay blue-bronzed parent flies? *W. Earley.*

The Brunswick Fig.—That this is one of our best Figs for outdoor work I think no one will deny, but your correspondent (see p. 536) has not come up to the weight he may expect. We grow them here both on the walls and as standards, trees which I raised and planted out twenty-five years since. I have gathered several fruits weighing half a pound each, and once took second honours at the Crystal Palace, when twenty-three dishes were staged; but

compared with Champion are perfection, for without doubt the last is the "Champion of the Uglies." And now, coming to the last and most important point, quality, for my own palate I confess to having a slight preference for Champion, but it is so slight that without a moment's hesitancy I plump for Magnum Bonum as being the best late Potato, the best disease-resister, the heaviest cropper, of good appearance, and if grown on light soil and not used till Christmas A 1 in quality. *W. W. H.*

Field Potatoes.—I do not know in what particular respect field Potato culture in Mr. Culverwell's neighbourhood shows improvement, but the returns per acre do not exhibit any excessive crop, and will not, I think, compare with the product of Champions per acre in West Middlesex. A neighbour of mine recently purchased a quantity of these in a field near the Great Western Railway, and states now that the crop will reach 12 tons per acre. As a good sample of the Champion is now selling at £6 per ton in London, the crop is a very profitable one, especially as with a heavy crop the cost of lifting is proportionally lessened. *A. D.*

Self-fertilisation as the Cause of Doubling.
—M. Heckel's suggestion (see *Gardeners' Chronicle*, vol. xiv., n. s., p. 534), that the self-fertilisation of *Convolvulus arvensis* may have been the cause of the petalody of the stamens, and as a consequence the origin of double flowers, does not recommend itself as at all acceptable. The phenomenon of self-fertilisation, in fact, produces results of a totally different character. Thus, instead of a brightened petaloid appearance, there occurs not only a dwarfing of all the whorls, but this is not unfrequently accompanied by a tendency to reduce the number of stamens as well as the quantity of pollen. This is well seen in the closed buds of Violets, Chickweed, *Coronopus didyma*, *Myosurus minimus*, &c., but in no one instance of the very many self-fertilising plants I have examined was there the slightest indication of petalody. Again, natural self-fertilisation invariably represents a high state of sexual vigour, with a corresponding lowering of vegetative power. This is seen in the abundance of seed produced by them, associated with the relatively small size of self-fertilising species, as compared with their intercrossing allies, as well as their generally being annuals, while the latter are very often perennials, as, e.g., *Stellaria media* (Chickweed) as compared with *S. Holostea*, *Malva rotundifolia* with *M. sylvestris*, *Solanum nigrum* with large-flowering species, *Viola tricolor* var. *arvensis* with the larger flowering forms, &c. Conversely the production of petals in lieu of stamens is usually accompanied with an excess of vegetative vigour, as seen in the tendency to multiply them. Thus, I have counted more than forty petals in a double Wallflower, which had a still undeveloped bud as well in the centre of the flower. Hence, doubling by petalody, *per se*, represents a certain amount of extra vegetative vigour displaying itself, first, at the expense of the reproductive energy, the sexual organs having disappeared; and secondly, in the continual development of a long succession of petals. *Convolvulus arvensis* is probably a self-fertilising plant, as I have elsewhere suggested, just as *Ipomoea purpurea* sets seeds freely when protected, according to Mr. Darwin. So that this plant is probably a rather unfortunate one to take for experimental purposes. Several facts might be adduced in favour of petalody being a consequence of certain climatal conditions as well as of certain peculiarities of the soil, though we are not in a position yet to be able to define exactly what the cause or causes may be in each case respectively, e.g., of Violets, of which, when the ordinary flowers are single, the apetalous closed or cleistogamous buds are fertile; but if the former are double the latter are double also; clearly showing that there is some common cause affecting both kinds of flower, while self-fertilisation does not apply to one of them at all. I am very anxious to obtain information from horticulturists and others upon the phenomenon of doubling, especially as to the conditions of soil, temperature, &c., which they find most conducive to their production. One eminent horticulturist has called my attention to the fact that both doubling and variations of all sorts are much more readily produced on the Continent than with us. This is, perhaps, attributable to the atmosphere being more uniformly dry there than in our insular conditions. In Dr. Masters' *Treatise* (Appendix, p. 491) the author has collected several independent observations which seem to prove that dryness is at least one climatal feature conducive to doubling; but if observers would record the exact conditions of soil, &c., as well as temperature and degree of moisture prevailing whenever a new plant shows a tendency to petalody, there might be collected a most valuable series of observations of both scientific and practical value. *George Henslow*. [Mr. Darwin many years ago suggested in our columns that the appearance of double flowers may be sought for in some previous state of things bringing about sterility and consequent compensatory increase of the petals. *Eds.*]

The Gemenkraut.—Your correspondent, "X's," Gemenkraut is, I have no doubt, *Rhododendron Chamæcistus*, a lovely little plant, or I suppose I should say shrub, growing about 5 inches high; the flowers much resemble those of a *Kalmia*. I have seen it growing on the dolomite mountains in Tyrol, where I have heard the natives call it *Die echte Genser heide* (i.e., the genuine Chamois Heath). It is a charming rock plant, but I believe not easy to cultivate. It will certainly require the presence of limestone rock; possibly, as dolomite is in part composed of magnesite—and it grows, I believe, chiefly on dolomite mountains—a certain quantity of magnesite may be good for its constitution. My ring of *Agaricus muscarius* (see p. 602) is close to a large Birch tree. *Alex. Nesbitt, Oldlands, Uckfield.*

—The question asked by "X." on p. 606 is not easy to answer, as the description given does not tally with the genus to which the name Gemenkraut is usually given. Thus Grassmann, in his *Deutsche Pflanzennamen*, p. 136, says, "Doronicum, der Günsel, aus Gens-wurz, Gemen-wurz, Gemenkraut," so-called, because it is greedily eaten by the chamois ("so genam, weil sie von den Gensen gern gefressen wird"). I suspect some blundering on the part of the original author. *B. D. J.*

Orchids in Bloom at Fernfield, Bridge of Allan, Nov. 8:—

<i>Cattleya labiata</i> , autumn flowering variety	<i>Odontoglossum grande</i>
"maxima	"nebulosum
<i>Vanda Bensoni</i>	"bictonense
"tricolor Patersoni	"Cervantesii
"multiflora	<i>Mesospinidium vulcanicum</i>
"coculea	<i>Oncidium tigrinum</i>
<i>Burlingtonia candida</i>	"flexuosum
"fragrans	"verrucosum
<i>Rodriguesia secunda</i>	"Rogersii
<i>Phalenopsis Lowii</i>	"crispum
<i>Gongora atropurpurea</i>	"Forbesii
"Ruckeri	"ornithorhynchum
<i>Masdevallia Chimæra</i>	"nubigenum
"Veitchii	<i>Miltonia candida</i>
"Lindeni	"Clowesii major
"Harryana	"Morelana atropurpurea
"Davisii	<i>Cologne Lowii</i>
"igneæ	"speciosa
"tovarensis	<i>Maxillaria picta</i>
<i>Pleione Lagenaria</i>	<i>Lælia Fernii</i>
"maculata	<i>Zygopetalum Mackayi</i>
"Wallichiana	"maxillaria
"præcox	<i>Dendrobium chrysanthum</i>
<i>Promœna citrina</i>	<i>Cypripedium Roezlii</i>
<i>Sophronitis cernua</i>	"venustum
"coccinea	"insigne
"grandiflora	"villosum
<i>Calanthe Veitchii</i>	<i>Epidendrum alatum majus</i>
"vestita rubro-oculata	"erectum
<i>Odontoglossum Rosii majus</i>	"rhizophorum
"Lindleyanum	<i>Eria pubescens</i>
"constrictum	<i>Neottia picta maculata</i>
"Roezlii	<i>Odontoglossum Londesboroughianum</i>
<i>Uro-Skinneri</i>	<i>Oncidium cleiophorum</i>
"cordatum	<i>Lycaste Skinneri</i>

Storing of Beetroot, &c.—There are various ways of wintering these much-prized roots. In some places it has been the practice to store them in a house in dry sand, in which position they not only occupy space that might otherwise have been turned to good account, but lose their freshness also. Under these circumstances I will endeavour to state briefly one of the most simple and at the same time most satisfactory modes of wintering the roots, and one, too, which is within the reach of all who grow them. It is this:—The roots are taken up at the usual time and in the usual careful way, to prevent injury, and taken to any suitable position in the garden: a somewhat dry border under a south or west wall, if to spare, would be a very favourable position for them. An opening should be taken out at the end of this border next the alley, 12 inches deep and 15 inches or 16 inches wide, and put down at the point at which the operation is likely to terminate; then the digging of the ground is proceeded with, but so soon as the trench is filled and the ground levelled in the ordinary way the soil is cut straight down the whole width of the border, and two or three rows of Beetroots placed perpendicularly in the opening so formed, and the digging is again proceeded with until the roots are covered, burying the crowns about an inch under the surface of the soil. The operation is then repeated and the digging is again resumed, and this is continued after the style of transplanting young forest trees from the seed-beds in nurseries, minus the strict observance of the straight and level lines, until the job is finished. The leaves, which are not removed from the crown, will afford sufficient protection to the roots from several degrees of frost, but in the event of its being very severe a protection of dry litter or Fern would be necessary. In the spring, before the roots show signs of growth, they should be taken up, and all the leaves with the surface of the crown cut clean away, and laid in again as above recommended. Thus treated, our Beetroots are always fresh and of a good colour. Carrots, with the exception of cutting off the tops close to the crown at the time of taking them up, are treated precisely in the same way as the Beetroot. Wintered in this way, there need be no apprehension of fermentation ensuing, as is so frequently the case where

a bulk of them has been put together, sometimes to the entire loss of the crop. Where Parsnips are not grown in great quantities, or where the ground is not wanted for some special purpose, they are best left during the winter in the ground in which they have been grown, in which position they require no protection whatever from frost, further than covering a sufficient piece for present use, so that in the event of severe frost there would be no difficulty in taking up roots sufficient to meet the demand. Roots wintered as I have endeavoured to describe are always superior in flavour and appearance to those which have been wintered in the proverbial "dry shed or loft" in dry sand or soil. *H. W. W.*

Broccoli.—Having advocated some years ago in your pages a hard soil for Broccoli, I can bear testimony to the fact that Mr. Lloyd's practice (see pp. 568, 569) is a good and safe one to follow; unfortunately, however, with us it never proved a safeguard from the effects of severe cold. A good deal, however, depends on the position of the ground as well as its quality. From the wholesale way that Mr. Lloyd cuts Broccoli, it is probable that he grows his garden crops in an open field. If so, that may account for the safety of his Broccoli, while those in gardens grown on even the hardest soil may perish with cold. I have seen this happen again and again. The greater exposure renders the Broccoli more hardy to endure the frost; it has less sap, and consequently less for the frost to lay hold of, hence its immunity. In many gardens, too, over-loose and over-rich ground causes the Broccoli to run up rank and sappy, to its certain destruction should the winter prove severe. Hence, I not only heartily approve of, but have often practised as well as advocated, a hard and moderately poor root-run for Broccoli, and have used the iron bar instead of the dibble to plant with. But even then I have lost my Broccoli, and hence, in addition to all these expedients that moderate growth in the plants, I have this year returned to the ancient practice of inlaying, to relieve our Broccoli of some of those superfluous juices that they could not help imbibing during the abnormally wet autumntide. They were all healed over before the recent floods, and as they were very strong and had to be rather severely handled, the latter has just preserved them from wilting too much, as some of them threatened to do. As already we have had some severe foretastes of winter, we shall scatter all our Asparagus tops thinly over our transplanted plants, and thus hope to carry these in safety through the winter. They look promising after the rains, and fortunately Veitch's Autumn Giant Cauliflower still affords a fine supply of fine sweet crowns. Walcherens have their leaves tied over their crowns, which saves them from 6° or 8° of frost, and the White Capes, both sprouting and whole, are already showing. *D. T. Fish.*

—There can, I think, be no doubt, that were Broccoli more grown in the way described by Mr. Lloyd, we should have fewer losses to lament among the plants during winter than we now have, as under such a system of cultivation the stems must of necessity grow more hard and woody, in which state they are in a much better condition to withstand frost than those that are larger and softer, as these latter, containing little fibre and much moisture, are riven asunder by the ice formed therein, and when the thaw comes they must of necessity rot. In fields where land is generally poorer and the growth consequently slower, Broccoli are always considerably harder than they are in gardens, where ground is so rich; and another thing that tells in their favour in fields is that they get more air, which helps to consolidate the tissues, and render the whole structure of the plants different to what it otherwise would be. The plan of growing Broccoli in large plantations in rows about 2 feet apart is a bad one, and it will be found if they are given double that distance with Potatoes between, that both crops will be benefited to a considerable extent, as the Potatoes will have less disease, and yield more tubers owing to the increased spread of the top, and as the Broccoli, when so favoured, enjoy plenty of breathing room, they stand every chance of becoming fully developed. *J. S.*

Late Swallow.—The Weather.—I have a letter dated November 2 from a friend who is a close observer of birds and other fauna, in which he says:—"I saw a swallow on Saturday morning [October 30] as I was walking on the terrace at Holm Hill [7 miles from Carlisle]; it alighted every now and then on the house. I imagine it is very uncommon at this season to see a laggard in his movements, and it is very likely dead by this time. I find that the date on which I saw the three swallows last year on Annanside was October 22." I send you the minimum of my thermometer since the 26th:—27th, thermometer, 38°, rain at 3 P.M. and a little sleet; 28th, 36°, rainy and gusty during the night, stormy wind through the day; 29th, 34°; 30th, 28°, cold and showery in the afternoon; 31st, 42°, wet and showery. November 1, 30°; 2d, 21°; 3d, 29°, fine.

The readings are taken on the morning of the dates given. *J. A. C., Northfield, Annon, November 30.*

Gilbert's Cabbage Broccoli.—I have the opportunity of testing the quality of these, and think them capital as Cabbages. But there are Cabbages and Cabbages, and this is so distinct as to be virtually a new vegetable at table. Its form and character and colour are unique among "parlour" Cabbages. The form is that of a long narrow Sugar-loaf, its character is crisp and tender, with a peculiarly sweet flavour, and brittle flesh; and its colour a creamy-white with the faintest dash of green in it. I consider it more of a Cabbage than a Broccoli, though any vegetable that is a first-rate Cabbage and will also do duty as a Broccoli, must needs prove doubly valuable on that account. Its hardness in seasons such as the last is another strong point in its favour. Those who were fortunate enough to have a good stock of this Cabbage Broccoli last spring were enabled to supply a useful and generally liked vegetable, when almost every garden not so provided was stripped bare of greens, and without Broccoli. I know nothing of the parentage of the Cabbage Broccoli, though it reminds me a good deal of a Cabbage grown in the North some thirty years ago, under the name of the Pomeranian. That was of similar form, though hardly so narrow as the Cabbage Broccoli. Were I inclined to reply to "A. D.'s" strictures on this new vegetable, it might suffice to remind him that a Cabbage must be specially valuable which, if not eaten in the autumn, will keep good and sound all the winter, and may develop into a Broccoli in the spring. *D. T. Fish.*

It is very evident from the palaver, reported at p. 569, which took place between "A. D." and an "Intelligent Inquirer" at South Kensington, that they would fain throw discredit on both the committee who awarded the Certificate and the raiser of this most useful new vegetable: but those who can speak and judge from experience will easily see that this is a clear case of the blind leading the blind, as all "A. D.'s" questions, answers, and calculations respecting this production are far from representing its true character. We have grown this Cabbage for two seasons. At the present time we have two large patches of it, one 10 yards wide by 20 long, the other 10 yards longer. Many of the fine heads are ready for cutting now, and others will turn in during the next two months or more, as this is not like an ordinary Cabbage which stops growing on the first appearance of frost, and is of little or no use afterwards. It is one of the hardiest winter vegetables we have. Frost has no more effect on it than on a Drumhead, and the flavour is at all times most excellent; we never tasted any spring Cabbage to equal it, and we prefer it to the best-flavoured Broccoli. It was on account of its superior flavour that the Cabbage Broccoli gained a Certificate, and most justly too. In growth it takes no more room than any ordinary Cabbage, and I will venture to say that all who grow it as a late autumn and winter Cabbage will have every reason to feel satisfied. As a spring Broccoli I never knew it, nor have I much chance of doing so, as it is too much valued here now, for what it is, to be left until it grows into something else—which is not its main claim, or no doubt it would have been shown as such before the committee. I will not volunteer to send heads of this vegetable to all who may like to send for them, but I shall be pleased to show them to any one coming this way, and let them taste them too if they wish it. *J. Muir, Margam Park, Taibach, South Wales.*

Would it not have been better if Mr. Hinds had waited until he had grown the Cabbage Broccoli ere he took up the cudgels in its favour? He has simply seen it and tasted it, but such experience gives him none of the practical knowledge needful to reply to the queries put. I am surprised to learn that this Cabbage possesses a crispness that is not found in other Cabbages; I think very many persons were surprised to learn that. Crispness is a feature of all white-hearted Cabbages in a raw state, but surely not when properly cooked. I do not expect to eat my loaf and have it too, and this is just where I cannot help asking, if it is no better than any ordinary autumn Cabbage, where is the gain in growing it? because any good white Cabbage after being cut will later on give another good loaf, whereas the Broccoli is done for at the first cutting. But Mr. Hinds should be consistent, for whilst he writes that there is something uncanny about this Cabbage Broccoli, owing to its tendency to change its nature, he yet pronounces it to be a valuable acquisition. As to the opinion of the Fruit Committee I, of course, would not challenge that. This is the body that has never yet made a mistake over Melons, Grapes, Peas, and many other things, and whose judgment is of course infallible. I simply publicly propounded some queries that were put to me by an intelligent gentleman, and I thought they deserved replies. I have not the least animus against the Cabbage Broccoli; it may be all that Mr. Hinds asserts it to be, and if it is

there should have been no difficulty in answering the queries. *A. D.*

Chrysanthemums at Beechwood.—It was my good fortune to-day to call upon Mr. Cash, the gardener at Beechwood, Prestwich, the residence of Charles Agnew, Esq., and fine as were the Chrysanthemums at this place last year, they are certainly much finer this. For magnificent flowers and beautiful finish in plant and foliage it would be difficult to find their equal: they certainly reflect the very highest credit on Mr. Cash, for the untiring pains and attention that, I am sure, he must have bestowed on them, for there are few plants that will show the effect of neglect sooner than the one in question. The number of plants cultivated at Beechwood is about ninety, and nearly every one is a perfect specimen, with highly finished flowers and foliage, the former from 5 to 6 inches in diameter, and deep in proportion, and the latter large, and of a bright glossy green, not of that black dull green which we sometimes see, and which I think is not so pleasing. The plants vary in height from 2½ to 4½ feet, with clear stems to the height of 4 inches, with from five to ten blooms each. I measured one grand flower of Golden Queen, and found it to be fully 8 inches in diameter, and 4 inches deep; another, of Mrs. G. Rundle, was 5 inches by 4 inches deep—a wonderfully fine flower for this variety, which I think is the best in its class. Mr. Cash propagates in February and March, he does not believe in earlier striking. Only the best and strongest cuttings are taken, and such as are quite free from insect pests. Size of flowering pots, 8 and 10 inches; soil used, good turfy loam and leaf-mould; weak guano-water is frequently used, with a little soot added. The following are the favourites here, and I think it a very choice list:—Golden Queen, Alfred Salter, Nil Desperandum, Blonde Beauty, Mrs. G. Rundle, Mrs. Dickson, La Nymphe, Diamond, Bismarck, Empress of India, Golden Empress of India, Barbara, General Slade, White Christine, Princess Teck, Hero of Stoke Newington, White Venus, Pink Venus, Guernsey Nugget, Adonis, Mr. Howe, White Beauty, Yellow Beauty, Fair Maid of Guernsey, and Hereward. A plant of the latter was cut down as late as the middle of July, and is now carrying eight fine flowers. This proves that the Chrysanthemums may be safely stopped much later than is usually done, and may be much dwarfed by such treatment. *H. E.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, NOV. 10, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr from Average of 18 years.	Difference from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Dew Point.	Degree of Humidity.		
Nov. 4.	30.20	+0.42	45.9	29.7	16.2	37.2	8.4	31.0	79	N.N.E. 0.00
5	30.18	+0.39	45.0	30.0	15.0	36.8	8.6	34.9	93	E.N.E. 0.00
6	30.18	+0.39	47.2	37.4	9.8	43.0	2.1	37.5	81	W.S.W. 0.00
7	30.04	+0.24	51.3	43.0	8.3	47.4	2.7	40.2	77	W.S.W. 0.00
8	30.13	+0.33	50.0	36.5	13.5	42.0	2.3	36.4	84	N.N.E. 0.10
9	30.00	+0.20	44.0	27.1	16.9	34.7	9.2	27.6	72	W.S.W. 0.00
10	29.93	+0.13	48.4	38.0	10.4	43.3	0.2	37.4	80	W.N.W. 0.00
Mean	30.12	+0.30	47.4	34.5	12.9	40.6	4.0	35.0	81	Vari- sum- able. 0.10

- Nov. 4.—A very fine bright day. Very cold. Fog at night. Hoar-frost in morning.
 5.—A dull, gloomy, foggy day. Cold and damp.
 6.—A dull day throughout. Misty. Milder, but still cold.
 7.—A very dull day, occasional sunshine; but chiefly overcast. Mild.
 8.—A very fine day. Cold. Rain in early morning. The max. temp., 50°, occurred at about 1 A.M.
 9.—A fine, bright day. Clear till night, then overcast. Very cold. Few drops of rain at midnight.
 10.—A fine day, but cloudy and hazy. Milder, overcast at night.

LONDON: Barometer.—During the week ending Saturday, November 6, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.17 inches at the beginning of the week to 30.07 inches by the evening of October 31, increased to 30.31 inches by the evening of November 1, decreased to 30.07 inches by the even-

ing of the 2d, increased to 30.43 inches by the morning of the 4th, and decreased to 30.34 inches by the end of the week. The mean reading for the week at sea level was 30.26 inches, being 0.53 inch above that of the preceding week, and 0.31 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 50° on October 31, to 44½° on November 1; the mean value for the week was 46½°. The lowest temperatures of the air observed by night varied from 25° on November 2d, to 37½° on the 6th; the mean value for the week was 31½°. The mean daily range of temperature in the week was 15½°, the greatest range in the day being 21° on November 2, and the least, 9½°, on the 6th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Oct. 31, 41° 6', -4° 8'; Nov. 1, 37° 6', -8° 6'; 2d, 34° 8', -11° 2'; 3d, 39° 1', -6° 7'; 4th, 37° 2', -8° 4'; 5th, 36° 6', -8° 6'; 6th, 43° 7', -2° 1'. The mean temperature of the air for the week was 38° 6', being 7° 2' below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 130° on Nov. 4, 113½° on the 3d, and 111° on the 2d; on the 5th and 6th the readings did not rise above 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 16½° on Nov. 2, 19½° on the 4th, and 20° on the 1st; the mean of the seven lowest readings was 23½°.

Wind.—The direction of the wind was N.E. and S.W., and its strength strong at times.

The weather during the week was fine and dry, but very cold. Fog prevailed on Nov. 4 and 5, and an aurora borealis was seen on the 3d.

Rain.—No rain fell throughout the week.

ENGLAND: Temperature.—During the week ending Saturday, November 6, the highest temperatures of the air observed by day were above 53° at Truro, Cambridge, and Sunderland, and below 49° at both Wolverhampton and Nottingham; the mean value from all stations was 50½°. The lowest temperatures of the air observed by night were below 23° at Cambridge, Wolverhampton, and Nottingham, and above 29° at Plymouth, Brighton, and Sunderland; the general mean from all places was 26½°. The extreme range of temperature in the week was more than 26° at Truro, Bristol, Leicester, Cambridge, Wolverhampton, and Nottingham, and less than 21° at Plymouth and Brighton; the mean range from all stations was 24½°.

The mean of the seven high day temperatures was above 50° at Truro and Sunderland, and below 45° at Wolverhampton and Bradford; the mean from all places was 46½°. The mean of the seven low night temperatures was below 31° at Bristol, Leicester, Cambridge, Wolverhampton, and Nottingham, and above 37° at Liverpool and Sunderland; the general mean from all stations was 33½°. The mean daily range of temperature in the week was more than 17° at Bristol and Cambridge, and less than 9° at Liverpool and Sunderland; the mean daily range of temperature from all places was 13½°.

The mean temperature of the air for the week from all stations was 39½°, being 4½° lower than the value for the corresponding week in 1879. The mean temperature of the air was above 42° at both Truro and Sunderland, and below 37° at both Wolverhampton and Nottingham.

Rain.—The amount of rain measured at Truro was 0.62 inch, but with this exception the falls were very slight, and were generally between 0.02 inch and 0.10 inch. At Brighton, London (Blackheath), and Leicester no rain fell; the average fall over the country was 0.06 inch.

The weather during the week was fine, dry, very cold and frosty, and at times foggy or hazy. An aurora borealis was seen at Cambridge on November 2.

SCOTLAND: Temperature.—During the week ending Saturday, November 6, the highest temperatures of the air observed by day varied from 55½° at Aberdeen, to 51° at Greenock; the mean value from all places was 53½°. The lowest temperatures of the air observed by night varied from 15° at Paisley and 18° at Glasgow and Perth, to 25½° at Greenock; the mean value from all stations was 21°. The mean range of temperature from all places was 32½°.

The mean temperature of the air for the week from all stations was 39½°, being 5½° lower than the value for the corresponding week in 1879. The mean temperature of the air was above 40° at Edinburgh, Greenock, and Leith, and below 38° at Paisley.

Rain.—The amounts of rain varied from 0.60 inch at Greenock to 0.02 inch at Leith; at Dundee and Perth no rain fell; the average fall over the country was 0.14 inch.

DUBLIN.—The highest temperature of the air was 53½°, the lowest 26½°, the extreme range 27½°, the mean 41½°, and the fall of rain 0.04 inch.

JAMES GLAISHER, F.R.S.

Obituary.

It is with much regret that we announce the death, on the 4th inst., of the Rev. T. C. BRÉHAUT, in his sixty-first year, at his residence, Richmond House, Guernsey. Mr. Bréhaut was chaplain to the prison of the island, and found relief from his painful duties in gardening and music. Mr. Bréhaut did good service in bringing under the notice of English gardeners the French system of pruning the Peach. This was done very successfully in his book, the *Modern Peach Pruner*. He was a frequent contributor to this and other horticultural journals, and practised as well as he preached. In private life Mr. Bréhaut was a man of culture, amiable and sympathetic. The death of his wife some short time since greatly affected him, and we doubt not in some degree hastened his own end.

Enquiries.

He that questioneth much shall learn much.—BACON.

CORDATE.—When did this term, applied to a particular form of the base of the leaf, first come into use? The Latin dictionary affords no sanction for its use in classical times in the sense in which it is used by botanists. Linnaeus uses it in his *Philosophia* (1751), but how much earlier it was in use I do not know. Y.

TOMATO DISEASE.—*Enquirer* asks if this has ever been seen in Tomatos under glass?

Answers to Correspondents.

CHARCOAL. *R. Crouch.* This is a good material for mixing in composts for garden purposes, as it acts beneficially in more ways than one—that is to say, mechanically as a means of promoting porosity, and also as a source of plant food. For composts for pot plants it may be used broken up to the size of nuts and smaller (not powdered) in the proportion of about one-sixth part for ordinary soft-wooded plants; while for composts for fruit tree borders it may be used of larger size and somewhat smaller proportions.

CYDONIA JAPONICA. *W. Divers.* The fruit is of no use for preserving purposes.

GRAPES. *W. P.* It seems to us to be only a case of shanking, and not the work of any insect.

GRAPES DEVOID OF SEEDS. *G. H. Haydon.* An exploded fallacy.

INSECTS. *A Garden Foreman.* What you have sent us is mealy-bug, undoubtedly.

NAMES OF FRUIT. *H. T. Shepperton.* 1, Round Winter Nonsuch; 2, Waltham Abbey Seedling.—*Harrison Weir.* Apple, Mère de Ménage *M. T. C.* 1, Egg or Paradise; 2, 3, not known; 4, Beauty of Kent.—*B. Pratt.* 1, Gloria Mundi; 3, Hanwell Souring; 6, King of the Pippins; 8, Down-ton; 10, Pear, Beurré de Capiaumont. These fruits were all smeared with dry lime and could scarcely be handled: very objectionable.

NAMES OF PLANTS. *A. B.* *Pleroma elegans.* What a specimen to send any for identification!—*W. Divers.* *Gastrodium lendiferum.*—*E. S.* *Hedychium Gardnerianum*, as near as we can tell from such wintered materials.—*C. Y.* 1, *Nephrodium molle*; 2, *Pteris longifolia*.—*J. F. R.* 1, *Adiantum Giesbreghtii*, *alias* *scutum*; 2, insufficient—perhaps *Asplenium viviparum*; 3, *Adiantum gracilimum*; 4, *Lomaria Patersonii*; 5, *Blechnum spicant*; 6, *Doodia media*; 7, *Adiantum trapeziforme*; 8, *Adiantum setulosum*; the other plant is *Tradescantia discolor*. Nos. 1 and 7 are stove Ferns; No. 5 hardy.—*D. M.* 1, *Acer campestre*; 2, probably *Salix pentandra*; 3, *Cotoneaster frigida*.

PILARGONIUM LITTLE DORRIT. *Hugh Henderson.* The flower had tumbled to pieces before it reached us. Send another one, gummed, and a leaf or two.

POTATO. *B. Pratt.* Cannot pretend to identify a single Potato tuber, and that a very poor one.

RETINOSPORA. *Anxious.* The browning of the branches is a natural thing. The discoloured branches will ultimately fall, as the leaves of deciduous plants do. Your gardener is in no wise to blame.

SELECTION OF FRUITS. *Provincial Apples:* Lord Suffield, Cellini, Stirling Castle, Loddington Seedling or Stone's Apple, Yellow Ingestre, Braddick's Nonpareil, Mère de Ménage, Warner's King, Cox's Orange Pippin, Cockle Pippin, Rosemary Russet, and Blenheim Orange. *Pears:* Williams' Bon Chrétien, Souvenir du Congrès, Madame Treve, Beurré Superfin, Louise Bonne of Jersey, Belle Julie, Thompson's, Maréchal de la Cour, Pitmaston Duchess, Doyenné du Comice, Josephine de Malines, Winter Nelis, and Bergamotte d'Esperen.

SIEVE. *R. M. Lingwood.* A "sieve" contains 7 imperial gallons, and a "bushel sieve" 10½ imperial gallons.

SNIDDLE. *Cor.* The plant sent under this name is *Juncus lamprocarpus*. The best way to get rid of it is to drain the land.

STRAWBERRY LEAVES. *Strawberry.* The practice varies, and of course opinions vary likewise. In a

general way the trimming off of the old outer leaves may be regarded as beneficial, but it should be done with care and judgment.

TREE FERN. *C. Herbert.* Your Fern is apparently affected in the same way that hardy British species sometimes are—they are bitten by a midge, and the growth of the immature parts attacked is arrested. Your specimens appear in much the same condition; but it may have been brought on by drought—either by their being too dry at the roots, in which case the fronds have flagged and stopped growing, or by being too dry in the atmosphere, in which case the tender tissues have been parched up, and thus destroyed while still unfolded. If you give them a good moist stove atmosphere you will probably find them improve by-and-by, as fresh fronds develop themselves.

VINES. *J. F.* We have not found any Phylloxera on the roots sent, and think you must look for some other cause for the flagging.

. Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED.—The General Horticultural Co. (John Wills) Limited (Warwick House, Regent Street, W.), Catalogue of New, Rare, and other Plants.—Thomas Kennedy & Co. (Dumfries), Catalogue of Forest, Fruit, and Ornamental Trees.—Dickson & Robinson (12, Old Millgate, Manchester), Descriptive Catalogue of Roses.—W. Smith & Son (Kintore, Aberdeenshire), Select List of Nursery Stock.—Desfossé-Thuillier et Fils (Orléans), General Catalogue of Nursery Stock.

COMMUNICATIONS RECEIVED.—George Syme (with thanks).—C. D. J. de Monteiro.—F. S. & Co.—F. W. S.—W. T.—W. M.—J. Day (it is impossible for us to give an opinion on what we have never seen).—H. Cannell (many thanks).—A. P.—D. R. & Co.—H. E.—J. H. H.—W. C.—J. M.—R. A.—C. L.—W. R.—J. S.—D. J. N.—J. D.—A. P.—W. D.—R. I. L.

Markets.

COVENT GARDEN, November 11.

Large consignments of American and Canadian Apples are still to hand, and prices are lower. Business dull. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0-5 0	Melons, each	2 0-3 0
Cobs, per lb.	1 9-1 10	Pears, per dozen	1 6-4 0
Grapes, per lb.	1 0-4 0	Pine-apples, per lb.	2 0-5 0
Lemons, per 100	6 0-10 0		

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	3 0-4 0	Horse Radish, p. bun.	4 0-..
per doz.	3 0-4 0	Lettuces, Cabbage,	..
Asparagus, Fr., bndl.	1 6-2 0	per doz.	0 6-1 6
Aubergines, per doz.	3 0-..	Mint, green, bunch..	0 4-..
Beans, French, p. lb.	0 6-..	Mushrooms, p. baskt.	1 6-2 0
Beet, per doz.	1 6-2 0	Onions, per bushel..	5 0-..
Cabbages, per doz.	1 0-2 0	— Spring, per bun.	0 6-..
Carrots, per bunch.	0 4-0 6	Parsley, per bunch..	0 4-..
Cauliflowers, Eng-	..	Radishes, per bun.	0 2-..
lish, each	0 3-0 6	Seakale, per basket	3 6-..
Celery, per bundle	1 6-2 0	Small salad, pun.	0 4-..
Chilis, per 100	3 0-..	Spinach, per bushel	4 0-..
Cucumbers, per doz.	0 6-0 9	Tomatos, per lb.	0 9-1 0
Endive, per doz.	1 0-1 6	Turnips, new, bunch.	0 4-..
Garlic, per lb.	1 0-..	Vegt. Marrows, doz.	2 0-..
Herbs, per bunch	0 2-0 4		

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 65s. to 85s.; Early Rose 60s. to 70s.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Asters, per dozen	6 0-9 0	Evergreens, in var.,	..
Begonias, per doz.	6 0-12 0	per dozen	4 0-18 0
Bouvardias, per doz.	12 0-18 0	Ferns, in variety, doz.	4 0-18 0
Chrysanth., p. dozen	6 0-12 0	Ficus elasticus, each	1 6-7 6
Cyclamen, per dozen	6 0-12 0	Foliage Plants, vari-	..
Cyperus, per dozen	6 0-12 0	ous, each	2 0-10 6
Drazena terminalis	30 0-60 0	Fuchsias, per dozen	9 0-12 0
— viridis, per doz.	12 0-24 0	Hyacin., Rom., doz.	13 0-18 0
Epiphyllum, per dozen	18 0-30 0	Myrtles, per doz.	6 0-12 0
Erica gracilis, dozen	9 0-18 0	Palms in var., each	2 6-21 0
— cafrica, per doz.	8 0-12 0	Primula, single, per	..
— hyemalis..	12 0-36 0	dozen	5 0-6 0
Enonymus, various,	..	Solanums, per dozen	6 0-18 0
per dozen	6 0-18 0		

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3-0 6	Marguerites, 12 blms.	0 4-0 9
Arum Lilies, 12 blms.	6 0-9 0	Mignonne, 12 bun.	4 0-9 0
Asters, 12 bunches.	9 0-12 0	Narcissus, Paper.	..
Bouvardias, per bun.	1 0-3 0	White, 12 sprays.	3 0-4 0
Camellias, per dozen	3 0-6 0	Pelargoniums, 12	..
Carnations, 12 blms.	1 0-2 0	sprays	1 0-1 6
Chrysanth., 12 bun.	4 0-12 0	— zonal, 12 sprays	6 0-9 0
— 12 blooms	0 6-3 0	Primula, double, per	..
Cyclamen, 12 blms.	0 3-0 6	bunch	1 0-1 6
Epiphyllum, 12 blms.	1 0-1 6	— single, 12 sprs.	1 0-1 6
Eucharis, per doz.	4 0-9 0	Roses (indoor), doz.	1 0-6 0
Gardenias, 12 blms.	5 0-9 0	— outdoor, 12 bun.	9 0-18 0
Heliotropes, 12 sp.	0 6-1 0	Staphanotis, 12 spr.	9 0-15 0
Hyacinth, Roman,	..	Tropeolum, 12 bun.	1 0-3 0
12 sprays	2 0-3 6	Tuberose, per dozen	1 6-3 0
Lapageria, white, 12	..	Violets, 12 bunches.	1 6-2 6
blooms	4 0-6 0	— Neapolitan, Fr.,	..
— red, 12 blooms.	1 0-3 0	per bunch	3 6-5 0
Lilac, Fr., per bunch	8 0-12 0	— Czar, Fr., bunch	2 0-3 0

SEEDS.

LONDON: Nov. 10.—A good general enquiry for the leading varieties of farm seeds has sprung up this week. As the new samples of red Clover prove so unsatisfactory considerable attention is now devoted to fine yearling parcels, and a fair business at firm rates has resulted. The quality of this year's American seed is most disappointing. For Trefoil the tendency of values continues upwards. There is to-day no change in either Alsike or white. Imported Italian has become exceedingly scarce, and holders are consequently raising their demands. From the Board of Trade returns, just published, it appears that the imports last month of Clover and grass seeds amounted to £29,720, against £36,374 for October, 1879. Canary seed is in diminished request. Buckwheat, Millet, Hemp seed, and Linseed realise former terms. Of blue Peas the supply has latterly fallen off very considerably, and the demand being active quotations still move upwards. Haricots and white Runner Beans find buyers at full prices. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday a firm tone prevailed for home-grown Wheat, and former prices were well supported. Foreign Wheat sold slowly, but at fully late rates. Good and fine qualities of malt were in fair demand at full currencies, but inferior parcels were dull. Grinding Barley made barely late rates. Old malt was dull, but there was a fair inquiry for new produce. Indian Corn improved about 3d. per quarter. For Oats there was a good demand at an advance of fully 1s. per quarter. Beans and Peas were firm at rather better prices; and the flour trade was also firm, at fully previous quotations.—On Wednesday Wheat was in some cases about 6d. per quarter dearer than on Monday, but the demand was very quiet. Barley and malt showed no particular change. Oats were in fair demand at full prices. Maize was about 6d. per quarter higher. Beans and Peas were fully as dear, and flour was firm, with a hardening tendency.—Average prices of corn for the week ending Nov. 6:—Wheat, 43s. 4d.; Barley, 35s. 2d.; Oats, 20s. 9d. For the corresponding period last year:—Wheat, 50s. 5d.; Barley, 40s. 8d.; Oats, 21s. 6d.

CATTLE.

At Copenhagen Fields on Monday choicest descriptions of beasts were scarce, and consequently made a fair price, and there were so many inferior on offer they could not possibly be sold notwithstanding a disposition to take low rates. For sheep buyers were very scarce, and it was difficult to obtain the previous Monday's quotations. The calf trade was unaltered. Quotations:—Beasts, 4s. to 4s. 8d., and 5s. to 5s. 10d.; calves, 5s. to 6s.; sheep, 4s. 8d. to 5s. 6d., and 6s. to 7s.; pigs, 4s. 4d. to 5s. 8d.—On Thursday a dull tone characterised trade. Both beasts and sheep moved off slowly, at drooping prices, and calves also were flat.

HAY.

Tuesday's Whitechapel Market report states that supplies were large, and with a quiet trade prices were somewhat easier. Quotations:—Prime Clover, 100s. to 126s.; inferior, 70s. to 90s.; prime meadow hay, 90s. to 110s.; inferior, 30s. to 90s.; and straw, 25s. to 44s. per load.—On Thursday the large supply of fodder on sale met with a very dull trade, on account of the weather, and prices were lower for meadow hay, as follows:—Prime Clover, 100s. to 128s.; inferior, 60s. to 95s.; Prime meadow hay, 80s. to 100s.; inferior, 30s. to 70s.; and straw, 30s. to 44s. per load.—Cumberland Market quotations:—Superior meadow hay, 100s. to 110s.; inferior, 50s. to 84s.; superior Clover, 120s. to 127s.; inferior, 90s. to 105s.; and straw, 40s. to 44s. per load.

POTATOS.

The Borough and Spitalfields Markets reports state that supplies continue pretty good, and trade has been quiet, at the following prices:—Scotch Regents, 100s. to 110s. per ton; Scotch Victorias, 100s. to 110s.; do. Champions, 90s. to 100s.; Essex Regents, 90s. to 100s.; do. Champions, 80s. to 90s.; German Reds, 4s. 6d. to 5s. per bag.—The imports into London last week consisted of 55,442 bags from Hamburg, 1931 Harlingen, 8187 Antwerp, 489 Boulogne, 5532 Stettin, 52 tons Roskoff, 46 bags Havre, 7 barrels Montreal, 547 bags Rotterdam, 416 bags Bremen, 57 bags Gothenburg, 50 Ostend, and 1400 bags Brussels.

COALS.

The following are the prices current at market during the week:—East Wylam, 16s. 6d.; Ravensworth West Hartley, 14s. 9d.; Walls End—Haswell, 10s.; Hawthorns, 18s.; Lambton, 18s. 6d.; Original Hartlepool, 19s.; Wear, 17s. 6d.; South Hetton, 19s.; Tunstall, 17s. 6d.; South Hartlepool, 18s.; Hetton Lyons, 17s. 6d.; Pitlington, 17s. 6d.; Tees, 18s. 9d.; Radford Navigation, 16s.

Government Stock.—The closing quotations for Consols on Monday were, for delivery, 99½ and 99½, and 99½ to 99½ for the account. The figures on Tuesday were, for delivery, 99½ to 99½, and 99½ to 100 for the account. On Wednesday the final quotations were 99½ to 99½ for delivery, and 99½ to 99½ for the account. The last figures recorded on Thursday were, for the account, 99½ to 99½, and 99½ to 99½ for delivery.

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THE BEST VARIETY IN CULTIVATION :—

From Mr. SPEED, Gardener to the Right. Hon. Lord Penrhyn, Penrhyn Castle, Bangor, October 27, 1880.

"DEAR SIR,—I have a remarkably fine quarter of the Aigburth Brussels Sprouts again this season. Its hardness and quality, also its productiveness, makes it a great boon to us, who have to supply large families with really fine vegetables.—Yours faithfully,
"WM SPEED."

From Mr. JAMIESON, Gardener to the Right Hon. the Earl of Crawford and Balcarres, Haigh Hall, Wigan, November 8, 1880.

"DEAR SIR,—Last season I formed a very favourable opinion of your Aigburth Brussels Sprouts, and this season's trial has convinced me that it is, without exception, the hardest, most productive, and the best in quality of any variety I have ever grown.—I am, yours, very truly,
"ANDREW JAMIESON."

From Mr. BARHAM, Gardener to the Right Hon. the Earl of Sefton, Croxteth Hall, West Derby, November 3, 1880.

"DEAR SIR,—I find the Aigburth Brussels Sprouts is a very distinct variety, very hardy, and of much less disposition to 'bolt' than other kinds. Its sprouts are

exceedingly firm, the stem being covered with solid large sprouts from top to bottom, which last year, albeit a bad season, remained much longer in fine condition than any other variety: this makes it doubly valuable. I consider it a valuable acquisition. Shall give it exclusive culture next year.—Yours faithfully,
"B. BARHAM."

From Mr. HARRISON, Gardener to the Right. Hon. the Earl of Derby, Knowsley, Lancashire, November 1, 1880.

"GENTLEMEN,—I have grown the Aigburth Brussels Sprouts along with Scrymger's and one or two other sorts, and find it to be a distinct strain, of robust and even growth, very hardy and productive, and of excellent quality.—Yours truly,
"F. HARRISON."

From Mr. WALLIS, Gardener to the Rev. W. Sneyd, Keele Hall, Newcastle, Staffordshire, October 13, 1880.

"DEAR SIR,—I have a very good piece of your Aigburth Brussels Sprouts. They are a very even good lot. I like them better than any variety I have yet grown or seen. We are gathering beautiful close sprouts from them now, as good as possibly can be.—Yours faithfully,
"J. WALLIS."

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BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 or 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
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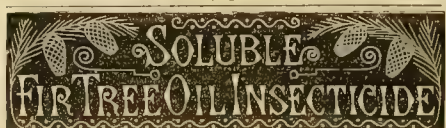
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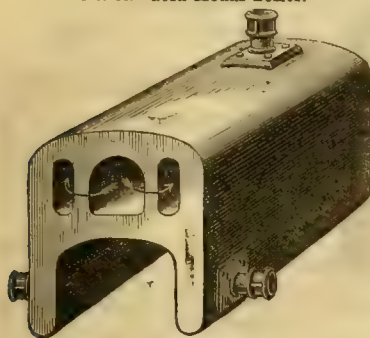
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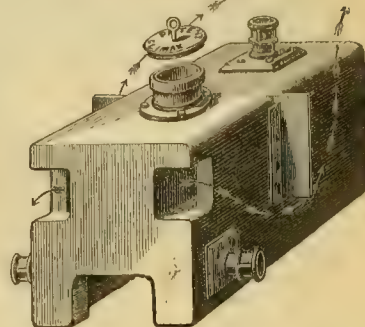
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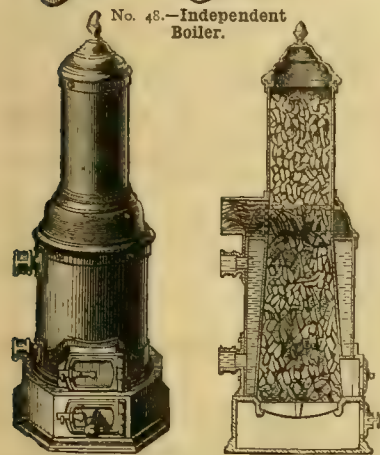
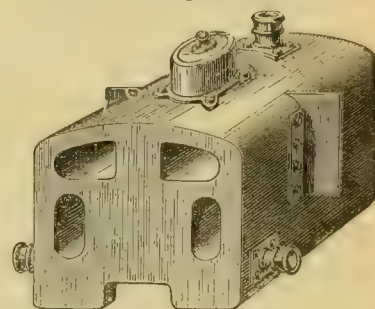
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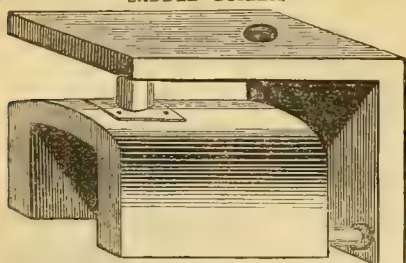
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High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	7 0 0
20 "	18 "	24 "	400	8 0 0
24 "	24 "	24 "	500	9 0 0
24 "	24 "	30 "	700	12 0 0
24 "	24 "	36 "	850	14 0 0
24 "	24 "	42 "	1000	16 0 0
24 "	24 "	48 "	1400	20 0 0
28 "	28 "	60 "	1800	25 0 0

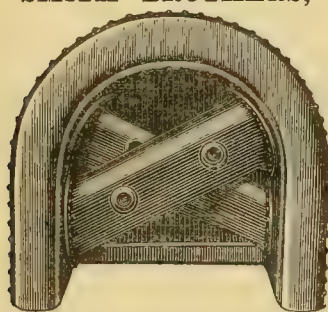
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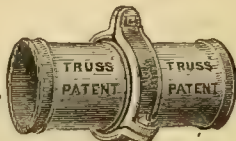
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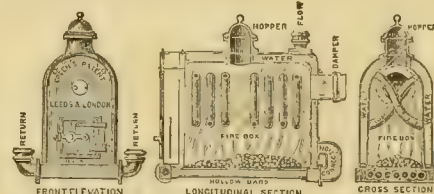
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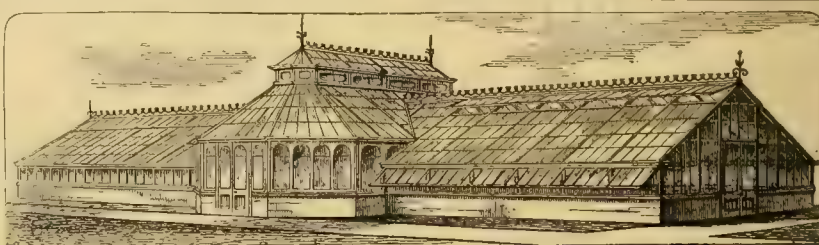
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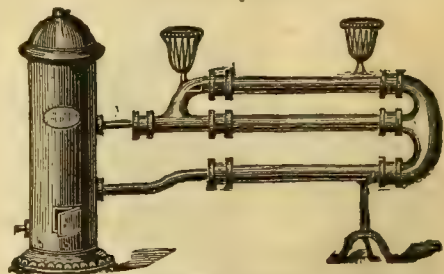
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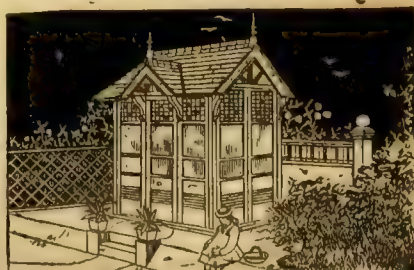


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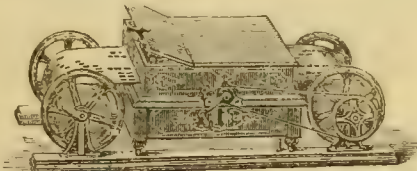
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KINAHAN'S LL WHISKY. Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

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The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for

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and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.

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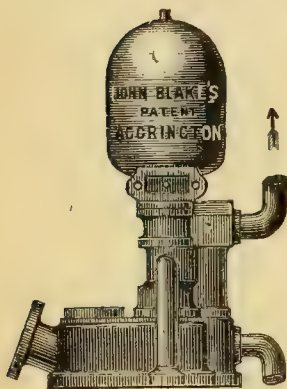
JOHN BLAKE'S PATENT SELF-ACTING HYDRAULIC RAMS,

For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 ft.

RECENT TESTIMONIALS.

From V. F. BENNETT-STANFORD, Esq., M.P., *Pyt House, Tisbury, Wilts, August 20, 1880.*—"I have no hesitation in saying your Self-acting Hydraulic Ram and Apparatus for Extinguishing Fire, which you laid down here, including about 1 mile of pipes, are very satisfactory. The Ram forces upwards of 5000 gallons per day to a service reservoir holding 25,000 gallons at an elevation of 95 feet, being 70 feet above the roof of the house, from which reservoir the water is distributed to the house, stables, home farm, and several cottages; and in case of fire, four jets can be thrown on to the house from different sides at a great force and large volume. I consider the work has been done well and efficiently, and does you credit."

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March 1, 1880.*—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of the tower, 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

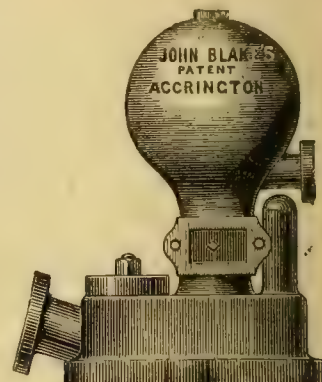
From Sir ROBERT MENZIES, Bart., of Menzies, *Rannoch Lodge, Rannoch, August 20, 1880.*—"The Hydraulic Ram you fixed for me to supply water to Rannoch Lodge and Camerburgh, two houses three-quarters of a mile apart, is a complete success. The extreme distance the water is carried is a mile and a quarter, and though the elevation of the two houses are different, there is a regular supply of seven quarts per minute to each house, which has never ceased since the Ram was set going, about three months ago. Your Ram took the place of one previously tried on the same spot, and which did not succeed, and was in fact a complete failure."

From Capt. GANDY, *Castle Bank, Appleby, February 11, 1880.*—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 72 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

BLAKE'S HYDRAULIC RAMS

have been supplied to the following amongst others:—

- | | |
|---|--|
| <p>His Grace the Duke of Cleveland.
The Right Hon. the Earl of Crawford and Balcarres.
The Right Hon. the Earl of Derby.
The Right Hon. the Earl of Ilchester.
The Right Hon. the Earl of Romney.
The Right Hon. the Earl of Granard.
The Countess de Morella.
Lord Leaconsfield.
The Right Hon. T. Sothern Estcourt.
The Right Hon. R. More O'Farrell.
The Hon. George Kenyon.
Admiral Sir George Broke Middleton, Broke Hall, Suffolk.
Gen. Gerard Potter Eaton, The Pole, Cheshire.
Sir Henry A. Hoare, Stourhead, Bath.
Sir William Fielding, Feniscowles, Blackburn.
Sir Robert Menzies, of Menzies.
Sir Henry W. Ripley, M.P., Acacia, near Leeds.
Colonel Starkie, Lovely Hall, Blackburn.
Colonel Milligan, Caldwell Hall, Burton-on-Trent.
Colonel Towneley, Towneley, Lancashire.
Colonel Hargreaves, Maiden Erlegh, Berkshire.
Colonel Tremayne, M.P., Carclew, Cornwall.
Colonel Mitford, Mitford Castle, Northumberland.
Colonel Leyland, Nantclwyd Hall, Ruthin.
Colonel R. R. Jackson, Lostock Hall, Lancashire.
W. Bromley-Davenport, Esq., M.P., Capetown, Cheshire.
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Hamer Bass, Esq., M.P., Needwood Hall, Burton-on-Trent.
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Captain Gandy, Skirsgill, Penrith.
Captain Townshend, Wincham.
Henry Sandbach, Esq., Hafodunias, Abergele.
The Rev. H. J. De Sallis, Portna Park, Virginia Water.
The Rev. E. G. Edwards, Trentham, Staffordshire.
G. H. Pinckard, Esq., Combe Court, Godalming.
W. Bickford Smith, Esq., Trevanno, Cornwall.
John Taylor, Esq., The Rocks, Bath.
William Roundell, Esq., Gledstone, Skipton.
Archibald Dunn, Esq., Architect, Newcastle-on-Tyne.
L. Hammer, Esq., Deanwater, Wilmslow.
W. H. Hornby, Esq., Poole Hall, Nantwich.
T. W. Bateman, Esq., Middleton Hall, Derbyshire.
John Hampson, Esq., Ullenwood, near Cheltenham.
R. Andrews, Esq., Prestbury Hall, Cheshire.
Richard Smethurst, Esq., Ellerbeck Hall, Lancashire.</p> | <p>T. M. Shuttleworth, Esq., Howick House, Preston.
C. R. Collins, Esq., Strath Culme House, Hele, Devonshire.
S. S. White, Esq., Manor House, Wethersfield, Essex.
The Corporation of Blackburn.
J. Barnes, Esq., Contractor, Chatburn and Hellefield Railway.
The Executors of John Hargreaves, Esq., Burnley.
G. Redmayne, Esq., Brathay Hall, Ambleside.
Thomas Mason, Esq., Alkincoates Hall, Colne.
Basil Sparrow, Esq., Gosfield Place, Halstead, Essex.
R. O. Leycester, Esq., Toft Hall, near Knutsford.
Fred. Lion, Esq., Seighford Hall, near Stafford.
Rev. A. C. Basset, Watermouth, Ilfracombe.
John Walker, Esq., Mount St. John, Thirsk.
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The Castle Brick Company, Northop, Flint.
The Leyland and Farrington Gas Company.
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John Fielden, Esq., Grimston Park, Tadcaster.
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John Rowe Bennion, Esq., Nursted House, Petersfield.
J. Spender Clay, Esq., Ford Manor, Surrey.
The Guardians of the Sheffield Union (New Workhouse).
Richard Mercer, Esq., Sandling Place, Maidstone.
James Smithells, Esq. (Caledonian Railway), Dean Wood, Rivington.
Chas. J. Ebdon, Esq., Baldolo Manor, Hastings.</p> |
|---|--|



This Ram, for deep working falls, will force up one-third of the water passing through it.

RECENT TESTIMONIALS.

From J. SPENDER CLAY, Esq., *Ford Manor, Lingfield, Surrey, August 9, 1880.*—"In reply to your letter of inquiry I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6120 gallons per twenty-four hours, being 720 gallons above the quantity you guaranteed."

From the Right Honourable the EARL of ROMNEY, *56, Eaton Place, S.W., June 15, 1880.*—"Sir,—In reply to your inquiry, I have pleasure in stating that the Hydraulic Ram which you erected for me at Gayton does its work remarkably well, and is a great success. I think the work is especially creditable to you on account of the very small fall of but 3 feet with which you had to deal, and I shall always be glad to recommend you.—Yours faithfully, ROMNEY."

From JOHN ROWE BENNION, Esq., *Nursted House, Petersfield, August 25, 1880.*—"I have much pleasure in saying that the two Hydraulic Rams you put down for me, and which are supplied from a spring now yielding in this dry season only 3 gallons per minute, are sending up an ample supply of water to my house and the home farm, distributing the supply through more than 2000 feet of pipes and to an elevation of 137 feet. Of this result I think you have as much reason to be proud as I have to be satisfied."

From EDWARD SINGLETON, Esq., *Preston Deanery, Northampton, July 9, 1880.*—"The Hydraulic Ram you fixed here for me is very successful. It sends up more than sufficient water for a hundred head of cattle, besides horses, also feeds a steam engine, and during two severe winters we have not had a pipe go wrong with frost as I quite expected they would do. No farmer who requires abundance of water should be without one."

From Col. TREMAYNE, *Perran-ar-Worthal, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons per day to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 360.—VOL. XIV. { NEW SERIES. } SATURDAY, NOVEMBER 20, 1880.

{ Registered at the General } Price 5d.
{ Post-office as a Newspaper. } POST FREE, 5½d.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to **INITIALS**, or to **FICTITIOUS NAMES**, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

RICHMOND HORTICULTURAL SOCIETY.

THE SECOND ANNUAL AUTUMN EXHIBITION OF CHRYSANTHEMUMS, FLOWERS, FRUIT, and VEGETABLES will be held in the Assembly Rooms, Castle Hotel, Richmond, on TUESDAY and WEDNESDAY, November 23 and 24.

H.R.H. the Princess Mary Adelaide, Duchess of Teck, and H.S.H. the Duke of Teck, have signified their intention of visiting the Exhibition. Schedules may be obtained of

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THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
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H. and F. SHARPE are prepared to make special offers of all the leading varieties of Seed Potatoes, grown from the finest selected stock and free from disease.
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H. and F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
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To the Trade.
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RHUBARB, Victoria and Albert, 16s. per 100. Cask and packing included.
T. EVES, Gravesend Nurseries—Established 1810.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Enfield Market and Rainham. Apply to Mr. T. DAVIES, Tangley, near Guildford.

SEAKALE CROWNS and ASPARAGUS ROOTS for Sale. None superior now growing.—Apply to
WM. BAGLEY, Market Gardener, Millshot Farm, Fulham, S.W.

SEAKALE for Sale—strong selected Crowns for forcing, now ready. None superior now growing. Land specially adapted for its growth. Apply to
T. BROSNAN, Market Gardener, Norman Farm, Fulham, W.

TELEGRAPH CUCUMBER PLANTS (True).—Seed of the same kind, 1s. 6d. and 2s. 6d. 1c. packet. STRAWBERRY PLANTS, 2s. 6d. per 100, or £1 per 1000. Trade supplied.
G. WALKLING, College Park Nursery, Lewisham, S.E.

SALES BY AUCTION.

Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, SNOWDROPS, and other FLOWER ROOTS, from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., every MONDAY, WEDNESDAY, and SATURDAY, during November, at half-past 12 o'clock precisely each day, consignments of DUTCH BULBS arriving weekly from well-known farms in Holland, in large and small lots to suit all buyers.

On view the mornings of Sale, and Catalogues had.

Plants from Ghent, Bulbs from Holland.

(Sale No. 5734.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, November 22, at half-past 12 o'clock precisely, a consignment of Choice CAMELIAS and Indian AZALEAS, all named and well set with bloom-buds, from Ghent; also an importation of Choice Double and Single HYACINTHS of all colours, for Glasses, Pots, and Borders; TULIPS, CROCUSES, NARCISSUS, SCILLAS, SNOWDROPS, LILIUMS, and other BULBS, from well-known Farms in Holland, in lots to suit all buyers.

May be viewed the morning of Sale, and Catalogues had.

7000 Liliun auratum and Other Choice Lilies.

(Sale No. 7735.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 23, at half-past 12 o'clock precisely, a consignment of 7000 splendid Bulbs of LILIUM AURATUM just arrived from Japan in the finest possible condition; also several hundreds of the rare and beautiful MONTBRETIA POTSI, about 100 fine plants of the new CHRYSANTHEMUM MARGUERITE COMPIE DE CHAMBER, and 100 SENEIO PULCHER; also an importation of DARLINGTONIAS and other CALIFORNIAN PLANTS, imported PANCRATIUM, and a great variety of choice LILIES, mostly English grown, comprising LILIUM SOVITZIANUM, L. HUMBOLDII, L. PARDALINUM, L. GIGANTEUM, L. CHALCEDONICUM, L. NEILGERRENSE, &c.

May be viewed the morning of Sale, and Catalogues had.

Standard and Dwarf Roses, Bulbs, &c.

(Sale No. 5736.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, November 24, at half-past 12 o'clock precisely, 200 Standard ROSES and 100 Dwarfs, from a Surrey Nursery; a few lots of choice English-grown CAMELIAS, well set with bloom buds, about 3 feet high; a Consignment of PLANTS and BULBS from Germany; CARNATIONS, PINKS, SPIRÆAS, and other HARDY HERBACEOUS PLANTS; also a consignment of first-class Double and Single HYACINTHS, of all colours, for Glasses, Pots, and Borders; TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULUS, SCILLAS, SNOWDROPS, and other BULBS from Holland.

May be viewed the morning of Sale, and Catalogues had.

Odontoglossum Edwardi, Cattleya gigas, Oncidium MELANOPUS, ONCIDIUM MACRANTHEMUM, COMPARETIA SPECIOSA, ONCIDIUM CHRYSORUS.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, of St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 25, at half-past 12 o'clock precisely, large and specially healthy importations of the above new and rare ORCHIDS, together with other consignments, consisting of a fine lot of PESCATORIA ROEHLII, the White-tipped ODONTOGLOSSUM HALLI, ONCIDIUM NUBIGENUM, ODONTOGLOSSUM CIRROSUM, O. VEXILLARIUM, dark variety; CATTLEYA MOSSII, MILTANIA FLAVESCENS, and many other rare and beautiful ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

Orchids from Borneo, Java, and Madagascar, DENDROBIUM LOWII, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 2, at half-past 12 o'clock precisely, by order of Messrs. Hugh Low & Co., fine imported plants, in the best possible condition, of the rare and lovely DENDROBIUM LOWII, CYPRIPEDIUM LAWRENCEANUM, DENDROBIUM VEITCHIANUM, CYPRIPEDIUM JAVANICUM or VIRENS, ANGRÆCUM SESQUIPEDALE, and other choice imported and established ORCHIDS.

On view the morning of Sale, and Catalogues had.

Every Monday.

SALES OF DUTCH BULBS at the Auction Mart, Tokenhouse Yard, E.C., opposite the Bank of England.

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, on MONDAY NEXT, and every following Monday, at half-past 11 o'clock precisely, extensive consignments of first-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, and other BULBS from Holland, in lots to suit all buyers.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Mottingham, Kent.

About ten minutes' walk from Latham Station, and one mile from Chislehurst.

By order of the Executors of the late Mr. George Clarke.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Rose Nursery, Mottingham, on TUESDAY and WEDNESDAY, November 23 and 24, at 12 o'clock precisely each day, several acres of valuable and well grown NURSERY STOCK, including a large assortment of Evergreen and Conifer Shrubs, Specimen Conifers, Ornamental and Forest Trees, trained Fruit Trees, thousands of Ivies in pots, Euonymus for potting, and other miscellaneous Stock.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Important Sale of a First-class Collection of Dutch BULBS, 400 handsome Standard, Dwarf and Climbing ROSES, selected FRUIT TREES, hardy CONIFERÆ SHRUBS and AMERICAN PLANTS, ERICAS, &c., in flower, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on THURSDAY, November 25, at 12 o'clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C.

Friday Next.

7000 LILIUM AURATUM, &c.—An unusually good Consignment.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, on FRIDAY NEXT, at half-past 11 o'clock precisely, 7000 Bulbs of LILIUM AURATUM, just arrived from Japan in first-class condition, together with an assortment of English-grown LILIES, including all the finest varieties; fine masses of DISA GRANDIFLORA, DARLINGTONIA, CALIFORNICA, SARRACENIA, &c.; Algerian and other BULBS, and a quantity of Berlin Crowns of LILY of the VALLEY.

View morning of Sale, and Catalogues as above.

Friday Next.

500 CAMELIAS and AZALEA INDICA, all named; FICUS ELASTICA and DRACÆNAS consigned from Ghent for unreserved Sale, together with 300 lots of first-class HYACINTHS, TULIPS, CROCUS, LILIUMS, GLADIOLUS, NARCISSUS, and other BULBS from Holland.

MESSRS. PROTHEROE AND MORRIS will SELL the above at the Auction Mart, Tokenhouse Yard, London, E.C., on FRIDAY NEXT, at half-past 11 o'clock precisely.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Friday Next.

TREE FERNS from NEW ZEALAND.

MESSRS. PROTHEROE AND MORRIS will SELL at the Auction Mart, London, E.C., on FRIDAY NEXT, at half-past 11 o'clock precisely, 100 very fine Trunks of CYATHEA DEALBATA and DICKSONIA SQUARROSA, from 2 to 6 feet in height, in splendid condition, consigned direct from New Zealand for sale without reserve.

View morning of Sale, and Catalogues as above.

To Noblemen, Gentlemen, and Others Interested in PLANTING.

EXTENSIVE NURSERY SALE OF FOREST TREES, on TUESDAY, November 30.

MR. DAVID MITCHELL, HORTICULTURAL AUCTIONEER and VALUATOR, has been instructed by Messrs. P. S. Robertson & Co. to DISPOSE of, by Public AUCTION, at their Forest Tree Nurseries, Inverforth, Edinburgh, on TUESDAY, November 30, at 11 o'clock forenoon, several Millions of SEEDLING and TRANSPLANTED FOREST TREES, all in the best possible condition for removal, comprising 600,000 2-yr. Seedling Larch, 400,000 Spruce Fir, from 9 to 15 inches; 200,000 transplanted Larch, from 12 to 20 inches, very fine lot; 150,000 Larch (interlined), 2 to 3½ feet in height, grand stuff; 200,000 Scots Fir, 2-yr. 9 to 15 inches in height, clean and well grown; 40,000 Silver Fir, 9 to 15 inches; 30,000 Spanish Chestnut, 1 to 2½ feet; 50,000 Thorns, 2 to 3½ feet; also immense quantities of Seedling and Transplanted Pinus montana and P. austriaca, Sycamore, Ash, Oak, Elm, Beech, Hazel, Alder, Poplars of sorts, many of them large; Laburnum, Willows, Hornbeam, Norway Maple, 100,000 2-yr. Seedling Hollies; also a fine lot of Green Hollies, 3 to 4 feet; Pinus Laricio, Privet for Cover Planting, Sea Buckthorn, Birch, 12 to 18 inches; Pinus Cembra, Laurels, Mahonia, Rhododendrons, and quantities of other Trees too numerous to mention in an advertisement.

Catalogues in preparation, and may be had eight days before the Sale from the Auctioneer, 6, Conely Bank, and of Messrs. P. S. ROBERTSON AND CO., at their Nurseries, Trinity; or the Seed Warehouse, 33, St. Andrew Square, Edinburgh.

N.B.—Mr. MITCHELL would beg to draw attention to this Extensive and Important Sale. The Exposer has undertaken to lift the whole of the Lots purchased and put them on the rails free of cost.

Edinburgh, November 9.

WANTED, TO RENT, a Small NURSERY and GREENHOUSE, suitable for a Retail Florist. Must be cheap.

G. W., Barbot Street, Edmonton, Middlesex.

The Priory Nursery Gardens, Warwick.

TO BE LET, with Immediate Possession, the above-named GARDENS, DWELLING-HOUSE, and OUTBUILDINGS. The Gardens contain 2 Acres, 2 Rods, and 12 Poles, or thereabouts, with a small adjoining Plantation, are completely walled in, and well stocked with choice Wall Fruit Trees. The Incoming Tenant will be required to take to the Vineries, Propagating and Greenhouses, and Nursery Plant at a Valuation of 5000 feet, 8 to 10 feet, 125. per 100. For rent and other particulars, apply to Mr. W. B. SANDERSON, Solicitor, Warwick; or to the Agent of the Landlord, Mr. JAMES BAILEY, St. Nicholas Church Street, Warwick.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are Eight and a Half Acres of deep, rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business.—For particulars, Apply to J. WATSON, 38, Crome Street, Bury St. Edmunds.

W. AND J. BROWN offer BIRCH, 7 to 8 feet, 6s. per 100; 8 to 10 feet, 12s. per 100. ELMS, Huntingdon, 8 to 10 feet, 26s. per 100; 10 to 12 feet, 55s. per 100. SYCAMORE, 6 to 8 feet, 8s. to 10 feet, 10s. per 100. POPLAR, Black Italian, 6 to 8 feet, 6s. per 100. LIMES, 6 to 8 feet, 20s. per 100. PRIVET, 3 feet, 20s. per 1000. BEECH, 3 feet, 40s. per 1000.

Nurserymen, Stamford.

MARTIN AND SON, Hull and Cottingham, (offer as under:—) QUICKWOOD, 1 to 1½ foot, 10s. per 1000; 1½ to 2 feet, 15s. per 1000; 2 to 2½ feet, 18s. per 1000; 2½ to 3 feet, 20s. per 1000. ORNAMENTAL TREES, of kinds, 12 to 16 feet, 40s. per 100, 4 to 6 feet, 100s.

RASPBERRY CANES.—A few hundred extra stout, well-fibred Fastoff Raspberry Canes for Disposal.

BRINKWORTH AND SONS, Reading.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application. RICHARD SMITH AND CO., Nurserymen, Worcester.

TO GENTLEMEN SEEKING A PLEASANT HEALTHY OCCUPATION.

To Nurserymen wishing to Enlarge their Business.

To Gentlemen's Gardeners with Means.

THE DIRECTION of the SUNNINGDALE NURSERY, established and successfully conducted by CHARLES NOBLE, must now, owing to the age and failing health of the Proprietor (who has no son to succeed him), be delegated to more robust hands, and he is prepared to entertain proposals for importing into the business new energies, either wholly or in part. The Grounds are extensive, over two-thirds being Freehold, and one-third Leasehold, to run some time, with little chance of objection to renewal. The situation is one of the very best in England (only a few minutes' walk from a railway station); it contains within itself every kind of soil, from heavy loam to peat and pure sand; and the neighbourhood is admitted on the highest authority to be one of the most healthy positions in Great Britain. The owner is prepared to consider any *bona fide* proposal, either from one or more persons, and every reasonable facility will be given to persons of moderate means. Skill and enterprise will be taken into account, and as favourably considered as mere money value. The business is capable of extension, or can be limited at pleasure, and contains within itself several specialities of undoubted value.

Bagshot, Nov., 1880.

RARE and CHEAP LILIES, including that lovely Lily, LILIUM AURATUM, are offered at prices which will command patronage. Finest possible Roots of auratum, Size No. 1, 6d.; No. 2, 1s.; No. 3, 1s. 6d.; and No. 4, 2s., with liberal discount to Trade. CATALOGUE free on application to

W. GORDON, New Plant and Bulb Importer, Office, 10, Cullum Street, London, E.C.

To the Trade.

SEED POTATOS.—Sutton's Magnum Bonum, 4s. 5s.; Myatt's Ashleaf, 4s. 10s.; Rivers' Ashleaf, 4s. 10s. per ton; Schoolmaster, 7s. per bushel. Free on Rail. The above are choice selected samples, grown expressly for seed; perfectly sound, and true to name.

BRINKWORTH AND SONS, Potato Growers, Reading.

Garden and Flower Seeds.

MR. CHR. LORENZ begs to inform his numerous English Customers that his this year's harvest of VEGETABLE and FLOWER SEEDS has been a most splendid one, and that he is now ready to supply this year's seeds.

Early Orders will oblige, and will enable Mr. Lorenz to send by cheap monthly opportunity. Those who have not yet received Mr. Lorenz, Spring CATALOGUE for 1881 will please apply to

HERN CHR. LORENZ, Samenhandlung, Erfurt, Prussia.

TUBEROSE, LILIES OF THE VALLEY,

CHRISTMAS ROSES, &c.—50 Double American TUBEROSE Pearl, and how to grow them, for 25s. 100 Berlin LILIES of the VALLEY, single crowns, and how to grow them, for 15s. 25 Christmas ROSES for 12s. 6d. Consignments will shortly arrive, the best that can be procured. LAURUSTINUS, fine bushy plants and well rooted, 1½ to 2 feet, 50s. per 100; 2 to 3 feet, 75s. per 100. On receipt of Post-office orders, the above will be forwarded to any address carriage paid.—R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

WHITE FLOWERS for CHRISTMAS.—

PRIMULAS, Double White, very fine and bushy, 100s. per 100; ditto, smaller, 60s., in 48-pots. Matted Baskets, &c., 4s. each.

VINES, Pot, very fine, from 30s. per dozen.

APPLES, Dwarf-trained, 18s. and 21s. per dozen, fine.

ROSES, Dwarf, H.P., and Tea, a matchless stock.

EDWIN HILLIER, Winchester.

FOR SALE, AZALEA INDICA,

14 to 16 inches broad, 11 inches high. Very cheap, for houses of first rank.

SPIRÆA (HOTEIA), fifteen to twenty-five growths, 7s. per 100.

DRACÆNA LINEATA and INDIVISA, with thirty to fifty leaves, 1s. 6d. each.

J. COENE, St. Pierre-Alost Nursery, Ghent.

FINE AVENUE TREES.—

LIMES, 10 to 12 feet, 15s. per dozen; 12 to 14 feet, Selected, 15s. 25s. per dozen.

CHESTNUTS, Horse, 10 to 12 feet, 9s. per dozen; 12 to 14 feet, 15s. per dozen; Selected, 15s. 25s. per dozen.

ELMS, English, 10 to 12 feet, 12s. per dozen; 12 to 14 feet, 18s. per dozen; Selected, 15s. 25s. per dozen.

The whole of the above have strong straight stems, with good bushy heads, and cannot be surpassed.

Also large quantities of FOREST TREES, EVERGREEN SHRUBS and QUICKS. Descriptions and prices will be sent post-free on application.

R. TUCKER, The Nurseries, Faringdon, Berks.

To Gentlemen engaged in Planting, Landscape

GARDENERS, and the TRADE.

HENRY GODFREY, NURSERYMAN,

Stourbridge, has to offer the following, all of which are well grown plants, and have been recently transplanted. Large purchasers will be liberally dealt with. An inspection solicited.—

VEWS, English, 5 to 6 feet, 15s. per dozen; 6 to 7 feet, 24s. per dozen; 8 to 10 feet, 42s. per dozen.

Irish, 15 to 18 inches, 18s. per 100; 18 to 24 inches, 21s. per 100; 24 to 30 inches, 25s. per 100; 30 to 36 inches, 30s. per 100; 3½ to 4 feet, 75s. per 100; 4½ to 5 feet, 46s. per 100; 6 feet, 110s. per 100.

CEDRUS DEODARA, 3½ to 4 feet, 18s. per dozen; 4½ to 5 feet, 24s. per dozen.

PINUS AUSTRIACA, 4 feet, 21s. per dozen, very fine; 5 to 6 feet, 36s. per dozen, very fine.

ABIES Menziesii, 3 feet, 50s. per 100.

" Douglasii, 4½ to 5 feet, 18s. per dozen; 5½ to 6 feet, 30s. per dozen.

CUPRESSUS Lawsoniana, 3 to 4 feet, 50s. per 100; 4 to 4½ feet, 60s. per 100.

CRYPTOMERIA elegans, 2 to 2½ feet, 8s. per dozen; 3 to 3½ feet, 15s. per dozen.

RETINOSPORA PLUMOSA, fine for potting, 1½ to 2 feet, 50s. per 100.

ARBOR VITÆ, American, well furnished, 10 feet, 42s. per doz.

HOLY GREN, 8 to 9 and 9 to 10 feet, 60s. to 80s. per dozen.

ARAUCARIA IMBRICATA, 8 to 10, to 12 feet, prices on application.

POPLARS, Lombardy, 8, 9, to 10 feet, 25s., 30s., to 75s. per doz.

MANETTI ROSE STOCKS fine, 30s. per 1000.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
 „ Golden, many thousands, 3, 4, 5 to 10 feet high.
 „ Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
 „ laurifolia, myrtifolia, Scottica, Hodgkins, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
 „ Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
 „ Golden Queen, 4, 5, 6 to 10 feet high.
 „ Silver, 4, 5, 6 to 10 feet high

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNKERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

„ **ARGENTEA**, 4 and 5 feet.

LIBODENDRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

„ **DOLABRATA**, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

„ **SEMPER-AUREA**, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 1, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently transplanted.

Knap Hill Nursery, Woking, Surrey.

To the Trade only.

DOUBLE WHITE PRIMULAS, in 5½-inch pots, now in bloom, £2. 10s. per 100.

MAIRIS AND CO., Weston-in-Jordano, Bristol.

YOUNG ORCHARD TREES, covering 2 acres, for Sale—Apple, Pear, Plum, Gooseberry, and Currant Trees: in good bearing. To be taken as standing, and removed by the Purchaser. Apply to Mr. ALFRED W. OSBORNE, Resident Agent, Wimbledon Park.

Webb's Prize Cob Filberts.

MR. COOPER having succeeded to the whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.
 Calcot Gardens, near Reading, Berks.

Twelfth Edition

"WEBB'S PRIZE COB FILBERTS, AND HOW TO GROW THEM."

This Pamphlet will be forwarded to any one sending Two Postage Stamps to

Mr. COOPER, Calcot Gardens, near Reading, Berks.

NEW CATALOGUE FOR AUTUMN, 1880, post-free, of the finest and cheapest DUTCH, FRENCH, and other FLOWERING BULBS. For prices, see last week's large Advertisement.

SPRING FLOWERING PLANTS, 100,000 fine plants, now ready.

HARDY FLORIST FLOWERS, and the choicest HERBACEOUS PLANTS for Garden Decoration. See CATALOGUE and last week's large Advertisement.

WINTER FLOWERING PLANTS for Indoors. A fine stock of the best sorts, well set with bloom. See CATALOGUE.

PLANTS and ROOTS for forcing, very fine.

DWARF ROSES, well rooted, strong good plants.

FRUIT TREES, STRAWBERRY PLANTS, EVER-GREEN and DECIDUOUS TREES and SHRUBS, &c.

For prices, List of sorts, and descriptions, see CATALOGUE.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

Roses, Fruit Trees, &c.

WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
 Ottershaw Nurseries, Chertsey.

THE MOST SUPERB ROSES that money can buy.

Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.

Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

MATRICARIA INODORA, fl.-pl.—Where an abundance of the most neat and pretty pure white flowers is valued, this is probably the most serviceable of all hardy flowers. In a note alluding to it in the *Gardeners' Chronicle* the Editors say: "Gardeners should take notice of this."

Two Cuttings, post-free, for 1s. 2d.

One Plant, post-free, 1s. 6d.

The Home for Flowers, Swanley, Kent.

Illustrated Catalogue of Ferns.

W. and J. BIRKENHEAD, Fern Nursery,

• Sale, near Manchester, beg to say that their CATALOGUE OF FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST OF FERNS," free on application.

Blooming Rhododendrons.

H. LANE and SON, Nurseries, Berkham-

stead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

NOTICE.

THE

GENERAL HORTICULTURAL CO.

(JOHN WILLS, (Limited),

Warwick House, 142, Regent Street, W.,

IS NOW IN CONNECTION WITH THE

EXCHANGE SYSTEM

OF THE

UNITED TELEPHONE COY.,

and Orders for Fruit, Bouquets, Floral Decorations, Plants, &c., can be sent by that medium, and will have immediate attention and prompt despatch.

FRUIT and FLOWERS, for SHOOTING and OTHER PARTIES, will be forwarded to any part of the country on receipt of Letter or Telegram.

JOHN WILLS, General Manager.

AZALEA INDICA, AZALEA MOLLIS,

HEATHS, CYCLAMEN, CAMELLIAS,

And other Winter and Spring-flowering Plants,

Also PALMS, &c.

All good Plants and at Low Prices.

See CATALOGUES.

OSBORN & SONS,

THE FULHAM NURSERIES, LONDON, S.W.

SUTTON'S FLOWER ROOTS.

For full particulars see



Gratis and Post-free on application.

SUTTON & SONS,
 THE QUEEN'S SEEDSMEN, READING.

THE LARGEST ROSE GARDENS IN ENGLAND.

CRANSTON'S NURSERIES.

(ESTABLISHED 1785.)

New Rose Catalogue for 1880-81,

now ready and may be had post-free on application.

Awarded over 60 First Prizes for Rose Blooms this season.

CRANSTON'S NURSERY and SEED CO. (LIMITED),
 King's Acre, Hereford.

STANDARD PEAR TREES.

All the leading kinds of Hardy Pears—Grand Trees.

Prices, with Sample, on application to

CRANSTON'S NURSERY and SEED CO.

(LIMITED),

KING'S ACRE, HEREFORD.

DUTCH AND OTHER BULBS.

WM. CUTBUSH & SON'S

CATALOGUE

Is now ready. Post-free on application.

HIGHGATE, LONDON, N., or BARNET, HERTS.

GROS MAROC GRAPE, price 10s. 6d. to 15s.

This variety has been for many years in this nursery. Berries, very large; colour, a deep purplish-black; flavour, rich and sprightly; a late keeper. Received a First-class Certificate from the Royal Horticultural Society.
 THOMAS RIVERS and SON, The Nurseries, Sawbridge-worth, Herts.

ACORNS. — A few hundred bushels left for Sale.

G. P. D. is still open for offers of New Varieties of GREEN-HOUSE FLOWERING and BEDDING PLANTS. Also of PEA, William J. Apply

GEO. P. DABY, Hertfordshire Seed and Plant Establishment and Nurseries, High Street, Watford.

To Planters on a Large Scale.

FOR SALE, to effect a clearance, thousands of CONIFERS in many varieties, LAURELS, YEWS, RHODODENDRONS, finest named, in largest specimens. They can be delivered to Great Northern Railway, or London and North-Western Railway, or Midlands. Apply to Rev. J. B. NORMAN, Edgware, London.

44 Notes Prices.

FOR AUTUMN PLANTING.

CABBAGE PLANTS Warranted free from Club-root.

Early Enfield Market	Wheel's Imperial
Early Nonpareil	Robinson's Champion
Early (Dwarf) York	Robinson's Drumhead
Early Battersea	Imperial Oxheart
Sugarloaf	Early Rainham
Thousand-head	Red Pickling
East Ham	

At 3s. per 1000.

LETTUCE PLANTS.—Hardy Hammersmith, Hicks Hardy White Cos, Giant Brown Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.

Testimonials and samples on application.

EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming. N.B.—Above Plants are from Messrs. Gifford's Seed, and Purchasers may depend on good Plants, and true to name.

E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford.

Extra Plants to compensate Carriage.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—

White Garden LILIES, 12s. 6d. per 100; DIELVTRA SPECTABILIS, 25s. per 100; ANEMONE FULGENS, 16s. per 100; single French ANEMONES, 30s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to

SANDER and CO., Seed Growers, St. Albans.

Larch, Quick, Conifers, &c.

CEDRUS DEODARA, 3 to 4 feet, 2s. 6d.;

4 to 5 feet, 3s. 6d.; 5 to 6 feet, 4s. 6d. each. LARCH FIR, from 2½ to 6½ feet, 4s. to 8s. per 100. THORN QUICKS, strong, from 1½ to 3½ feet, 12s. to 16s. per 1000.

Large CONIFERS, 5 to 7 feet, 3s. 6d. to 5s. each, &c.

HY. MINCHIN, The Nurseries, Hook Norton, Oxon.

Christmas Roses.

BUDDENBORG BROS., BULB GROWERS,

Hillegom, near Haarlem, Holland, have an immense stock of the above in vigorous growth. Have not been so fine for years. Can be highly recommended. Price and all particulars given on application. Any quantity can be supplied.

CATALOGUE of Hyacinths, Tulips, and other Bulbs, sent post-free on application.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

A New Seedling Pear.

DR. HOGG, 10s. 6d. A seedling from Gansel's Bergamotte, small but very rich; colour, brilliant red and brown; very prolific. Received a First-class Certificate from the Royal Horticultural Society.

THOMAS RIVERS and SON, Nurseries, Sawbridge-worth, Herts.

Spruce Fir for Christmas Trees.

W. CROWDER, The Thimbleby Nurseries, Horncastle, has the above to offer; also to the Trade or Gentlemen:—

ALDER, 3 to 4, 4 to 5, and 6 to 7 feet.

BEECH, 2 to 3, 3 to 4, and 4 to 5 feet.

CHESTNUT, Horse, 7 to 9, and 9 to 10 feet.

ELM, Huntingdon, 7 to 9, and 9 to 10 feet.

FIR, Spruce, 1 to 1½, 1½ to 2, and 2 to 3 feet.

AUSTRIAN, 1 to 1½, and 1½ to 2 feet.

LIMES, 4 to 6, 6 to 8, 8 to 10, and 10 to 14 feet.

SYCAMORE, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.

YEW, Common, 2 to 3 feet.

GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—

GRAPE VINES, extra strong, short jointed and well ripened; Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d.

ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.

Descriptive Price List for 1d. stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Spring Flowers.

RODGER MCCLELLAND and CO.'s New

Special LIST of above, including double and single Primroses, Hepaticas, choice Pansies and Violas, Daisies, Phloxes, and all kinds of Spring-flowering Plants and Spring-blooming Trees and Shrubs, is now published, and will be forwarded on application to all applicants.

64, Hill Street, Newry.

Raspberry Canes.

MR. R. BATH, who has just completed a heavy shipment of his famous "FASTOLF" CANES to Australia, can now supply all home orders with promptness, at 4s. per 100. P.O. or Cheque with order.

500,000 CARTER'S PROLIFIC to be disposed of at a very low figure, in quantities of not less than 500.

Crayford, S.E.

TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

O. LOIRE DE DIJON, ISABELLA SPRUNT, &c.

Trade terms on application.

MAIRIS AND CO., Weston-in-Gordano, Bristol.

GENERAL NURSERY STOCK,

in splendid condition for removal.

**WOOD & INGRAM'S**

GENERAL DESCRIPTIVE

CATALOGUE OF NURSERY STOCK,

INCLUDING

FRUIT TREES, FOREST TREES,
HARDY CONIFEROUS and TAXACEOUS
PLANTS, EVERGREENS,
DECIDUOUS ORNAMENTAL TREES and
SHRUBS, HARDY CLIMBERS,
ROSES, &c.,

Is now ready, and will be sent free on application.

The Nurseries, Huntingdon.

Strawberries!—Strawberries!ALL THE LEADING VARIETIES, GUARANTEED
TRUE TO NAME.

Strong plants from ground, 3s. 6d. and 5s. per 100
„ „ in small pots, for forcing, 12s. 6d. per
100.

*LIST of Sorts on application.***CRANSTON'S NURSERY & SEED CO.**

(LIMITED),

KING'S ACRE, HEREFORD.

**LANDSCAPE GARDENING.
GARDEN PLANS.**

Previous to Laying-out a Garden, however small, a Plan
should be had, showing how the Grounds will appear when
finished. This prevents disappointment and unnecessary
expense.

Designs and Estimates given for artistically Laying-out
Gardens of all sizes.

E. CHAMBERLAIN, Garden Contractor.

NURSERIES:—{ Haverstock Hill, N.W., and
Fitzjohn's Avenue, Hampstead, N.W.

NEW ENGLISH ROSE,**H.P. MRS. JOWITT (Cranston's).**

First-class Certificate awarded by the Royal Horticultural
Society, South Kensington, July 27, 1880.

First-class Certificate awarded at Wirral Rose Show, July 24,
1880.

First-class Certificate awarded at Shrewsbury, July 28, 1880.

First-class Certificate awarded at Liverpool Rose Show, July
31 and August 2, 1880.

We are now booking orders for this superb New Rose,
to be sent out this Autumn. For description see our
new ROSE CATALOGUE, now published.

Extra strong ground plants, 7s. 6d. each.

*Usual Discount to the Trade.***CRANSTON'S NURSERY & SEED CO.**

(LIMITED),

KING'S ACRE, HEREFORD.

FRUIT TREES of all kinds, for Gardens, | S T R A W B E R R I E S

Orchards, Walls, Forcing-houses, &c.

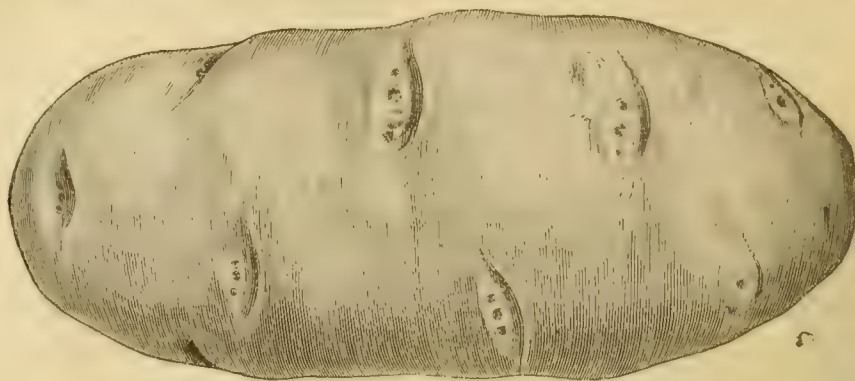
Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Strong Roots for Fruiting next year, 4s. per 100.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

**NEW POTATO—"ST. PATRICK."**

This variety, first introduced by us in 1879, and which is already a standard sort in the United States, was also thoroughly tested in England the past season, and from all sides we are in receipt of the most flattering reports in regard to it. The "St. Patrick" Potato is a direct descendant of the "Garnet Chili" and "Early Rose," and is the best result of the raiser's (Mr. Goodale) careful experiments for the past twelve years in the production of new varieties. In appearance the "St. Patrick" is undoubtedly one of the handsomest Potatoes ever grown; it has a smooth white skin, and white flesh, few and shallow eyes; in shape it is rather oblong than round, and has no core and is not hollow; it is also a strong and hardy grower, and is entirely free from disease. It produces but few small tubers, ripens medium early, and, finally, it is enormously productive and of fine quality.

Price, to the Trade (f.o.b. at New York), 24s. per Barrel of 160 lb.

*Our Wholesale Price LIST of valuable Novelties in SEEDS and PLANTS of American origin
is just issued, and will be mailed free on application.*

Address Cablegrams—TRITOMA, NEW YORK.

PETER HENDERSON & CO.,

SEEDSMEN and FLORISTS,

35, CORTLANDT STREET, NEW YORK, U.S.A.

**ROSES, FRUIT TREES, CONIFERS,
ORNAMENTAL TREES AND SHRUBS.**

PAUL & SON,

THE "OLD" NURSERIES, CHESHUNT, N.,

INVITE INSPECTION FOR

ROSES,

Which, as STANDARDS and DWARFS, are of the Advertisers' usual free quality and of moderate prices. For Descriptions and Prices, see Descriptive LISTS.

FRUIT TREES,

STANDARDS, PYRAMIDS and DWARF-TRAINED.

PAUL & SON, believing it is not generally known that they are now amongst the largest holders of really fine Fruit Trees in the Kingdom, invite the inspection of intending Planters of the following, amongst other leading articles of their stock:—

40,000 STANDARD APPLES, with fine heads and clear straight 5 to 6 feet stems, from £7 10s. to £10 per 100.

STANDARD PEARS, PLUMS, and CHERRIES, in proportionate quantities.

10,000 of the cleanest best HORIZONTAL and FAN-TRAINED TREES of APPLES, PEARS, and PLUMS which can be found.

10,000 PYRAMIDS, from 2 and 3 years to transplanted root-pruned trees of 10 to 12 years' growth.

50,000 GOOSEBERRIES and CURRANTS, of all the best sorts.

Specialities of STRAWBERRIES and other SMALL FRUITS.

VINES, extra fine Fruiting Canes, all grown from eyes this year.

The COLLECTION of CONIFERS and EVERGREEN PLANTS, AVENUE and STANDARD ORNAMENTAL TREES and SHRUBS, now one of the most complete of the Kingdom.

*Priced Descriptive CATALOGUES of the above Post-free.***PAUL & SON, THE "OLD" NURSERIES, CHESHUNT, N.**

LONDON "ORDER OFFICE," LIVERPOOL STREET STATION, E.C.

NEW AND SELECT SEEDS FOR 1881.

DICKSON, BROWN & TAIT,
SEED MERCHANTS,

43 and 45, CORPORATION STREET, MANCHESTER,

HAVE PLEASURE IN OFFERING THE FOLLOWING

SELECT VEGETABLE SEEDS, &c.,

OF THEIR OWN GROWTH, WHICH MAY BE RELIED UPON AS VERY SUPERIOR:—



DICKSON, BROWN & TAIT'S "ECLIPSE" CAULIFLOWER.

This Cauliflower has become a favourite in every garden where it has been cultivated, and has given the most unqualified satisfaction. The large increase in its sale is ample testimony to its superior qualities, and the numerous unsolicited testimonials received are proof that it will take a place second to none in Cauliflowers, either for private garden or market purposes, the quality, flavour, and size being unequalled. By successional sowings it can be had from August to Christmas.

This new and perfectly distinct variety, after several years' trial, excels even the flattering reports of its usefulness given by many of our customers last season.

It comes into use about the time of Veitch's Autumn, but has this advantage over that well-known variety, that it is much more self-protecting, the heads larger, pure white, and stands dry weather better than any other Cauliflower.

In Sealed Packets, 1s. 6d. each.

From Mr. WM. PATERSON, Head Gardener to Her Majesty the Queen, Balmoral Castle.—"Your 'Eclipse' Cauliflower still bears the high opinion I have formed of it, and has been excellent with me this season.—Sept. 1880."

From Mr. CHARLES PENNY, Head Gardener to H.R.H. the Prince of Wales, Sandringham.—"Your

Cauliflower 'Eclipse' is quite new, most distinct and true. A very dwarf stock, almost close to the ground, the leaves forming a perfect cylinder round the flower, so that no sun can discolour it for days after being fit to cut. Their average size is over 6 inches, and of pearly whiteness. This is really a vegetable worth bringing before the public."

DICKSON, BROWN & TAIT'S
"QUEEN OF TOMATOS."

Last year we purchased the entire stock of this new and handsome Tomato, and have pleasure in again introducing it as a novelty of great merit, which has been duly appreciated by a great demand from leading gardeners; and we annex a few testimonials selected from many we have received in the course of the season. We have great pleasure in offering it again, knowing it to be a desideratum in this class of fruit, which is becoming so much known and appreciated for culinary purposes and as a dessert fruit.

It is of free growth and compact in habit, and the fruit has a very handsome appearance on the plant. The fruit (average size of a Victoria Plum) hangs on stems 10 to 12 inches in length, numbering ten to fifteen fruit, regularly set on each side, Pear-shaped, and of a brilliant red colour; skin smooth and glossy, exquisite in flavour, and very prolific, bearing clusters in abundance.

In Sealed Packets, 1s. 6d. each.

Mr. HUNTER, The Gardens, Lambton Castle, Durham, sends us the following report of a trial last season:—

"I have grown your Tomato, and, as requested, have given it a fair and impartial trial. To put it to the test, I grew it along with Vick's Criterion and Hathaway's Excelsior. It far excels either of them for kitchen use, being the finest flavoured Tomato to my knowledge. Very handsome in appearance, of perfect Pear-shape, on strapes, bearing from 10 to 15 fruit on each; the plant remaining clean, healthy, and robust until the fruit was all gathered. Grown as it was here, on the single rod system, on the back of a low three-quarter span house, it was most productive and pretty, bearing its large clusters at every leaf. The fruit is smaller than the sorts mentioned, but the weight—from each plant of the same size—being nearly as much again from yours. It was much admired and asked after by visitors; and, from its taking appearance, must soon be widely known.—Yours respectfully,

From Mr. G. HALL, Head Gardener to Lord de Tabley, Tabley Park.—"I have formed a very favourable opinion of your 'Queen of Tomatos.' It is very prolific, of fine flavour, producing its fruit in Grape-like clusters, and highly ornamental. It is also very early, giving a supply until the later varieties are ready.—Sept., 1880."

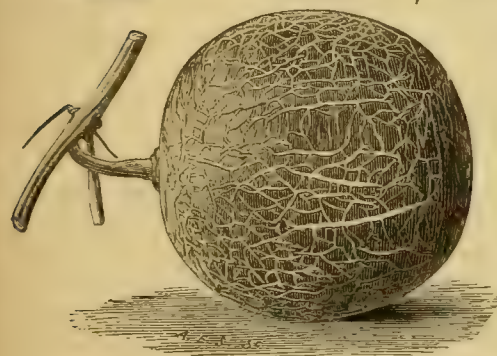
From Mr. R. TAYLOR, Head Gardener to Sir John Ramsden, Bart., M.P., Brynm Hall, Ferrybridge.—"I beg to inform you that your new 'Queen Tomato' has proved a wonderful bearer, and, although small, produces a great weight of fruit. I have had it tested by a very experienced cook, who states it is of superior flavour and very nice for dishing up whole, being pretty in shape and of uniform size.—October, 1880."

DICKSON, BROWN & TAIT'S "BEST OF ALL" MELONS.

Having purchased from the raiser the entire stock of this new and invaluable Melon, we have great pleasure in bringing the same under notice. This Melon was raised by Mr. J. McIndoe, Gardener to J. W. Pease, Esq., M.P., Hutton Hall, Guisborough. It is the result of a cross between Colston Bassett and Golden Gem, partaking of the beautiful netting of the former and the bright deep orange of the latter's rind. It is a strong and robust grower, free setter and very early. The fruit is round and generally about three or four pounds in weight. The flesh is white, rich, melting, and has a most delicious flavour. It cannot fail to become a favourite where high-class beautiful Melons are esteemed. It took the First Prize at the York Great Floral Fête, on June 18, 1879; also First Prize at the Royal Caledonian Horticultural Society's Show, September 8, 1880. It was in Mr. McIndoe's First Prize Collection of Fruit exhibited at Manchester on the 14th of May, 1880; and again on the 2d of August, 1880, in his Collection of Fruit that was awarded the Manchester Royal Botanical Society's Gold Medal. It was also shown in his First Prize Collection of Fruit exhibited at the York Great Floral Fête, June, 1879, and June, 1880. Also in his First Prize Collections of Fruit exhibited at the Royal Caledonian Horticultural Society's Shows of September, 1879, and September, 1880. A fruit was exhibited at the Royal Botanical Gardens, Manchester, in September, and the judges awarded a First-class Certificate for its superior merits. The Manchester Press gives the following notices:—*Courier*.—"Messrs. Dickson, Brown & Tait, of Corporation Street, received a First-class Certificate for a New Hybrid Melon, the flavour of which was pronounced to be delicious." *Guardian*.—"A First-class Certificate was awarded by the judges to a New Hybrid Melon exhibited by Messrs. Dickson, Brown & Tait, Corporation Street, the flavour of which was held by them to be unequalled."

In Sealed Packets, 2s. 6d. each.

From Mr. R. WESTCOTT, Head Gardener to the Duke of Cleveland, Raby Castle.—"I am sorry I have had no opportunity as yet of testing its edible qualities, but what I have seen of its robust constitution, prolific and quick swelling habit, so essential as an early variety, together with its perfect formed fruit, so densely netted and of a bright orange colour, will prove a desirable acquisition to our already extensive list of Melons."



From Mr. E. H. LETTS, Head Gardener to the Earl of Zealand, Upleatham Hall.—"In reply to yours respecting the Melon, I have much pleasure in saying that by far the finest Melon I grew this season was from the plant you kindly sent me. It was in a measure due to it that I gained the first prize for the collection of fruit I exhibited at the Newcastle Show in July last, and from what I have seen of it at Hutton Hall during the last two years I believe it to be the most handsome and finest looking Melon in cultivation."

From Mr. H. J. CLAYTON, Head Gardener to J. Fielden, Esq., Grimston Park.—"I have great pleasure in bearing testimony to the merit of your new Melon. I had noticed it particularly in your winning collections of fruit at York for the last two years, where it occupied, to say the least, a prominent position. When at Hutton Hall in May last I was much impressed both by the robust free-bearing habit of the plant and its handsome beautifully-netted fruit, many of which were at that time ripe and ripening. It is certainly distinct from any other Melon of my acquaintance, and I hope to grow it next year."

PRICES TO THE TRADE ON APPLICATION.

A List of Firms who Order Supplies of the above will be duly advertised in the "Gardeners' Chronicle."

Stamps or Post-office Order in payment from unknown Correspondents.

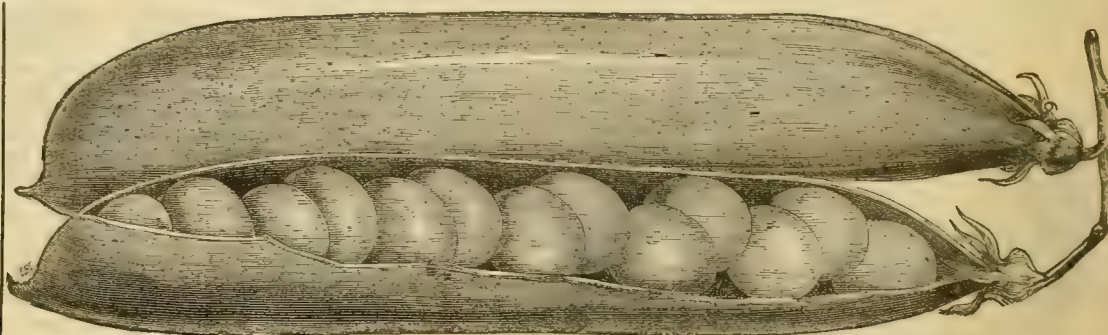
THE BEST NEW PEAS.

JAMES CARTER & CO.

Offer the following Magnificent PEAS, all of which have received First-class Certificates or other special recognition, after the most severe trials, conducted by responsible and qualified Authorities:—

These Grand Peas have been Awarded FIRST PRIZES wherever exhibited, including the following:—

5 FIRST PRIZES—Newcastle.
FIRST PRIZE—Ludlow.
FIRST PRIZE—Potter's Bar.
FIRST PRIZE—Rothwell.
FIRST PRIZE—Diss.
FIRST PRIZE—Highgate.
FIRST PRIZE—Grantham.
FIRST PRIZE—Wrexham.
FIRST PRIZE—Mary Cray.
FIRST PRIZE—Walsingham.
FIRST PRIZE—Rochester.
FIRST PRIZE—Brighouse.
FIRST PRIZE—Sandy.
FIRST PRIZE—Woodbridge.
FIRST PRIZE—Taunton.
FIRST PRIZE—Richmond.
FIRST PRIZE—Caythorpe.
FIRST PRIZE—Oxford.
&c. &c.



CARTER'S STRATAGEM—Awarded a First-class Certificate, R.H.S., 1879.

Admitted to be the finest Dwarf Wrinkled Pea in Cultivation.

Price, in
Sealed Packets,
5s.
Per Pint.

"It is the finest of Dwarf Peas."—*Journal of Horticulture*.
"The most extraordinary Dwarf Pea I know."—Mr. IGGULDEN, Orsett Hall.
"The gem of the three."—Mr. R. GILBERT, Burghley.
"Stratagem is, perhaps, the finest Pea in cultivation."—Mr. RUST, Eridge Castle.
"As a Dwarf Pea Stratagem has no equal."—Mr. MUIR, Margam Park.
"The best Dwarf Pea grown here for twenty years."—Mr. DONALDSON, Chesham.
"Stratagem is the best Pea I have ever grown or seen."—Mr. McDONALD, Totteridge.
"Stratagem is simply magnificent."—Mr. H. PLAYFOOT, Breckley.

CARTER'S TELEPHONE—Awarded a First-class Certificate, R.H.S., 1878.

This grand Pea requires no recommendation from us.

Price, in
Sealed Packets,
3s. 6d. per Pint.

"Telephone is one of the finest Peas in cultivation."—A. F. BARRON.
"Telephone is unsurpassed for exhibition."—Capt. HELME, Longton.
"Telephone and Stratagem are the Peas of the future."—Mr. CLARKE, Melton Constable.
"Telephone takes 1st prizes wherever shown."—Mr. LUMSDEN, Bloxholm Hall.



PRIDE OF THE MARKET.

CULVERWELL'S TELEGRAPH.

An indispensable Exhibition Pea.

Price, in
Sealed Packets,
2s. per Pint.

"Just the Pea for exhibition."—Mr. GOODACRE, Elvaston Castle.
"Telegraph is a splendid Pea."—Mr. MALCOLM, Cholmondeley Castle.

A SUPERB NEW PEA FOR FIELD CROPS.

PRIDE OF THE MARKET.

Pride of the Market is destined to become the most popular market Pea in existence. In length of pod it is equal to Stratagem, from which it differs in possessing a greater depth of colour in the pod, with round blue seed. It grows from 18 inches to 2 feet high, and bears grand pods, filled with large and fine-flavoured Peas from top to bottom of the haulm. Its robust constitution, enormous productiveness, and superior appearance, ensure its acceptance as a market favourite with the public.

From The "Gardeners' Magazine," August 16, 1879.

"Pride of the Market is a round Pea, averaging 18 inches in height, and, as showing its wonderful productiveness, it will suffice to say that a block of it not much less than an acre in extent was one mass of pods. Although dwarf in habit it is robust and free-branching in growth, and produces large pods containing from nine to ten Peas each, and will be found of immense value for market purposes."

Price, in Sealed Packets, 3s. 6d. per Quart.

Trade Price on application.

237 and 238, HIGH HOLBORN, LONDON, W.C.



THE BEST NOVELTY OF THE SEASON. SENECIO SPECIOSUS.

The exceedingly bright and pretty magenta-coloured flowers of this plant make it very attractive. It is a half-hardy perennial, introduced from South Africa, and is exceedingly floriferous, so much so that, planted in the open air, its flower-spikes are successively produced from Spring until the end of Autumn, and in a cool greenhouse its cheerful blossoms are produced throughout the year; they are each about $1\frac{1}{2}$ inch in diameter, and are borne in branching corymbose spikes. This pretty novelty has been figured in the *Garden and Botanical Magazine*.

Mr. WILLIAM BULL

Is now sending out, for the first time, Seed of this interesting and pretty plant.

The following Firms have already received a supply of the above, from either of whom it can be obtained in Sealed Packets:—

COOPER, Mr. R.	Southwark Street, S.E.	SUTTON & SONS	Reading.
GIBBS, THOS. & Co. ..	Down Street, W.	DAVIES, T. & Co.	Wavertree.
HOOPER & Co.	Covent Garden, W.C.	LAING, J. & Co.	Forest Hill, S.E.
HURST & SON	Houndsditch, E.C.	DANIELS BROS.	Norwich.
LEGERTON, Mr. A. ..	Aldgate, E.C.	LAWSON SEED & NURSERY CO.	Edinburgh.
NUTTING & SONS	Barbican, E.C.	DICKSON & ROBINSON ..	Manchester.
WAITE, NASH, HUGGINS & Co.	Southwark Street, S.E.	BROWN, Mr. S.	Weston-super-Mare.
WATKINS & SIMPSON ..	Strand, W.C.	REID, B. & Co.	Aberdeen.
WRENCH, JACOB & SONS ..	London Bridge, S.E.	DOWNIE & LAIRD	Edinburgh.
WILLIAMS, B. S.	Holloway, N.	FISHER, SON & SIBRAY ..	Sheffield.
KER, R. P. & SON	Liverpool.	VEITCH, R. T.	Exeter.
ROBSON, Mr. J.	Altrincham.	DICKSON, J. & SONS	Chester.
OSBORN & SONS	Fulham, W.	WOOD & INGRAM	Huntingdon.
HOGG & ROBERTSON	Dublin.	HENDER & SON	Plymouth.
GIBSON & REID	Dublin.	GRÖNEWEGEN & Co.	Amsterdam.
HAAGE & SCHMIDT		Erfurt.	

Price, 2s. 6d. per packet.

Trade Price on application. Coloured Illustrations can be supplied.

ESTABLISHMENT FOR NEW AND RARE PLANTS,
KING'S ROAD (and Ashburnham Park), CHELSEA, S.W.

PURCHASERS OF PLANTS

Of every description are respectfully invited and earnestly advised to inspect

RICHARD SMITH & CO.'S
NURSERY STOCK at WORCESTER.

SPECIAL OFFER OF SURPLUS STOCK
OF THE VERY FIRST QUALITY,

At exceedingly Low Prices, is just published, and may be had on application.

ODONTOGLOSSUM EDWARDI
ONCIDIUM MELANOPS
COMPARETIA SPECIOSA

CATTLEYA GIGAS
ONCIDIUM MACRANTHUM
ONCIDIUM CHRYSORIS

MR. J. C. STEVENS has received instructions from **Mr. F. SANDER**, of St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 25, at half-past 12 o'clock precisely, large and specially healthy importations of the above new and rare ORCHIDS, together with other consignments consisting of a fine lot of PESCATOREA ROEZLII, the white-lipped ODonTOGLOSSUM HALLI, ONCIDIUM NUBIGENUM, ODonTOGLOSSUM CIRROSUM, ODonTOGLOSSUM VEXILLARIUM, dark variety; CATTLEYA MOSSIÆ, MILTONIA FLAVESCENS, and many other rare and beautiful Orchids.

May be viewed the morning of Sale, and Catalogues had.



THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 20, 1880.

DUNKELD.

IN the fifteenth century, during the Wars of the Barons, gardening in England suffered a complete eclipse, and we lost many of the ornamental shrubs and useful vegetables which the Roman generals had cultivated in the gardens of their English villas. In Scotland gardening was never at a lower ebb than during the period of frequent dissension among rival clans. Even the Earl of Athole was at one time a disturber of the peace, when he ordered the canons of Dunkeld to elect his brother Andrew Stewart to the office of bishop. This was on the eve of the Reformation, when the cathedral was unroofed, in which plight it remained till that famous Duke of Athole who thatched the hills of Dunkeld with Larches roofed the cathedral. The sacred edifice was then again dedicated to its proper use, and the services of the Scotch kirk have since been held within it.

During an attack upon Dunkeld after the battle of Killiecrankie, only three houses and the cathedral escaped burning. The town had previously occupied the site of the pleasure grounds of Dunkeld House immediately around the old cathedral. The new town was very properly planted outside the present garden walls, and this brings us to the present period. The order and decoration of the grounds of Dunkeld House are admirable. Nature has herself ornamented the precincts of the old city in her own best style. She has placed some steeples behind the houses and the Tay in front. The private grounds of that member of the Athole family who may reside here for the time being, lie along the banks of the river, a delightful strip of lawn lying between the house and the river. There are just sufficient shrubs thereon, and they are the best of their kind, including a Portugal Laurel 34 feet through, a beautiful clump of Yew, a Cedrus atlantica planted by the Queen and growing rapidly, Thuja chinensis, a crimson-flowering Laburnum, a Pear tree, and some exquisite white Birches along the water's edge. The boundary wall of the lawn, towards the bridge, is covered by Garrya elliptica, Cotonaster acuminata, and Wistaria sinensis. West of the house the lawn expands around the cathedral, meets the park behind, and extends along the river side. And these wider breadths afford space for the famous Larches, and for various trees of later introduction. Several of the first flights of new Conifers must have settled early at Dunkeld, such as the Deodars and the Douglas Firs of 80 feet high, with rich foliage drooping to the ground. Some of the first English seedlings of the Araucaria imbricata were planted here. In the small park outside the lawn, which with gateway and offices fills the rest of the level space around the house, there are some handsome trees with a sloped and sheltered kitchen garden beyond; and upon a ledge on the left is a palatial kennel built for otter hounds—a large and handsome building, in a conspicuous position. The most distant prospect here is down the river, Dunkeld being closely enclosed by its neighbouring heights. The great northern road from Perth traverses the little city, skirts the ducal wall, and

makes its exit from this narrow stage by the pass above.

Although the site is limited there is no absolute want of space, for you may pass through 9 miles of Fir plantations as far as Loch Ordie, and from the banks of this lofty sheet of water you may ascend above the woods to the summit of the Grampians. In old times the town had a playground, called Shawtree Hill, within the present grounds on the left of the main entrance, a mound among mountains, heightened by Duke James in 1730, and named, after his mother's patronymic, Stanley Hill. The Duke on one occasion rolled Neil Gow, the famous fiddler and composer, down the "brae" of Stanley Hill. "I was the mair idiot to wrestle wi' sic a fule!" cried the sturdy fiddler. At the west end of the lawn you enter a promenade parallel with the river, shut in on the right by a steep escarpment, and draped on the sunny side next the river by the foliage of trees—Birch trees, Chilian Pines, giant Scotch and Silver Firs. Trees of the forest and banks of shrubs lend this walk their beauty and their shade, and the Tay enlivens it. Beyond the American garden, on this attractive Tayside walk, is Duke John's Oak. There are 50 or 60 miles of private walks, according to the guide books, but none can excel this favourite walk of Duke John the planter.

It is pleasant to think of the great planter here "in his own ground," with his Larch plantations on the hills beyond, and his fiddler, Neil Gow, beneath an old Oak, discoursing sweet music across the river. He might be described, so far as Britain is concerned, as the inventor of the Larch as a timber tree, which others had only introduced as an interesting specimen from the Tyrol. We read in a report prepared by his executors, at his death in 1830, that he planted about 14,000,000 Larches, 11,000,000 trees of other sorts, 10,000 acres of Larches, and nearly 5000 acres of other trees. Dukes James and John, his immediate predecessors, had planted 1250 acres of Larch at his accession in 1774, and several of these were felled by the planter, at fifty years old, to test their value, including three from the lawn at Dunkeld and one for his coffin from Blair. The *Athole* frigate, and a small fleet of merchant ships—all of Larch—were already afloat, and the Duke, seated on the old Oak—originator and noble-minded enthusiast as he was—built castles in the air with Larch timber, while Neil Gow scraped the catgut.

The site of Dunkeld, and especially of the gardens of Dunkeld House, is admirably sheltered by the high ridges enclosing it. Ribston Pippins, which do not ripen perfectly in their native Yorkshire, ripen here at the foot of the Grampians. The sorts of Pears and Apples which do well on this warm soil are too numerous to mention, and in further proof of a favourable climate, a large Salisburia, or Maidenhair tree, flourished against a wall in a rosery, where the queen of flowers grows in perfection, having proved its merits at the Horticultural Exhibitions of Scotland. The shelter of the woods has undoubtedly improved the climate, and Birnam and Dunkeld are so notoriously healthy that some elderly gentlemen in these two places established among themselves some years since what they called an "Eighty-four Club," which was open only to those gentlemen who had reached the age of eighty-four, and could still enjoy fun and anecdote at the meetings of the Club, and quaff the "milk of old age," which is in some countries wine, in others whisky.

A few words on the history of such a city as Dunkeld may not be out of place. It stands under the shelter of that rugged barrier through which the Tay bursts when it quits the Highlands. It guards the ancient boundary line of Pict and Scot. "Not far from Calidon Castle, otherwise called Dunkeld,"

says an old writer, "a battle was fought between the Picts and Scots." The most prominent wood hill of the district rises immediately above Dunkeld, and commands the gap formed by the river and the valley beyond Birnam Hill. In the year 138 the Romans encamped in this valley, 6 miles from Dunkeld, and near the same oft-contested spot Kenneth MacAlpine, King of Scots and Picts, beat the Danes in 845. As early as the sixth century a Celtic king erected a monastery for St. Columbus—Culdees, near the castle on the site of the present cathedral—and the gathering of dwellings around was named originally Dunkelden, from the ancient British words "dun," or stronghold, "kaled," rough, and "in," a country. King Kenneth, having beaten the Danes, removed out of their reach the body of St. Columba, then reposing in Iona, and buried it here in a new cathedral. Continuing the romantic history of this delightful place, we shall find that the battles of the past have led up to the gardens of the present. Kenneth III. beat the Danes in the same neighbourhood in 905, at Luncarty, near the site of the Roman station, Orrea, in a field on the banks of Tay, close to the village of Stanley, and not far from Murthley, where you may now see some of the noblest exotic Conifers in Scotland.

According to a legend of Luncarty, Hay, a countryman of large calibre, left his plough and rushed with his stout sons to the assistance of Kenneth, armed with a yoke. He rallied the Scots at Turn-again Hill, beat out the brains of the Danish king at a spot now called Denmark, refused Kenneth's offered robes at Perth (then called Bertha—"splendour"), and marched through the streets in a husbandman's attire, armed with a yoke. Hay became an earl, and the choice was given him of a falcon's flight of land, or as much as a greyhound could run over. He preferred trusting to the bird. She was unhooded on the top of Moncrief Hill, at Perth, and alighted on the "Hawkstone" in Errol—hence Hay's title; and at the present day the Earls of Errol, Tweeddale, and Kinnoul are proud to quarter either a yoke or an armed husbandman on their shields.

I have already mentioned the Columbans, called Culdees—"servants of God," from the Gaelic, *Ceil de Dia*. An interesting chapter might be written on these devout ecclesiastics and the services they rendered as the teachers and protectors of the people. But we must conclude by briefly mentioning the "Wolf of Badenoch," the scourge of this part of the country in the fourteenth century. His name recalls the violence of an age when there could be no such decorated landscape in any part of Britain as that which now surrounds his tomb. He was buried in the cathedral at Dunkeld, under the name of *Alister-mòr mac an Rìgh*, or "big Alexander, son of the King." The king in question was Robert II., and the son of Alister-mòr was the last of the Stuarts who ruled over Badenoch. He was succeeded by the Earl of Huntley and the Gordons. *H. E.*

New Garden Plants.

CYPRIPIEDUM CALANTHUM, n. hyb.

This flowered first in the Royal Exotic Nursery of Messrs. James Veitch & Sons, September 7, 1878; it had its First-class Certificate from the Royal Horticultural Society, September 16, 1879, and most accidentally it only obtains its description in our columns now—end of 1880. It is an artificial *Sedenian* mule between *Cypripedium barbatum biflorum* and *C. Lowii*. The strong leaves are shorter than those of the second-named species, and a little broader, light green, with irregular narrow dark hieroglyphical markings. The tall ferruginous pedicels bear two stately flowers with short bracts and velvety ovaries. Upper sepal very broad, transversely elliptical, acute, whitish green with sepia-brown nerves. Connate sepal narrow, shorter than the lip. Petals beautifully ligulate, rather blunt, surpassing the odd sepal, with ciliae at the basilar margin, light green with brown blotches at the interior half, mauve at the anterior half. Lip's sac blunt, having one angle on each side in front, and much emarginate in the centre. There is on each side between those horns and the ungular channel a

little plate, now simply acute, now emarginate. This plate indicates well its descent from *Cypripedium Lowii*—since it is not found in *Cypripedium Haynaldianum*, and since this has a distinct staminode, I regard it a quite different species from *C. Lowii*, and not in the least a simple race. Staminode short, as in *C. barbatum*, whitish with three green areas, having three teeth in front, the middle one very small, the side ones falcate, introrse, much larger, brown. No doubt it has that remarkable quickness of growth so highly approved in *C. Sedeni*, else Messrs. Veitch might not have favoured me with three inflorescences at once—a very gay sight. The habit of the plant is stated by Mr. P. C. M. Veitch to take rather after that of *C. barbatum*. *H. G. Rehb. f.*

PESCATOREA GAIRIANA, Rehb. f.

A fine individual of this grand Orchid has just appeared with Mr. W. Bull. The lip is different, inasmuch as the callus is orange with purple ridges, while the anterior lamina is light purple-mauve. *H. G. Rehb. f.*

LÆLIA PERRINII (Lindl.) NIVEA.

This lovely variety has just appeared in England in a very fascinating condition, since the purple border of the white lip is quite lovely. May the stock be rich enough to satisfy the demand. I had it from Mr. B. S. Williams, from the Victoria and Paradise Nurseries. *H. G. Rehb. f.*

ONCIDIUM UNICORNE (Lindl.) PICTUM, n. var.

This is a very gay variety. The sepals and petals are whitish, with dark indian-purple blotches. The lip is lemon-yellow, with dark brown blotches. Column nearly white, with a few brown blotches at its base. I had it from Messrs. Henderson, Pine-apple Nursery, Maida Vale, London. *H. G. Rehb. f.*

ORCHID GROWING.

MR. MAULE, of the Bristol Nurseries, recently favoured us by submitting for our inspection a plan he has devised for growing Orchids, and which is illustrated in the accompanying sketch (fig. 122). Mr. Maule tells us he conceived the idea on perusing the statement of the late Mr. Gibson, when collecting for the Duke of Devonshire, that when a single branch on which Epiphytes were growing died, the whole of the plants on the branch died also. By immersing the lower end of the blocks of wood on which the Orchids are growing in water, as shown in the illustration, the blocks are kept constantly moist by absorption and capillary attraction, and, moreover, the roots of the Orchid gradually find their way to the water. The necessity for dipping the plants is thus done away with, as the Orchids help themselves. In the case before us *Teak* is the wood made use of, but any hard wood will probably answer. The flower-pots are, of course, made without the usual hole, and they are pressed into a somewhat flattened shape before baking, so that two plants can be grown in the same pot. The cost is slight, all "croaking" and "potting" is done away with, and the plant kept away from the insects, which under ordinary conditions take up their abode in the pots, and eat off the young roots as they start. The plants we saw were *Odontoglossum Rossii majus* and *Oncidium biflorum*, and both were in a very thriving condition, much more so than the wood-cut indicates, inasmuch as for simplicity sake we have omitted to represent several of the pseudobulbs. Enough, however, are shown to illustrate the principle on which Mr. Maule has worked, and which bids fair, we think, to be a great boon to Orchid growers, more especially to amateurs with limited appliances and restricted leisure. The saving of labour, if the plan continues to succeed, will clearly be very great. The pots can be placed on the stage or suspended near the glass, and it is obvious that the method is applicable to other plants besides Orchids.

FERNS FOR TABLE DECORATION, and general furnishing, are largely grown at the Amherst Nurseries, Hackney. Amongst the best of all the *Adiantums* for this purpose is *A. cardiochlena*, which is found to stand much longer than most other Ferns. The sulphury-powdered *Gymnogramma Wetenhalliana* is also much liked. *Pteris serrulata cristata* var. *Dixoni*, a very handsome form of the tasselled *Pteris*, is one of the best of all room Ferns. *Davallias* are here also held in much estimation for cutting; few Ferns last so well with buttonhole flowers, or in any way under the flagging influence of exposure to the air. *D. elegans*, *D. dissecta*, and *D. bullata*, are planted out, with a view to encourage their growth as much as possible for use in this manner.

OPEN AIR GRAPES.

I HAVE always been, as some of my best friends think, a little too sanguine on this question of open-air Grapes, and so Mr. W. C. Barry's letter on the subject (see p. 591) was especially interesting to me. Our fruit growers are gradually awakening to the fact that moderate elevations are better than low-lying valleys for fruit culture, but at the same time there are limits to the altitude in our own climate beyond which the cultivator of fruit cannot go with safety. For example, I remember Mr. Webb, of Sittingbourne, in the fair county of Kent, once laid particular stress on this question of elevation with regard to successful Cherry culture, in a lecture

ditions most suitable, so far as elevations and general soil formation are concerned, for particular varieties of fruit trees. It surely cannot be merely accidental that the Damson flourishes so well in Shropshire, the Cherry in Kent, and the Apple and Pear in Herts? What seems desirable is precise knowledge of the physical conditions under which these fruits succeed so well on a large scale in the places named. Perhaps some will say that all the information obtainable in the way above suggested would not lead to better fruit or more of it being grown, but I incline to the opposite opinion. A mere shadowy line often exists between success and failure in fruit-growing for profit, as in other pursuits, but it is precisely what is shadowy or unknown that must be investigated, and in many cases I have but

varieties of the American Vines, or hybrids between them and the Asiatic species (*Vitis vinifera*), ere we can hope for success on a large scale. I have eaten perfectly ripe Black Cluster, Esperione, or Royal Muscadine Grapes, from sunny walls at South Kensington and Brompton; and at Heckfield Place, the seat of Viscount Eversley, the Muscadine or Chasselas ripens, as a rule, perfectly on walls. Even in the comparatively cold Midland Counties the little Black Cluster Grape ripens well in hot seasons. In an old garden at Melton—the fox-hunting centre—fruit of this variety is produced by the hundredweight on an old mud wall, and from which some really excellent wine is made.

A recent writer on open-air Grape culture, Mr. Hobday, has well said that—"If the same pains and skill were bestowed upon the culture of the Grape Vine in the open air as when it is grown under glass a vast improvement would soon take place in its produce. Almost any soil that will 'grow' good crops of vegetables will produce good open-air Grapes, but the Vine, like the Ivy, seems to have a partiality for old crumbling ruins. Some of the finest open-air Grapes I have ever seen were grown some years ago upon the remains of the old city wall at Norwich; the site was dry and warm, and the soil rich from the accumulations and decompositions of ages. Where the soil is fairly good, trench it up 2 feet deep and 6 feet square for each plant; as they increase in size more space can be prepared for them. It will be an advantage if a few barrowfuls of horse-droppings fresh loam, lime debris from old buildings, and a few bones can be worked in at the same time. There is scarcely a possibility of making a mistake in adding a reasonable quantity of dung, or of the materials just enumerated, as they are calculated to improve even the best soils so far as their adaptation to Grape culture is concerned. If the site be damp and resting on clay, put in the bottom 9 inches of brick rubbish or stones; scatter a few spadefuls of lime and coal-ashes over the top, water it, and ram it down firmly; on this foundation place the soil, and plant the young Vine."

My own experience is quite on a parallel with that of Mr. Hobday, and what seems especially desirable are enthusiasts in open-air Grape culture. "Oh!" says some practical reader, "I don't believe in enthusiasts; they are always going in for extremes, and what I like is the 'happy medium.'" Ah! my friend, "happy mediums" don't help much in the march of progress. I find that it is the enthusiastic explorer who shows the way—opens up new lines of thought, and makes it possible for the man of "happy medium" ideas to get a "finger in the pie" of progress. How often has not Darwin been termed an enthusiast by the "happy medium" men, but his enthusiasm showed the way to better crops of Peas and Cabbage, just as I hope ere long enthusiasts in open-air Grape culture will show how these may be obtained. Already we have leanings in this direction. There is a current setting in, as witness the success of Mr. Harrison Weir with ground vineries, which may be defined as cold frames placed over Vines trained cordon fashion a few inches only above the damp earth. Even this cold frame culture shows to us how grateful the Grape Vine is for the slightest encouragement in the way of shelter and culture, but what is especially requisite is a race of Grapes sufficiently robust and hardy to grow and fruit freely on warm walls or fences in the open air.

Mr. Barry evidently believes that some races of American Vines will do this, and from what I have said above he will see that there is at least one person on this side the Atlantic who agrees with him, that open-air Grapes are a possibility in at least the more favoured parts of Britain. They are so already indeed, under good management, that is, with about half the labour and appliances necessary for the production of Grapes from pot Vines, but we want an enthusiastic amateur to show us "how it's done." Mr. E. S. Dodwell can show us how to manage Picotees and Carnations as town blossoms, Mr. G. F. Wilson has shown us how to grow American Lilies 11 feet high as naturalised in an English wood, Ben Simonite gives us form and colour the most exquisite in the Auricula amid Sheffield smoke and steel dust, and Dr. Lionel Beale and others have shown us how Filmy Ferns and other delicate vegetation may be grown in the heart of foggy, smoke-begrimed London, but—who will give up their leisure and make themselves a name by showing to the average English cultural mind the best way of growing a crop of good sound eatable or wine producible open-air Grapes? F. W. B.



FIG. 122.—MAULE'S ORCHID-POT. (SEE P. 652.)

delivered at the Institute of Surveyors in Westminster. In substance this is what he there said:—

"A good climate is indispensable for Cherries, especially for such kinds as the Bigarreau and the Duke tribe. These sorts flourish best at an elevation of from 30 to 200 feet above sea level; Black Heart, Kentish, and Turkey Hearts do well up to 400 feet, but at any elevation beyond that the chance of a crop even is precarious, and the fruit indifferent!"

This question of elevation is a very important one so far as fruit culture of any kind is concerned, and ought to receive the same attention as is accorded to subsoils, drainage, suitable stocks, judicious thinning or pruning, and the most suitable kinds or varieties for particular localities. In all matters connected with fruit tree culture we want more precise information than is at present ready to our hands. Some day in the future Britain will be mapped out physically, and we shall be able to tell at a glance the peculiar con-

ditions most suitable, so far as elevations and general soil formation are concerned, for particular varieties of fruit trees. It surely cannot be merely accidental that the Damson flourishes so well in Shropshire, the Cherry in Kent, and the Apple and Pear in Herts? What seems desirable is precise knowledge of the physical conditions under which these fruits succeed so well on a large scale in the places named. Perhaps some will say that all the information obtainable in the way above suggested would not lead to better fruit or more of it being grown, but I incline to the opposite opinion. A mere shadowy line often exists between success and failure in fruit-growing for profit, as in other pursuits, but it is precisely what is shadowy or unknown that must be investigated, and in many cases I have but

little doubt that mere elevation influences the one or the other much more often than is generally allowed to be the case. Shelter is another great essential to success. It is, however, mainly on open-air Grape culture that I would now beg to write, and we must never lose sight of the fact that the open-air culture of the Grape is successful in many sheltered localities on warm calcareous or gravelly soils. Acting on this belief, the Marquis of Bute planted a vineyard at Castle Coch some years ago, and I hope most earnestly that it is in Mr. Pettigrew's power to tell us that the venture is a successful one, or, in remembrance of the past fine season, that success is to be hoped for. I long ago wrote* that "If ever the open-air culture of the Grape is to become of any national importance, we must look to the hardier

* *Horticulture*, Stanford London, P. 47.

DAWSON COURT, EMO PARK.

BOSOMED high in the midst of a beautifully wooded park, 4 miles south-east of Portarlington town and railway station of the Great Southern and Western Railway, which is 45 miles from the King's Bridge terminus of the Irish metropolis, stands Dawson Court, the baronial residence of the Earl of Portarlington, K.P., with its gilded dome glistening in the sunshine, which is surmounted with a flagstaff, from which, when his lordship is at home, floats proudly in the breeze the Union Jack of Old England. Emo Park, by which name the place is best known to the general public, is rich in sylvan scenery, and is beautifully undulated. The park, which is about 2000 acres in extent, and well stocked with deer, is enclosed by a substantially built stone wall 10 feet high, and to which there are several grand entrance lodges and gates; the latter, being gilded bronze, are large and picturesque in character. The carriage drives, which wind over hill and dale, are 10 miles in length, of a good width and capably kept, as in fact is every department in this extensive and well managed estate. The soil in the park is of a light yellow loam resting upon a gravelly subsoil, which evidently suits the Oak, Ash, Elm, Beech, &c., of which there are some fine groups and single specimens. Emo Park is of easy access from the Portarlington Junction, where there is a goodly attendance of Irish jaunting cars awaiting the arrival of the trains, that will, the visitor is told, take him thither "in no time."

The Court, which is of the Italian style of architecture, has two porticos having circular columns and Ionic capitals at the north and south front, with heraldic tigers on either side the steps, is a large, commodious, and handsome oblong building, to which has been added a west wing—quite a mansion in itself—within the last twenty-five years. The decorations and picturesque appearance of the exterior of this mansion portray very faithfully those of the interior, where paintings by Rubens, Vandyke, Sir Joshua Reynolds, and other eminent masters drape the walls of the picture gallery, reception rooms, &c., whilst in the entrance hall is a fine assortment of weapons of war of an antiquated description, some of which had been borne bravely by some of the noble Earl's ancestors in various foreign climes in the defence and assertion of their country's weal. Emo Park has on several occasions been visited by Royalty in the persons of their Royal Highnesses the Prince of Wales and the Duke of Connaught, on which occasions the receptions were of a brilliant description, and during the latter months of the Duke of Marlborough's Viceroyalty in Ireland, his Grace, in the absence of his kinsman, who was then on a foreign tour, resided at Emo.

The grounds, which adjoin the Court, occupy the east, north, and north-west sides of that edifice, are very extensive, and form a good example of landscape gardening—Nature herself being the primary architect. They are rich in Conifere, of which there are some good specimens, some of them having been planted by their Royal Highnesses the Prince of Wales and Duke of Connaught in commemoration of their visit to Emo. There is also a great variety of statuary, representing various deities, interspersed through the grounds, which showing here and there amongst the spreading and coniferous trees, produce a picture quite in harmony with the architecture of the Court.

From the terrace at the east end of the mansion there is a fine uninterrupted view of the famous Wicklow mountains some 40 miles distant. The ground from the north-front terrace stretches with a rapid declivity towards the lake—a distance of about 400 yards from the Court—whence, on the northern side, it rises, gradually at first, and then somewhat precipitately, until in the distance the tree-tops seem to have reached cloudland. The lake—

"A riband of silver, soft and slow
It wanders down the dale,"

is stocked to repletion with stately swans and a variety of other aquatic birds, including the wild duck, which fly hither and thither in the sunbeams, floating smoothly in sweeping undulating lines—

"As though life's only call and care
Were graceful motion."

The pellucid waters of this lake reflect and harmonise the surrounding features of the landscape, and complete a picture which for sylvan beauty has few, if any,

superior to it in the country. Before taking leave of the grounds, I may be permitted to state that Mr. Ennis, the gardener at Emo, a couple of years ago lifted and transplanted successfully several dozen fine *Cedrus Deodara* which had been planted some twenty years since on either side a broad walk leading through the pinetum proper, and which had grown so rapidly during that period as to necessitate the adoption of one of three courses, viz., either to cut these gracefully growing trees back (which would have been barbarous), or to allow their draped branches to interlace across the walk, or else to take them up—as Mr. Ennis did. Yes, to take them up was the only practical alternative, and to plant them farther back from the walk. However, with trees of this description your readers will understand that there is more than the ordinary meaning attached to the words "take them up and replant them farther back?"

The kitchen garden, which is oblong, is enclosed by a wall 10 feet high, and divided in the middle by another wall through which there are three arches as a means of communication one with the other. The walls and gardens are well furnished with a good variety of trees and vegetables, which one and all show unmistakable signs of good management. In these gardens are also situate the forcing and other glass structures, which include Pine and plant stoves, greenhouse (a central span-roofed house, erected, with some of the adjoining houses, by Messrs. Weeks & Co., of London, about twenty-five years ago), vineries, Peach-houses (the latter about 200 yards long), pits, &c. There is no occasion here to refer in detail to the occupants of each individual house; suffice it to say that Mr. Ennis is a frequent and successful competitor at the Queen's County (Maryborough) and Dublin shows, where he stages largely fruits, vegetables, plants and cut flowers, including Dahlias and Roses; of the latter there is a large quantity grown at Emo. Not the least admirable feature at Emo is the gardener's house, and such a house!—in every respect a good example of what a gardener's house should be. Perhaps it may not be out of place here to state that all Lord Portarlington's workpeople, both inside and outside the Park, are well housed and cared for, the houses being, as a rule, of the same uniform size and style of architecture, with a suitably planted garden in front and rear of each.

The two principal entrances to the park I may mention are the Portarlington (N.W.), and Monasterevan (S.E.); the former, which is about 1½ mile from the Court, has for the first half mile a fine row of Weeping Birch (*Betula pendula*) on either side the drive, the continuation being flanked here and there in the open by clumps and specimen trees; whilst the latter entrance has, without any exception, one of the finest avenues of *Wellingtonia* in the kingdom. The drive is about the same length from the Court to the lodge as the one above referred to; from whence it takes a quadrantal sweep thither. It is 30 feet wide at starting from the south front of the mansion, but gradually diminishes in width to 16 feet, and descends at easy gradients for the first half mile, when for about the same distance it rises somewhat abruptly till it reaches a clump of Firs on the summit, at which point the *Wellingtonia* avenue ends; and the drive, which is then lost sight of from the Court, descending precipitately through the clump, the avenue is continued with Limes (*Tilia europæa*). I have never before seen such a fine, healthy, well-grown, and uniform lot of *Wellingtonias* together in any private establishment; the branches of every tree sweep the greensward beneath, and when viewed from the Court late in the autumn, in connection with the foliage of the grouped and specimen trees some short distance off, with their varied and vivid colours, and the hart and the roe scampering underneath, whilst the mid air is dark with rooks wending their way to the rookeries which abound in distant parts of the park, make a superb picture when contrasted with the Pine woods and mountain tops in the background.

Before taking leave of the gardens and grounds at Emo, which everywhere bear ample evidence of presiding skill, and of which in the foregoing remarks I have only given a synopsis, I may be allowed to state that to Mr. D. Ponsford (who by the way served his apprenticeship at Bilton, under the late Mr. J. Barnes), the present steward and forester, who has been in the Earl of Portarlington's service over thirty years, is due the credit of having successfully carried out the plans and suggestions of the Earl and late lamented and much beloved Countess of Portarlington (in whose death horticulture lost a liberal patroness, and the poor a kind and generous friend) in remodelling and

beautifying the place in his then capacity of gardener—a position which he filled for fifteen or sixteen years, when he was promoted to be steward, gardener, and forester combined, but about seven years ago he relinquished the management of the gardens in favour of his pupil, Mr. Ennis, who so worthily fills his place. *H. W. Ward, Salisbury.*

WINTER FLOWERS AT SWANLEY.

PEOPLE who have seen the very beautiful cut flowers in the winter season exhibited by Mr. H. Cannell must have felt a desire to see the plants that produced such excellent examples. The houses are numerous, mostly span-roofed, not large but lengthy, exceedingly light, and well adapted for the wants of their occupants; provided with a path down the centre, and beds or stages on each side. The roofs have a good pitch, and the glass is well bedded in putty, but merely bradded on the outside. Besides the houses there are 800 feet of heated frames. It may be as well to say that the heating arrangements are excellent and economical. Mr. Cannell has as much faith in the "hot-water circulator" as he has in the development of his business. The arrangement of the hot-water pipes is quite different from anything I have seen before. Instead of the pipes being connected close together with elbows or castings, they are distributed equally over the houses. The larger houses are furnished with 4-inch pipes, and in most cases a 2-inch pipe is carried all round, close to the glass, and about a foot from the bottom of the rafters. The joints are made good with Portland cement, and about one joint in 30 or 40 feet is stopped with an indiarubber ring: this is necessary to prevent the other joints cracking, which they would do without this arrangement for expansion. The heating of the frames is a most useful arrangement, as ordinary glass lights and wooden frames can be utilised for Zonal Pelargoniums and other bedding plants during the winter, without the labour, cost, and breakage of covering with mats. There is merely a 2-inch pipe running along the front of the frames, and an inch one along the back, these being also kept near the glass.

The houses are well furnished with flowering plants, but the glory of Swanley lies in the houses filled with Zonal Pelargoniums in flower. There are two houses, each 100 feet long, filled with flowering plants, all the best varieties being represented. The size of the trusses, and size, colour and brilliancy of the individual flowers are most remarkable, and must be seen to be realised, as any descriptive remarks would fail to do them justice. It is very satisfactory, too, to find that the recently introduced varieties are well in advance of those of previous seasons. We went very carefully over the collection, and took notes of those that were really distinct and good. J. B. Miller is a fine variety to cut for single trusses; they are very large, the flowers well shaped, bright scarlet, habit rather tall. Guinea is now a well-known variety of dwarf habit, flowers well shaped, with a touch of yellow in the red; Niobe, salmon-pink, fine trusses of well-shaped flowers; Iris, purplish-crimson, truss large, habit of plant good; Hebe, very dwarf habit, good trusses of magenta-coloured flowers; Fanny Catlin, clear salmon, good truss, the best of this shade of colour; Lumen, a very fine variety of dwarf habit, with large truss of finely formed crimson-scarlet flowers, with white eye; Beatrix, a distinct variety, good trusses of rosy-salmon coloured flowers; Ada, dwarf habit, good trusses of pale rose-coloured flowers; Dr. Orton, rich dark crimson, large truss, and dwarf habit; Evening Star, neat, dwarf-habit, flowers white, with salmon-coloured centre; Hala, a splendid variety, with immense trusses of bright orange-scarlet coloured flowers; Eva, very good truss, habit of plant good, magenta, with a dash of scarlet at the base of the top petals; Hetty, a distinct and good flower, magenta, with scarlet on top petals; Miss Hamilton, a very distinct variety of dwarf habit, truss good, flowers white, flushed with pale rosy-pink; Edith Pearson, habit of plant good, colour of flowers rosy-salmon, trusses not very large; Mrs. Patchett, dwarf plant, free-flowering, rose-magenta, with scarlet flush; Leander, bright reddish-salmon, good truss; North Star, dwarf habit, well shaped bright scarlet coloured flowers; Joyful, a very distinct variety, of dwarf habit, the petals edged with scarlet, and with a purple centre; Golden Glory has very good trusses of orange-scarlet flowers; Commander-in-Chief is a very good variety, and has the best shaped

flowers, the colour crimson-scarlet, large truss; Mrs. Daniels, dwarf habit, has good trusses of purplish-rose coloured flowers; Romeo, habit of plant good, has large trusses of rich scarlet flowers; Mrs. Moore, white with deep red centre, very distinct, habit good.

All the above have single flowers, and they comprise the very best varieties in the collection. On the other side of the path in the same house all the best of the double varieties are in flower; and one could not fail to notice how much more dwarf the plants were as a whole. The first to attract attention was F. V. Raspail; its immense trusses of scarlet flowers were very attractive. Nymph, a very fine white variety, habit of plant dwarf, is a fine variety for winter flowering. Aglaia, magenta with scarlet markings on the petals, dwarf free flowering plant; M. Pasteur, very rich magenta-crimson, immense trusses; Heroine is probably the best white: although the flowers are not so pure as those of Nymph, they are much larger; Roi de Violet, the best of this colour, a fine violet-purple; Mr. Gladstone, bright orange-scarlet; Me Gelein Lowagie, a very dwarf plant, with trusses of orange-red flowers; Ville de Nancy, pink, flushed white; Pallas, dwarf habit, with salmon flowers; Grand Chancellor Faidherbe, good truss of very double rich crimson flowers; Deufort Rochereau, habit rather tall, large truss of mottled salmon flowers; Henri Cannell, habit tall, large trusses of magenta-purple flowers shot with crimson, a very fine variety. Sylvia is a very free-flowering variety, having well-formed flowers of a deep rosy-pink colour, habit of the plant dwarf and compact; Mrs. Parker has very pretty variegated foliage, with pretty double flowers of a clear rose colour. I must not omit to mention a new variety with single white flowers; Mr. Cannell thinks this is the finest white yet raised. It has large trusses of well-shaped flowers, and the white is more pure in the summer than it is in the winter. Its name is "I've got it."

A very important feature at present, and a sight worth going a long way to see because it is unique, is a house, 100 feet long, full of *Salvias* well grown and flowered in 5 and 6-inch pots. One of the most distinct and beautiful is *S. Pitcheri*; it has very deep blue flowers, with oblong linear leaves very slightly serrated. This plant was noticed in the *Gardeners' Chronicle*, p. 598, as probably not distinct from *S. angustifolia*, but it is certainly different from that species as described in the *Botanical Register* for January, 1833, where *S. angustifolia* is stated to have a little white in the centre of the flowers. *S. Bethelii* has large heads of deep rose-coloured flowers, which continue to unfold from a knob on the top of the spike; *S. splendens Bruantii* has rich scarlet flowers, and forms a very strong and striking plant. The above three plants should be grown by the score and by the hundred at this season of the year, in every garden in the kingdom. *S. Hoveyii*, with rich purple flowers; *S. pseudo coccinea*, with its upright habit of growth, and a score of other species on trial, are all interesting.

I must pass over the Paris Daisies, and merely glance at the new *Chrysanthemums* singled out from a house containing nearly 500 varieties:—*L'Incomparable*, a distinct show variety, reddish-bronze, gold-tipped; Mr. Bunn, a sport from Beverley, seems to be distinct from that variety in the formation of its broader petals; *St. Mary* is a good white hybrid early-flowering Pompon, and Poiteau is a good yellow Pompon. Amongst new Japanese, of which there is a goodly array, I noted *Early Rose Queen*, pinky-rose; *Cité des Fleurs*, with full, purplish, narrow, reflexed petals; *Reverie*, bronze, distinctly marked with gold; *Constance*, brilliant deep crimson, occasionally tipped gold; *La Chameuse*, purple-white tips; *Docteur Andigour* is the most distinct and a good variety, of a deep amaranth-crimson; *Madame C. Andigour*, rosy-purple, with the flowers large; *Rose Mignonne*, light purplish-rose; *Early Red Dragon* is distinct from the old variety, and a good sort; *Alphonse*, dark crimson, tipped with gold. I had some notes of Cannell's strain of Chinese Primroses, &c., but must reserve them for another short paper. J. Douglas, Loxford.

DESTRUCTION OF THE PLANTATIONS OF SEQUOIA GIGANTEA AT VINCENNES.—The *Revue Horticole* records the almost entire destruction of the magnificent plantations of Wellingtonia in the Bois de Vincennes. Of about 400 fine trees, varying in height from 6 to 40 feet, 350 are quite dead, and not one has entirely escaped injury.

FORCED FLOWERS.

THERE is always something worth seeing where flowers for market are forced on an extensive scale. The growth of the different things cultivated is so arranged, that immediately outdoor flowers fall off the indoor supply shall commence, and come on in succession all through the autumn, winter, and spring, up to near the close of the London season, after which for a time there is little demand for the best class of flowers. Amongst the first which Messrs. Beckwith have in, are:—

TREE CARNATIONS.

About a fourth of the stock of 10,000 plants is now in full bloom, and a beautiful display they make, although the flowers are cut over every day, to the extent of a thousand dozen per week. *A. Alégatière*, red; *Vestal*, white; *Miss Jolliffe*, flesh colour; *Madame Elizabeth*, rose; are sorts that still hold their own. But another of *Alégatière's* seedlings, *Lucifer*, a brilliant scarlet, will no doubt take the place of *A. Alégatière*, as soon as enough stock can be got. Beauty of Scarborough, another very large-flowered vivid scarlet, Mr. Beckwith thinks a deal of. It is an immensely strong grower, equal in this respect to *Souvenir de Malmaison*.

BOUVARDIAS.

Of these the stock propagated and grown on to flowering condition this year has been increased to 50,000, filling twenty-five houses. They are so timed by stopping that those intended for later flowering are not yet showing their bloom-buds, and are kept as cool as can safely be done without injuring them. The long banks of them now in full flower, each variety and colour separate, present a sight that it would be difficult to match at this season of the year, and which cannot be realised without being seen. Every plant looks an exact counterpart of its neighbour, so even are they. For some time the quantity cut has been from 1800 to 2000 bunches per week; fifteen trusses of the white varieties and twenty-four trusses of the red sorts are put in a bunch. The flowering plants are kept up to 70° at night. In addition to the flowers, 1000 or 2000 plants a week are marketed for a considerable time through the autumn and winter. The demand for the large-bloomed white kind—*Humboldtii corymbiflora*—is increasing; 10,000 of it have been this year grown. Amongst the red varieties Hogarth yet finds a place along with elegans, the well-known sport from Hogarth, and another sport which Messrs. Beckwith have got also from Hogarth. After this year the cultivation of the original is to be discontinued, as it is found inferior to the sports, of which the last is much the brightest and best.

HYACINTHS.

The first of the Roman Hyacinths were ready for cutting the second week in October, and they are now in full swing; the spikes are this season very fine, showing the thoroughly ripened condition of the bulbs: 20,000 of these are grown. The year's crop of large-flowered kinds has been increased to 60,000, all in 5-inch pots. The Romans are forced in boxes.

TULIPS AND NARCISSUS.

The Tulips have been increased to 120,000; they are all forced in herring-boxes, fifty in a box; when the flowers are just about opening, all that are not intended for sale in a cut state are potted. The sorts grown are *Scarlet Duc Van Thol*, *Rose do.*, *Vermillon Brillant*, *White Pottebakker*, *Chrysolora*, yellow and common white, for cutting. The first of the 20,000 *Narcissus*, mostly *Paper-White*, were in flower on October 20.

CHRYSANTHEMUMS.

The first of these, occupying three houses, each 100 feet long, had their first flowers about half open the third week in October. The pots were stood near together, each plant with its shoots encircled with a piece of matting, so as to keep them as close as could be without destroying the leaves, the heads of the shoots not more than 6 inches from the glass. The earliest was *Madame de Valsey*, a profuse flowering yellow; the blooms are about the size of the white *Mlle. Marthe*. Few varieties can perfect such a number of flowers as this kind is able to do. The Japanese *Elaine*, white; and *Fair Maid of Guernsey*, another Japanese white; *Princess of Teck*, white; *Julie*

Lagravère, crimson; *Golden George Glenny*, *Victor Lemoine*, *Fulton*, a yellow Japanese, and *Lady Margaret*, a large white *Anemone*-flowered, are the sorts most grown. The principal object is to get kinds that will perfect the greatest number of flowers without any thinning of the buds. The number of Japanese varieties grown shows that the public taste has set in for these, which are by far the more elegant flowered forms.

BERRY-BEARING SOLANUMS.

House after house is occupied with these useful decorative plants—in some cases the berries fully coloured, in others yet quite green, to come on in succession. They are all grown through the season in pots, and are as even and thickly studded with berries as they well could be. To keep the foliage full and healthy they are liberally supplied with manure-water. With bushy low-growing plants like these, and such a number to be gone over, it is impossible to keep some of this water from getting on to the foliage, which causes a dirty looking mould to come on the upper surface. Dirty plants will not do for the market, and to sponge or hand-wash the leaves of from 15,000 to 20,000 was out of the question. Mr. Beckwith had noticed the effects of water impregnated with paraffin in giving a bright clean polish to the leaves of such plants as it was applied to for the destruction of insects. Trial was made to see what would be its effects on the dirty-leaved *Solanums* and the strength they would bear it. It is used at about a wineglassful to a gallon of water, syringed over the plants as they stand on the stages. All the time the man is engaged in syringing the plants he has a boy with another syringe drawing and discharging its contents into the tub, which naturally keeps it mixed better than simple stirring. The paraffin water softens the mould and dirt directly, so that a good syringing with clean water before the mixture has time to dry on the foliage leaves them as clean and shining as if they had been varnished. It is needless to say that no trace of aphides, which these plants are subject to, is left upon them, after being subjected to this ordeal.

CROTONS AND DRACÆNAS.

The house filled with *Crotons* looks very bright. The plants are all in small pots, and confined to single stems. *C. Weismanni*, *C. undulatus* and *C. Queen Victoria*, are the kinds principally grown; of the last named a stock is being got up as quickly as possible: there is no doubt it will be one of the few that will be in demand as a market plant, on account of its decided high colour. A similar house is devoted to *Dracæna*. *D. terminalis* is still the most in request, but a stock is being got on of *D. amabilis*, *D. stricta*, *D. Frederici*, and several other narrow-leaved varieties.

GARDENIAS.

A houseful of these are in excellent order—mealy-bug kept so well down that it requires a close look to find any: this is effected by syringing overhead with water and paraffin. The mixture in sufficient strength to kill the bugs, is not found to hurt the roots of the plants, consequently they are syringed just as they stand, which saves much time that would be required if they were dipped in the way usually done.

ROSES.

Rose grafting is about to be carried out on a considerable scale, principally with the *Tea* varieties. *La Grifferaie* is the stock that is to be used; of this 30,000 in small pots are in hand ready for working. All the best of the old and newer free-growing *Tea* kinds are to be raised in this way.

PELAGONIUMS.

The immense stock of these was this year struck sooner than usual, with a view to get the growth harder and their pots full of roots before any fire-heat is given them. None has yet been used: the plants are as stout as it is possible for them to be, and in the best condition to stand the warm treatment they will shortly be subjected to. One thing that is always noticeable in a well managed market garden is the uniform condition in the plants grown; the whole stock, allowing for that portion of each that is intended to come in succession, seems as if they might have been all cast in a mould, so even are they, and, considering the small pots they are in, of large size accompanied by a bushy stout habit. Nowhere is this more apparent than in Messrs. Beckwith's establishment. T. B.

NEW DRACÆNAS.

AMONGST the many fine forms of *Dracæna* we owe to the skilful manipulations of Mr. Bausé, the one here represented (fig. 124), and which bears the name of *D. Thomsoni*, is one of those which broke into colour at a later period than the batch first sent out by Mr. Wills, and has broad oblong shortly acuminate leaves, of a deep green, having a broadish border of pale magenta-rose, the colouring being creamy with a flush of magenta in the younger central parts. It is the result of a cross between *D. terminalis* and *regina*.

As an elegant contrast to this we may take the pretty variety named *D. Mrs. C. J. Freake* (fig. 123). This comes from *D. concinna* crossed by *regina*, and is remarkable for its free growth and narrower more graceful foliage. The leaves are lanceolate-acuminate, recurved, deep bottle-green, edged with a narrow band of bright rosy-purple, the younger leaves having within this a band of creamy-white, so that the margin is white bordered with magenta. The leaves are supported on longish stalks which have a pink margin; and altogether the plant is very effective.

We are indebted to the General Horticultural Company for the use of the blocks, which appear in their recently issued Catalogue of New and Rare Plants.

DISEASE IN PLANTS.

(Continued from p. 625.)

GALLS.—But of all morbid processes in plants, none, I think, are so suggestive as are those produced by parasites, whether vegetable or animal. The whole subject would be far too large to speak of, even if I were familiar with it; it is, indeed, a subject of the gravest national importance; but I will speak of only some of the changes which are produced by insects. The most remarkable of these are the galls; * and, among the many hundreds of them that have been described, I may assume that you know some in their natural mode of growth—such as the common Oak-apple, with which some celebrate the restoration of our monarchy; and the bedeguar of the wild Rose; the bright crimson Oak-spangle; the Currant-gall, or the Artichoke-gall, or the gall of pharmacy. But, besides the hundreds of the different true galls, there are still more hundreds of changes of structure in leaves and stems and roots, all produced by the irritant secretions of insects, and all such as may justly be ascribed to processes of inflammation. In some, as in the "curl" of the leaves of the White-thorn, you find thickenings of leaves which are lifted, rolled, or curled into chambers which serve for defence of the aphides or other insects; in some, the thickened and distorted clusters of leaves, in buds or twigs, roll up and are mutually fastened so as to form the walls of similar defensive lodgings; in some cases, leaves become swollen as with a kind of œdema; in some, their layers separate as with blistering; or leaves, or stems, or fruits, or clusters of flowers, buds, or roots produce variously shaped and variously constructed growths of cellular parenchymatous tissue and cork and, more sparingly, of woody tissue or of cells whose thick walls become as hard as wood. Besides, some of the monstrous growths of parts of plants, and some of the viviparous variations, and of the undue metamorphoses of leaves, are to be referred to the influence of parasites.†

It may seem bold to speak of so many hundreds of widely various morbid processes as having any essential character in common, or as fit to be included under one name; yet I think we may regard the whole of these as being such as, in our pathology, we should call inflammatory hypertrophies or hyperplasie. They all show a rapid increase of lowly organised

structures, by derivation from, and in continuity with, those pre-existing. There is, as in the products of our inflammations, a general likeness among these new structures, whatever be the part of the plant from which they are derived, and all bear a general likeness to the structures formed after injuries of actively growing parts. In the morbid growths formed by these new structures, the deflection from the natural shape and construction of the part, in continuity with which they have grown, is often not complete; they often retain marks of characteristic normal forms, and sometimes acquire marks of natural variation from the species.* Moreover, all these morbid growths

less because neither group can be circumscribed with any exact definition.

Here are the bare facts. Each species of these parasitic insects can compel some part of a plant into such disease as shall supply good food, or well-built and well-placed lodging, or both, for itself or for its eggs and larvæ, or even for part of the life of its complete offspring. Each insect selects, by instinct, the very part of the plant which is adapted to its purpose. The provision made at the cost of the plant is exactly adapted in quality to the welfare of the insect or its offspring, and in quantity as well; for both the lodging and the food are made sufficient for



FIG. 123.—DRACÆNA MRS. C. J. FREAKE.

* Many growths like galls are produced by fungi and other parasitic plants; but those I omit. Many are described by Schroeter, *Beiträge zur Biologie der Pflanzen*, Band 1, p. 4; and by Beijerinck. The best essays on the minute structures and modes of growth of galls are those of Lacaze Duthiers in the *Ann. des Sciences Naturelles, Botanique*, 1853; of Prillieux, in the same, *Botanique*, 1876; and of Beijerinck, *Beijdragen tot de Morphologie der Plantengallen*, Utrecht, 1877. But I am most indebted to Miss E. A. Ormerod, who, by her admirable works on Entomology and Meteorology, sustains the scientific reputation of the name so well known to pathologists. Since the Address was sent to press, I have received the second part of Frank's essay in the *Encyclopædie der Naturwissenschaften*, containing a much fuller account of galls and gall-like growths than, I think, had before been published. With this, or with the soon-coming second part of his separate *Pflanzenpathologie*, and with Beijerinck's essay, the whole subject may well be studied by any human pathologist. But, I hope that it will soon be yet more clearly illustrated by Dr. Arthur Ransom.

† Among them are the "Witch-brooms" of the Birch, Pine, Larch, &c. Miss Ormerod has described the "Phytophagus of the Birch-knots" in the *Entomologist*, 1877. A long list of the teratological forms due to parasites is in Beijerinck, *loc. cit.*, p. 32; with this should be studied Dr. M. T. Masters' volume on Vegetable Teratology.

have their origin in what may justly be called "irritation" of the part on which they grow; and in all of them, I think, we may note signs of degeneracy from natural conditions, either in the absence of stomata or similar structures, or in the presence of the red, or yellow, or other colours commonly noticed in decay.

Here, I believe, are reasons enough for regarding all these galls and gall-like products of disease, generated in plants by insects, as analogous with a large group of the products of inflammation which we study in our own pathology and the analogy is not the

* As Darwin pointed out in the likeness of the mossy covering of the common wild Rose gall to the calyx of the Moss Rose. There are, also, instances in which galls imitate small cones or other structures of the plant.

any necessary time—for days or weeks, often for many months; in some instances for two or even three years. Nay, more than this, the gall, of which the growth has been provoked by the virus of one insect, may be fit for the food and lodging of another, which, when all seems complete, can penetrate the gall-cavity, and there, as with theft or murder, obtain food and lodging perfectly suited to itself or its progeny.* And the whole process in the plant, though it be one of disease and, in a sense, unnatural, is yet so regular, so constant and specific, that the form and other characters of each gall or other morbid product are, usually, as constant

* The Inquilina, Einmiether, lodgers, or (as they might be called) burglars, are usually described in the works on gall-insects, though not themselves "gall-makers."

and characteristic as are those of the insect itself, and the differences among the galls are at least as great as those among the insects. Is there, in all the range of natural history, a more marvellous group of facts than may here be studied? If you would like to work out a problem in evolution, find how it has come to be a part of the ordinary economy of Nature that a gall-insect compels some part of a plant to grow in a manner which, while injurious to the plant, becomes useful to one insect not yet born, and to another who will, in due time, kill this one and feed on it.

leaf or any other; and the wound for inserting it—the poisoned wound—may be made either with part of the oral apparatus, or, as in most of the true galls, with the ovipositor, through which one or more eggs are passed with the virus, and are left among actively living structures of the plant. The little wound closes; the virus, whether an oral or an ovarian secretion, remains; and the result of its influence on the plant structures and their contained protoplasm is the formation of the gall or other morbid product. The whole process may be compared with the local consequences of the insertion of vaccine lymph, or

insertion of the virus with the ovum, and continue to increase during the whole—sometimes long—development of the larvæ; or even, in a few instances, after the larvæ have deserted them.

But, while plants supply no occasions for studying fever, or any other of the constitutional phenomena of specific diseases, they are all the more fit for illustrations of some of the local characteristics. Let me suggest some things for study in them, in addition to the inflammatory changes of structure.

We find hundreds of different forms of galls, and we may be nearly sure that there are as many kinds of morbid poisons produced by the gall-insects, each form answering to a different virus. This may suggest that we may be too grudging in thinking of the number of morbid poisons, or of their modifications in the blood, to which diseases in ourselves may, at least in part, be due.

It is true that the galls are produced by many species of insects on many species of plants; and that the differences among these species may be as wide as those between ourselves and any other mammalia. But, even among closely allied species, there are many and very different forms of galls. Mayr,* ten years ago, described and figured ninety-six kinds of galls found on the Oaks of middle Europe, all but two of them being produced by different species of gall-wasps. Of those ninety-six kinds, thirty-two are formed on the leaves alone; and even on similar parts of one Oak-leaf it is not rare to find three or four different forms of galls.†

We have thus clear evidence of a very large number of morbid poisons, each of which is capable of producing, in an appropriate subject, a distinct specific disease, with a characteristic morbid structure.

We may safely believe that, for each of these morbid poisons, there is no test yet possible except that of the disease which it may produce; and so we may as safely believe that there may be many morbid poisons or morbid conditions of blood in ourselves which may be indicated by very different products of disease, though they may be beyond detection by any other, even the most refined, method of research.

Further, though it may be impossible by any other means to detect any differences among these morbid poisons, yet the diseases which they severally produce may be widely different; as unlike as are a pustule and a *goutre*, or a vaccine vesicle and a carbuncle, or as any of the morbid changes due to gout or rheumatism.

It may be observed, however, that these great differences are marked in outer shape and construction much more than in minor structure. As, in human pathology, there are certain general characters and degrees of likeness in all inflammatory products, however differently they may be constructed—in pustules, vesicles, thickenings, opacities, adhesions, scars, fibroid and other changes; so in galls there are certain likenesses in minute structures, even among those that are, in their construction, size, and outer shape, most unlike.

It may be well to learn from this a lesson on the imperfection of our methods of minute research. As we cannot doubt that the differences in outer shape and method of construction of the products of specific diseases are associated with differences of chemical composition and ultimately minute structure, so it must be in those yet greater differences on which we frame our distinctions of species in all living nature. The coarse, visible, and tangible distinctions, may be well marked; the really material differences with which these are associated, and to which probably they are due, are beyond our reach.

Again, in the study of specific diseases in ourselves, we see many variations due to the differences in the parts, or even in the persons affected with them. In the study of galls similar variations may be seen. As a general rule, each gall-insect lays its eggs in one part of one plant—as the leaf, leaf-stalk, bud, fruit, or root of this or that species; but if, as rarely happens, one lays in different parts of the same plant, there is usually a very close agreement in the characters of the resultant galls. A few exceptions to this rule are known, one of them being in the very different galls produced on the roots and on the leaves of Vines by *Phylloxera vastatrix*; but the rule is generally observed, and accords with the fact of certain features of general likeness being observed in the



FIG. 124.—*DRACENA THOMSONI*. (SEE P. 656.)

But now, of the relation of galls and our specific diseases, such as our eruptive fevers, syphilis, cancer, gout, and others.

In these galls and other similar disease in plants, we have, it seems, hundreds of specific diseases due to as many hundreds of specific morbid poisons; * for the most reasonable, if not the only reasonable, theory of these diseases is, that each insect infects or inoculates the leaf or other structure of the chosen plant with a poison peculiar to itself. The poison may be merely deposited; but, in the instances best for study, it is inserted in the plant-structure, whether

any such morbid poison, in ourselves or other animals. I say the local consequences, for we have no clear evidence of what might be called general infection or constitutional disease in the plants. In the absence of quickly moving fluid, such as lymph or blood, the virus infects only the part in or very near to which it is inserted. A single Oak leaf may have fifty "spangle" galls on its under surface, but the structures between them may be quite healthy; and when in any instance a general damage is done to a plant by gall-growths, it seems to be only as a remote consequence of the spoiling of considerable portions of its structures. And this appears to be true, even though the virus may continue active for a long time, as in the galls which begin to grow soon after the

* Karsch (abstract in the *Botanische Jahresbericht*, 1879, p. 150), gives the total number of the forms of galls at present known as about 1250, of which one-fifth belong to the Cynipidae.

* *Die mitteldeutschen Eichengallen*, 1870.

† While writing, I have before me some Oak leaves from a sapling on which are five kinds of galls, three being in several instances, on one leaf.

products of our several specific diseases, wherever they may be seated.

When the same insect lays in similar parts of different plants the galls may be all similar; * but I believe that they more usually are different, and that their differences are such as bring them severally nearer to the distinctive characters of the plants on which they grow; just as, in ourselves, a specific disease may be modified by the personal conditions of each patient.

In similar analogy, the differences are yet greater when the eggs are laid in different parts of different plants.

Very rarely, the same insect may produce on one leaf different forms of galls.†

(To be continued.)

LILIES IN LANCASHIRE.

ON reading on p. 602 Mr. Wolley Dod's remarks on *L. speciosum*, and knowing him to be a skilful cultivator whose opinion carries deserved weight, it seemed desirable to ask Mrs. Newall to give her Lancashire experience somewhat more fully; this she has been good enough to do: I enclose her note. *George F. Wilson, Heatherbank, Weybridge Heath, Nov. 10.*

"It is now nineteen years since the *Lilium speciosum album* began its outdoor life in my garden. I had then hardly two dozen bulbs, and not only has it not disappeared, but I, having bought no more, have, out of the abundance of its increase, supplied several of my friends; neither has it deteriorated, but rather improved in hardiness and vigour, although far inferior in flower to what it would be if grown in a greenhouse or pit. The question is, however, not whether the manner of growing it indoors or out-of-doors be best, but whether it can be treated as a hardy denizen of our shrubberies and borders, supplying flowers when the more delicate favourites of the autumn have perished. Unquestionably it can, for it will outlast the *Dahlia*, and when placed in a well drained rich soil requires no other care than the giving of a plentiful supply of water until it blooms. I once in an open winter plucked flowers from it in December. On October 21, 1878, I gathered 289 blooms from five small beds, in one of which earlier in the season I had counted over 200 flowers. The snowstorm this year, of October 28, ruined above one hundred beautiful blooms and a rich harvest of nearly open buds.

"From the first planting out of the bulbs until last year they have had undisputed possession of these five small beds, and beyond thinning and top-dressing have been undisturbed—in the autumn of 1879 removing them to another part of the garden, especially prepared for *Liliums*. After keeping 300 bulbs for myself, I gave away a good number. *Roseum*, *rubrum*, and *punctatum* are, I imagine, hardier and earlier than *album*, but as I have not had so long an experience with them I cannot speak on that point. *Longiflorum* and *extimium* flowered very beautifully here last year under the same treatment, and I am told that they did so again this year in August, while I was abroad. They are earlier and therefore better than *speciosum* for Lancashire.

"In February, 1877, Mr. G. F. Wilson gave me a fine *auratum* bulb. I put this out in an exposed bed on the top of a slope facing the south-east, and having a background of *Rhododendrons*. In the spring I sheltered the young shoots, but that year they did not flower. In 1878 only one stem brought its six flowers to maturity. In 1879 the frost came early and nipped all its buds. This year (1880) there have been several stems bearing each one, three, six, nine, twelve fine flowers. In this case the bulb must have increased, because, although I have bought other *auratum* bulbs, none have been planted anywhere near the part of the garden where the first bulb was placed. I should very much like to know the ratio in which the stems increase their yield of flower-buds and the limit of their produce.

* Fr. Löw. Ueber Gallmücken; in Verh. der K. K. Zool. botan. Gesellschaft in Wien, 1877.

† Beijerinck, loc. cit., p. 21, from whom, also, the two preceding sentences are quoted. He cites from Winnertz the case of *Cecidomyia tremula*, which may produce on the same leaf of the white Poplar four different forms of galls; but I would suspect that there may be as many differences among the eggs, just as there are among those of some *Lepidoptera*, in which, out of the same brood of eggs, all laid in the same place, some are hatched in the next following season, others in one, others in two, seasons later. Of course, these eggs are not all alike, though no other difference besides that proved by the times of hatching may be discoverable in them, or in the insects produced from them.

"In this clump of three years' growth I had several different thicknesses and heights of stems; some, small ones, flowerless, others bearing either one, three, six, nine, or twelve flowers—the increase of the stem corresponding with the increase of bloom-buds, excepting in one instance where a weaker and shorter stem bore the same number (six) as a neighbouring and more finely developed one. I intend to leave this bed undisturbed, and to remark the yearly changes therein. In Maries' nursery gardens at Mythop Lytham, near Preston, a very much more sheltered position than here, also a very different altitude—that being close to the sea and ours more than 500 feet above it—the *speciosum*, *auratum*, and many other *Lilies* are perfectly hardy and grow in great beauty and profusion."

PAROTIA PERSICA.

AMONG the numerous trees and shrubs remarkable at this season for their gorgeously-coloured leaves, there are none more noteworthy than the shrub of which we give a figure (fig. 125, p. 661), taken from a specimen in the Royal Gardens, Kew. It is surprising that so little is known of this very beautiful shrub. It is quite hardy against a wall, and, indeed, needs no such protection, as a large bush has stood out unhurt at Kew for several winters. The general shape of the leaf reminds one of that of the *Hazel*, but it is not so rounded, and is of a deeper green in summer. In the late autumn the leaf assumes at the tip a glowing crimson colour, in the centre a rich orange or yellow, while the base still retains its green hue. The colours we have mentioned shade off gradually into each other, and no two leaves are quite alike in the disposition and arrangement of the bands of colour. At Kew the plant forms a large shrub, but in its native country—North Persia—it forms a tree. The flowers are inconspicuous, and of such conformation as to show their kinship to *Hamamelis* and *Loropetalum*, but, unlike those two genera, in *Parotia* there are no petals. Parot, in whose honour the tree was named, was a German naturalist who travelled in the Crimea and the Caucasus and Armenia, having been, it is stated, the first to ascend Mount Ararat. He entered the Russian service as a medical officer at the time of the French invasion, and at the conclusion of the war travelled in Savoy and in the Pyrenees, subsequently establishing himself as at physician at Heilbronn. But in 1821 he was again summoned to Russia, to officiate as professor of physics in the University of Dorpat, where he remained till his death in 1841. In addition to *P. persica* there is another species native to the North-Western Himalaya, viz., *P. Jacquemontiana*, which it would be very desirable to introduce as its flower heads are surrounded by four large white membranous involucre bracts which must be very attractive. The young shoots of this tree are made use of for bridge making in the Punjab. These bridges, Dr. Brandis tells us in his *Forest Flora*, are often 300 feet long, and consist of one large rope (made of twigs of *Parotia*) to walk on, and two smaller ones, one for each hand, with thinner ropes connecting the hand with the footropes. Such bridges last about three years. *Parotia* belongs to a small family (*Hamamelidaceæ*), remarkable for its structure and often for the beauty of its flowers. Foremost in the latter respect is the *Rhodoleia Championi* (see p. 597, vol. iii. n.s.). The species of *Hamamelis* are interesting, and from their flowering early are desirable inmates in the shrubbery. The best is that figured and described in the *Gardeners' Chronicle*, 1874, vol. i., p. 187). *Corylopsis spicata* and *Loropetalum chinense* are both highly attractive flowering shrubs, though but little known. *Fothergilla alnifolia* is better known, from its small tufted flowers with their long club-shaped white stamens. The *Liquidambar* are valued for the splendour of their autumnal foliage. *Bucklandia* is a striking foliage plant brightly coloured in the young state. Lastly, we may mention the Tibetan *Davidia*, of which at present only imperfect specimens exist in herbaria, but which must be a fine thing and one which plant collectors should be on the look out for as soon as circumstances permit them to penetrate into Tibet.

CATTLEYA LABIATA.—We understand that there is at the present time a remarkably fine specimen of this fine Orchid flowering in the collection at Bothwell Castle, though Mr. Turnbull makes no pretensions to be an Orchid grower, and has no proper accommodation for these aristocratic plants. The plant in question has on it six flower-spikes, bearing a total of twenty-two of its splendid blossoms.

Garden Operations.

KITCHEN GARDEN.

If this department is so situated as to be within the range of the kept grounds, or so contiguous to them as in a like manner to contribute to the interest and enjoyment of those most intimately concerned, a great deal of time must necessarily be taken up at this period—when the leaves are falling from the trees—in the maintenance of proper order. For the sake of cleanliness, therefore, the wheeling of manure and other composts should, as far as possible and practicable, be effected at seasonable times, so that the aspect of the walks should not be marred; consequently, when the ground is in a proper state, through the effects of frost or other causes, such operations should be prosecuted diligently. During the winter months more time can be given than at any other season to the improvement of the condition of the soil, and this is a matter that should not be overlooked or neglected.

If any forethought has been exercised in this way in the securing of supplies of roadside scrapings—leaf-mould and spent tan are not to be despised for certain purposes—and the customary refuse, much can be done when it is necessary in ameliorating the state of some soils. Those, for instance, which are of a stiff adhesive and plastic nature will be highly improved if a dressing of roadside scrapings, leaf-mould, spent tan, wood ashes, or even the lesser sorts of undecomposed leaves of trees be mixed in in the process of mulching or digging. On the other hand soil which is naturally light and porous, or has become pulverised by the process of good cultivation, may be much benefited by a compost of an opposite nature. We make a point of using up all spent material which comes to hand in renovating Vine borders or those in which other kinds of fruit trees are grown, and apply this compost with infinite advantage to our light and friable soil. In connection with important affairs of this nature let trenching, semi-trenching, and digging and forking be energetically pursued.

Recently planted flats or borders of Lettuces will require considerable time to make up the deficiencies among the plants caused by slugs or other noxious pests. Cauliflowers which are pricked out at the base of walls or other places out-of-doors are particularly liable to be destroyed by these pests, and will also need attention. During the prevalence of inclement weather such matters as tying mats, preparing sticks and stakes, pegs for layering, marking out, &c., and looking over and sorting the stores of Potatoes and other roots, can be done.

FORCING DEPARTMENT.—In order to have supplies of the different materials which are used in potting, surface-dressing, &c., in connection with forced subjects in a proper state for use when they are required, stores of each should be placed where they will become available. Roots of Tarragon and Mint should be introduced into some of the forcing-houses, with a moderate degree of heat. Surface-dress French Beans with rich material or manure, and Tomato plants likewise, as soon as the former dressing becomes permeated with roots.

FRAME GROUND.—The stores of Cauliflower, Lettuce and Endive, allocated together here for preservation and use as required through the winter months, will need to be looked over very frequently, and all decaying matter about the plants should be removed. The stocks of the same subjects which are to be preserved for planting out next spring will also require similar treatment, as well as a sharp look-out very often for those detestable pests which abound in the shape of grubs and slugs. Wood ashes is an excellent material to apply occasionally over such plants as a preventive, and, moreover, it is beneficial in other respects. These plants should—except when frost actually prevails—have air in abundance to prepare them to withstand its effects better by-and-by. Let the outside of frames and pits which are slightly built be protected by means of a lining of bracken, leaves, or litter placed around them now before severe weather sets in; covering materials should also be provided for the same end. Late autumn-sown Carrots and Radishes and those ready for use will also want protecting from frost. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

PEACHES and NECTARINES.—Assuming that ripe fruit from these will be wanted before the end of May, and that all cleansing has been brought to a close, it will be necessary to shut up the house for forcing by the middle of this month. Old trees that have been judiciously managed and forced for a number of years are more easily excited than young ones; but in either case a great deal of patience through the early stages is absolutely necessary, and on this account an early start is of great importance, as it admits of

gentle excitement until the buds show signs of swelling, without having recourse to much fire-heat; and when, owing to unfavourable external conditions, the warming of the pipes is thought desirable, they should be allowed to get cool before nightfall. If the roots are confined, as is now generally the case, to internal borders, these should be examined and watered with tepid water until every particle of the soil is properly moistened down to the drainage, when a good ridge of fermenting Oak leaves and short stable manure may be introduced with advantage to the trees, which as a means of securing a moist, genial temperature will be in every way superior to that obtained from hot-water pipes. Let the trees be syringed with tepid water twice a-day, and give a little heat on all favourable occasions to sweeten the atmosphere, as trees that are forced with open ventilators always break stronger than others that are brought on in a close house in which the buds never become dry. The temperature at starting may range from 40° to 45° at night, and from 50° to 55° by day, with a rise of 5° to 10° from sun-heat until the buds are fairly on the move, when a slight increase on fine days may be indulged in. Where the roots have the run of outside borders, the latter should be well protected with some kind of non-conducting material, for the twofold purpose of throwing off cold rain and snow, and keeping the surface-roots in action, as nothing can be gained by the mistaken practice of starving the latter while the branches are in a state of activity. Take advantage of unfavourable weather for getting all pruning and cleansing in succession-houses brought to a close, and see that the roots of trees under fixed roofs do not suffer from want of water, otherwise the blossom-buds will fall off when the time arrives for forcing, a season will be lost, and root-pruning will have to be resorted to. If the trees have been infested with brown-scale they should be washed twice with warm soapy water or a weak solution of Gishurst Compound, 4 oz. to the gallon of water, in preference to painting with composition, which closes the pores and often disfigures the fruit when it is washed off by the syringe. When all is finished a free circulation of air should be allowed to pass through the houses until the time arrives for exciting the trees, and where practicable they should be kept clear of plants of all kinds that are subject to insects or liable to be injured by a few degrees of frost. Young trees that have become too strong should be corrected by lifting and relaying the roots in new loam free from animal manure, training upon the extension principle, and allowing them to grow into a fruitful state, while old ones that lack vigour may be strengthened by the removal of the surface soil, and watering with diluted liquid manure prior to replacing it with new compost of rich calcareous loam, burnt refuse and 12 per cent. of bone-dust. *W. Coleman, Eastnor.*

FIGS.

If still open the early house should now be closed for starting, and before any attempt is made to excite the trees the roots should be repeatedly watered with tepid water until the balls of earth are thoroughly moistened. Unlike Peaches and other kinds of stone fruit, the Fig may be started at a high temperature; but the most satisfactory results are always obtained where the houses are closed early, and the roots and fruit are allowed to advance steadily under the influence of moist and gentle heat from fermenting materials placed in near proximity to the pots. If Oak leaves are used they should be worked and fermented before they are introduced, and for some time afterwards they should be watched and allowed to lie loosely, until the heat descends to 70° or 75°. The minimum top-heat may range from 50° to 55° on mild nights, with a rise of about 10° by day, when a little air at the apex of the house will allow the atmosphere to become fresh and sweet, at least once in the twenty-four hours. The trees will require regular syringing with tepid water two or three times a day, and moisture by night must be secured by damping the paths and floors about 9 P.M., or later when external conditions favour the rapid escape or condensation of vapour at this changeable season. A little fire-heat will of course be necessary, particularly where the roofs are not provided with blinds for running down by night or during the prevalence of severe storms by day; but no hard and fast line of temperature, as was formerly the common practice, should be insisted upon. Advantage should be taken of wet days for getting succession-houses ready for starting when the proper time arrives. If the trees are in pots care should be taken that the roots do not become too dry during the season of rest. Where they are planted out in internal borders this danger is easily met, as the roots can be watered if necessary, and well mulched with rotten manure immediately after they are cleansed and tied to the trellis. If unheated Fig-houses or cases still exist, and the trees have not been loosened from the wires, no time should be lost in making them safe for the winter by drawing the branches down to the lower part of the wall and placing a little dry Fern or straw amongst them. Fig growers

in the South and West find their trees in the open air do best without covering, but in cold situations full exposure in severe winters would end in the destruction of the trees, and the occupants of unheated houses suffer quite as much as they do on open walls. *W. Coleman, Eastnor.*

PINES.

It is very important at this season of the year to have all these plants so placed as to obtain all the light possible, and every ray of sunshine when it appears or prevails. For this object keep the glass clean, and let the plants be placed as near to it as can consistently be done. Fermenting beds will in the course of time, through decomposition, subside considerably, and newly made ones, unless they be well trodden down, are very apt to settle rapidly. In either case the necessary attention should be given to raising the plants into a position for the purpose described. It is a customary practice and a commendable one to assort these plants according to their respective needs before winter sets in, and to give the fruiting plants the best places for swelling of the fruits properly at a time when natural means will not afford much help. These plants should under any condition have a night temperature of about 65°, and 70° or 75° during the daytime. Successional plants may safely be kept 5° lower at night, and from 65° to 70° on bright days; other young stock, which are not prepared to make much growth, will progress satisfactorily at about 58° at night, and 60° to 65° by daylight. Atmospheric moisture will be necessary at all times in the fruiting compartments; sprinkling must therefore be seen to regularly, and syringing in a nice light house at least twice or thrice every week. In the case of successional plants and others, syringing will only be required occasionally. Oak and Beech leaves are the most durable kinds, and as these are now available, new beds should be made where necessary. If the extent of the glass will admit of it, the plan which succeeds best, and is the most satisfactory under such circumstances, is to free the pits of all the plants; make the beds, and not put the plants into them until they are in a proper condition, as more injury arises from plants being shifted about, or put on cold or very hot beds, than is generally supposed. *G. T. Miles, Wycombe Abbey.*

ORCHARD-HOUSE.

The Peach and Nectarine trees from the late house plunged out-of-doors look all right, and during the recent mild weather the buds have been swelling, with a corresponding root-action. The roots seem to be in the best possible condition covered over with cocoa-nut fibre refuse. It is now time to see that maiden plants are potted for the purpose of replacing sorts that have gone wrong, as they sometimes do. One seldom needs to replace the good old sorts with new ones of greater merit. In Peaches we do not yet improve upon Noblesse, Royal George, Grosse Mignonne, and Bellegrape. Next to Peaches and Nectarines, the most desirable fruit to grow in pots in the orchard-house is the Pear. We get very fine fruit on small trees long before it can be obtained out-of-doors even on walls. For September we have Souvenir du Congrès, which is larger, and distinct in flavour from Bon Chrétien, although both should be grown. Rivers' Summer Beurré d'Aremberg is likewise well worthy of culture for its abundant bearing qualities and distinct flavour, although it does not look so showy on the dish as the other two. Beurré d'Amanlis is later and good. Next in succession, nothing can surpass Louise Bonne of Jersey; it is probably the best we have for orchard-house culture. I do not care to grow later varieties than these, although Joséphine de Malines may be grown if it does not succeed well out-of-doors. Plums succeed well under glass, indeed we have not been able to grow some varieties in the open garden, but have splendid fruit from the pot trees. Jefferson and Coe's Golden Drop are very fine from pots. Golden Espren and the different varieties of Green Gage are all to be depended upon, and Kirke's is one of the best purple Plums. The trees may now be lifted from the open ground and potted. I prefer two-year-old Pear trees, but the others one year from the bud. The roots would take up considerable space if they were not well cut back, but we cut back all the thick roots, so that the trees may go into 9 or 10-inch pots: the larger trees only should be potted into 11-inch. In potting, work the compost well in amongst the roots with the fingers, and then ram it in firmly with a wooden rammer. After potting plunge the trees in the open ground, covering the roots with fibre, the same as the established trees. I do not prune them until they have made some roots. See that the Strawberry plants on the shelves do not suffer for want of water. Many growers allow the soil in the pots to become dust dry before watering; this ought not to be permitted. See that air is admitted underneath the plants, and let the top-lights be open. *J. Douglas.*

ORANGE-HOUSE.

If any of the trees are in flower now, they must be placed near to the glass, with a little less moisture in

the atmosphere, and as much ventilation as possible, so that the temperature may be kept up to 65°. Dust the pollen on to the stigmatic portion of the flowers with a small camel-hair brush. It is better that the trees should not flower until February, but we have one in full flower now, and must make the best of it. Be careful not to give too much water to those trees that have fruit near the ripening stage, as it may cause the skin to crack, and thus spoil the fruit. It will not do to keep the trees on which fruit is ripe in a moist stove temperature. It will be better to move them into a vinery where late Grapes are hanging, as the treatment required to keep the Grapes will also do for the ripe Oranges. In gathering the fruit for dessert, cut it with two or three leaves attached. *J. Douglas, Loxford, Ilford, E.*

PLANT HOUSES.

ORCHIDS.—In the management of these plants through the winter months every care must be taken to protect them from the drops of condensed water which are constantly falling, unless otherwise disposed of from the roof. This drip, as it is commonly called, acts injuriously to almost every Orchid upon whose roots or leaves it may chance to fall. I have seen hundreds of Orchids injured by drip, but only one that received any benefit from it. This was a small plant of the moisture-loving *Cypripedium Fairrieum*, that had by yellow-thrips and red-spider been robbed of almost every particle of vitality, when by chance it got placed immediately under where the condensed moisture dropped from a rafter. From that moment it began to recover, and is now, although small, a clean healthy plant. The ill effect from ordinary drip is not by any means quick in showing itself, and indeed where it falls on the roots only of such plants as *Vandas*, *Saccolabiums*, and *Angræcums*, they may for a time look more robust and actually better in health than their neighbours who escape the drip; but there comes a time when both roots and leaves are so overcharged with moisture that they cannot perform their proper functions, and the result is cessation of growth, followed sooner or later, according to the nature of the plant, by decay. Not so the sphagnum moss in which such plants are potted—that will grow on in the greatest luxuriance, being naturally a semi-aquatic; it will also show by its extra deep green colour much sooner than the Orchid where drip is reaching the roots. In watering through at this time of the year the grower, particularly if a young hand, should pay great attention to the colour of the moss, as it may lead to the detection of many a drip from the roof. Another very bad result from drip is the starting into premature growth such resting-plants as *Chysis*, *Cattleyas*, and *Dendrobiums*. The grower may have placed such plants in a nice light position for them to winter in, and may be very careful to give them the proper amount of water; but his calculations will be entirely upset should drip find its way down to the roots of either of the plants. The injurious effects of drip upon the young breaks and centres of many Orchids is well known to all growers, as also is the fact of its spoiling the beauty of nearly all flowers by spot and decay. Evidently then the question, how to prevent drip, is to the Orchid grower no minor one. Those who are building new houses will of course go to the expense of having each bar and rafter made with a little groove running its entire length, a trifle below the under side of the glass. This will prevent drip almost entirely, especially if the inside of the glass is cleaned occasionally. To prevent drip in old houses, there is a no more simple or less expensive plan than that of screwing tightly to the under side of each bar and rafter a strip of zinc with its two edges turned slightly upwards. There is not the slightest need of having elaborately made troughs. Many a dripping bar, rafter, or square of glass may be quite cured by cleanliness, as it is often an accumulation of dirt that turns the water from its proper downward course on the roof to suddenly drop into the heart or roots of some plant. The earliest flowering plants of *Dendrobium nobile*, *D. moniliforme*, and the two hybrids, *D. Dominionum* and *D. Ainsworthii*, will now require to be placed in a light position in the East Indian-house; still water such plants sparingly, or they might too soon turn their attention to growing. The moment the *Pleiones* go out of flower let them be at once attended to as regards potting or top-dressing. They should never be kept in the same compost for more than two seasons, as a sour, improperly drained compost is fatal to all good results in their culture. Top-dress with peat and sphagnum, but in making up new pots or pans add a little leaf-soil. Shallow pans suspended near to the roof-glass of the *Cattleya*-house suits all the varieties of *Pleiones*, now flowering excellently. The cool growing *P. humilis* and *P. Hookeri* will now be resting, and should get a watering often enough to keep them plump. The sphagnum must no longer be allowed to cover up the bulb, or the flowers might perish in the bud. Still keep the plants of *Cattleya marginata* and *Lælia Dayana* under growing conditions, as their growth is not yet completed. *J. C. Spyers, Burford Lodge, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Nov. 22	Sale of Plants and Bulbs, at Stevens' Rooms Sale of Dutch Bulbs, at the Auction Mart, by Protheroe & Morris Chrysanthemum Shows, at Northampton, Liverpool, and Oxford
TUESDAY, Nov. 23	Sale of Lilies, at Stevens' Rooms Clearance Sale of Nursery Stock, at Clarke's Nursery, at Mottingham, by Protheroe & Morris Lee and Blackheath Horticultural Society's Show (two days)
WEDNESDAY, Nov. 24	Birmingham Chrysanthemum Show Sale of Roses, Plants and Bulbs, at Stevens' Rooms Continuation of Sale at Mottingham Chrysanthemum Show, at Manchester Sale of Imported Orchids at Stevens' Rooms
THURSDAY, Nov. 25	Sale of Bulbs, Roses and Fruit Trees, at the City Auction Rooms, by Protheroe & Morris Sale of Plants and Bulbs, at the City Auction Rooms, by Protheroe & Morris
FRIDAY, Nov. 26	Sale of Plants and Bulbs, at Stevens' Rooms
SATURDAY, Nov. 27	Sale of Plants and Bulbs, at Stevens' Rooms

IN HEATING BY HOT WATER success is quite as much dependant on a sufficient quantity of piping proportionate to the size of each structure, large or small, that is to be warmed, and the proper arrangement of the pipes, as it is on the boiler that heats the water. The best boiler that it is possible to choose, set in the best manner, becomes comparatively powerless to effect the object desired when there is an insufficiency of piping, or when the pipes are so arranged that the water will not circulate freely through them. In almost everything connected with gardening there are not wanting those ready to aver that they can get on equally as well, or better, with something differing diametrically in its construction or arrangement from that which is generally admitted to be the best: and so it is with hot-water heating. The subject is seldom broached, but we hear of instances where the circulation is said to be just as good where there are dips in the pipes or other obstructions, as it is where such obstacles do not exist.

When water, confined within a boiler, and pipes attached on the principle now existing for warming horticultural and other buildings, is heated, it becomes lighter and is then made to ascend by the pressure of the heavier colder water until a portion of its caloric is lost, in which state it again gets heavier, and by its own specific gravity will be inclined to descend and return to the bottom of the boiler to take the place of that which, being rarified by the action of the fire, is continuously forced upwards and forwards. When the arrangement of the pipes is such that it is not forced to the highest point away from the boiler before it descends, and consequently after dipping has again to rise, the depression always has a natural tendency to obstruct its course. Enough power in the boiler, or, more correctly speaking, in the fuel employed, will no doubt, as it often does, force the water beyond the point where the obstruction exists, but the resistance thus offered is on a par with anything that opposes the rotatory movement of a machine when going, and that thus requires more power from behind to support the motion. And all unbiassed conclusions, formed on actual working experience, upon the subject, points in one direction—that the flow-pipe from where it leaves the top of the boiler should have more or less of a continuous ascent until the required point is reached for its return, from which the descent should also be continuous.

Another point of importance is that the pipes ought never to be so arranged that the water will have to traverse too great a distance before again entering the boiler, as where this occurs it unavoidably gets too cold to permit of the return pipes giving off nearly the amount of heat they are capable of, and which would take place if the water passing through them was warmer. This usually happens when the structures to be warmed are too far distant from the boiler. To some extent it may be remedied, so far as warming the house or pit so situated, by putting in more pipes than would be needed to supply the

requisite heat if nearer the boiler; but even when this is done it is still always at a sacrifice in fuel, by necessitating the fire being driven harder than it needs to be if sufficiently near the work it has to do. Again, it frequently happens where a number of houses are warmed by one boiler, yet not more than it is capable of heating nor any of them too far away, that collectively they cannot be kept as warm as desirable, although there is enough piping in each. This often arises from an insufficient number of flow-pipes from the boiler, or those that do exist not being large enough; the consequence of which is that the water, as it first leaves the boiler, is forced through a very limited space, after which it is so much subdivided into the different houses to be heated that it flows comparatively slower in all than it should do.

It is well to bear in mind that if, for example, there are eight or ten houses to be warmed, and all the water going to them has to pass through a single flow, it necessarily follows that the whole of the water in the pipes of the lot must travel comparatively so much slower than it does through the flow attached to the boiler. Now if, instead of the flow connections being composed of 4-inch pipes those of 6 inches are used, and from these the water is made to branch off to the different structure required to be warmed, it is evident that its progress will be so much less throttled or impeded at the commencement. In the cases of boilers of any considerable size, with correspondingly numerous houses to heat, instead of the water being confined to a single flow, as it often is, there should be two 6-inch flows. Many apparatuses fail to answer through this deficiency, the heated water not having sufficient room for egress. As a matter of course, these flow connections leading from the boiler are in all cases from the top, the return pipes entering it at the bottom on both sides, as near the front as convenient.

We have gone considerably into detail in this matter, as in practice we have found it very important; for although we sometimes see flow connections composed of small pipes that necessitates the water passing through them at a most rapid rate, and which, if the apparatus is rightly set, with the pipes having a considerable ascent from the boiler, will in some cases act so as to satisfy; yet where such defects have existed, and a difficulty was found in getting enough heat, we have often seen an alteration that gave more room for the flow of water produce a marked effect. Another matter of importance is, that the houses which require to be kept the warmest should be nearest the boiler. Two or three of ordinary size when adjoining each other can generally be warmed from a single flow-pipe, with some difference in their temperature, but there is a limit in this direction that is soon reached unless very little heat is sufficient in those that are furthest from the boiler. It is where a large number of houses have to be heated that the one-boiler system is found so extravagant and wasteful; several of the number of flow-pipes that it becomes necessary to have coming directly from the boiler have to be laid in mains instead of entering the houses directly, and through this arrangement it is a very common occurrence to see hundreds of feet of flow-pipes wholly or partially wasting the heat of the water within them in these mains.

Another thing not to be omitted is to secure egress for the air, which, from its being so much lighter than the water, is disposed to accumulate in the highest points of the flow-pipes, where, if there is no outlet for it, it will collect in such a volume as to block the whole, and completely stop the movement of the water. To get rid of this satisfactorily the small air pipes put in should be taken up to the outside of the house higher than the supply cistern, so that they can be always open, and in this way self-acting. The short pipes with a tap attached, frequently put in, are wrong in principle, as they are useless unless when open, and if, as it often happens, there is any omission to open them, the circulation of the water is more or less impeded. Every set of pipes connected with one or more houses should be provided with a thoroughly

tight double valve, that will stop all circulation of the water. The necessity for these is the more apparent where the pipes in the different erections are of different heights, for it almost always occurs that the water has a determination to rush directly to those that are in the highest level above the boiler, and even where the pipes warming several houses can be so arranged as to be all exactly on a level, still the water will generally show a disposition to go in some directions in preference to others, the consequence of which is that to get some of the structures warm enough others are made too hot—which is not only a continuous waste of heat, but is injurious to whatever crop is grown. This can only be regulated by valves, of which there are three or four hundred different forms, varying in price and efficiency, but it is very poor economy to have any that are inferior. A single throttle valve on the flow-pipe is often all that is used, yet is far from being sufficient.

In the erection of hot-water apparatus it is necessary to keep in view all such details as these, and to carry them out in accordance with the local requirements of the different places to be warmed, or success in doing the work well and economically can never be attained. One thing more—and this a matter frequently lost sight of—is that when putting in the heating apparatus the whole of the pipes should be left easily accessible, and not, as often seen, buried under paths, brickwork and earth, the removal of which to effect any repairs that may be needed, in many instances costs more than the length of pipes thus difficult of access. We would advise every young gardener who aspires to obtain the knowledge necessary to enable him to manage a garden where there are glass erections of even moderate extent, to give enough attention to this subject, so as to enable him to master the principles of heating by hot water. It is quite as essential as the knowledge requisite for him to successfully cultivate the plants or fruits that have to be grown in the houses. The subject is not difficult to understand. There is nothing mysterious, or that needs any great amount of application to learn in it. There are plenty of gardeners who understand all that bears upon it in every way, and where such knowledge exists, and a heating apparatus has to be put in, it rarely happens that the gardener has not enough voice in the matter to ensure its doing the work well and economically.

Between the much that has of late years been said on the subject of heating horticultural buildings, and the number of rival apparatus that have appeared to do the work, many of those interested are bewildered. The competition that took place at Birmingham a few years ago did something to solve part of the question, but it was very far from doing all that might be done, or that it is desirable should be decided in a way that admits of no doubt. The Birmingham competition, like most other first attempts, had many shortcomings, that were so apparent as to make it an easy matter to correct them in future.

The Manchester Botanical and Horticultural Society have announced their intention to hold a great International Exhibition next autumn, and there could be no better place or opportunity for organising a competition that would fairly and clearly show the merits of the rival boilers, valves, furnace-fittings, and all connected with hot-water heating. The Manchester society have, through their exhibitions, done much for horticulture, and if they would take this matter up they would have a still further claim upon the gardening community. No one is more fit to carry it out than Mr. FINDLAY, who would find plenty of willing helpers, disinterested and capable. The subject would require to be carefully thought out, so as to put the competition in such a shape as to make it indisputable and conclusive. There is not much difficulty attending the matter; it is simply a question of cost and efficiency in the widest sense of these terms. If it was taken up in earnest and made, as its importance entitles it to be, a leading feature of the exhibition, it would attract more of the very large number throughout the country who are interested in such matters than anything in the way of horticultural competitions that has taken place for a considerable time.

— THE LATE REV. JOSHUA DIX.—There are many still among us by whom the memory of this genial florist and excellent man, so long chairman of the Floral Committee, is cherished and held in affectionate regard. His widow and his only son have followed him to the grave, and now there remains the

and fidelity to Nature, while all manifest a greater mechanical facility, and a fuller acquaintance with the characteristics of plants, than is at all usual with amateurs. The present possessor of these drawings is anxious to dispose of them, and the Editors will be pleased to give further information if desired.

circles during the approaching festive season. Messrs. C. GODFREY and JOHANN STRAUSS are amongst the contributors to the *Musical Bijou*.

— VEGETABLE PATHOLOGY. — In a note to Sir JAMES PAGET's address on *Elemental Pathology*, the



FIG. 125.—PAROTIA PERSICA. (SEE P. 661.)

son's widow, a lady sorely tried by the pressure of a serious malady, and by scanty means for the support of herself and her children. To her have descended, in due course, a collection of some two hundred small water-colour drawings of British wild flowers and Fungi, drawn and painted by Mrs. DIX. Some of these are executed with much freedom of handling

— MUSIC.—Messrs. METZLER & Co. send us their Christmas Number, the *Musical Bijou*, which contains a selection of dance music, "Singing Quadrilles," now so fashionable (and, we should imagine, so fatiguing), polkas, &c. The number contains complete cornet and violin accompaniments, and as the music is easy it will be probably acceptable to family

learned lecturer takes occasion to allude to the "admirable essay" on this subject by Mr. BERKELEY which appeared in our columns in 1854 and 1857, and expresses his regret that they were not collected and published in a single volume. Unfortunately, in cases like this, the many do not find out the value of such communications till long after their original

publication, and the appreciative few can exert but little influence on publishers.

— **RIPPINGILLE'S STOVE.**—We have been requested to make trial of a small stove—**RIPPINGILLE'S Patent.** For the outlay of a few shillings this stove answers admirably as a warming apparatus, and is so constructed as to hold a kettle, saucepan, or small frying-pan on the top, if required. In a small greenhouse, harness-room, or coach-house, we think it will be found most useful. It is fed with paraffin oil and a wide flat wick, is very clean, light, and easily managed. We cannot say, however, that we have found this stove altogether free from smell.

— **POPULAR NAMES.**—We do not think Professor MEEHAN—called "Professor GRAY MEEHAN," by the way—will be much indebted to the *Daily Telegraph* for attributing to him the startling statement that the Compass Plant, *Silphium laciniatum*, is a "gifted shrub" . . . or "dwarf variety of the Osier"! A visit to Kew, or the Regent's Park or Chelsea Botanic Gardens, in the summer, might be serviceable to the writer of the paragraph in question.

— **MR. CHARLES MARIES**, to whose industry and zeal on behalf of his late employers—Messrs. J. VEITCH & SONS—European gardens are indebted for so many rare and interesting Chinese and Japanese plants, some of which have already been figured and described in our columns, has been appointed head gardener to the Maharajah of Durbungah.

— **POLYSTICHUM ANGULARE LATHAMII.**—We have received from Mr. W. B. LATHAM, curator of the Birmingham Botanic Garden, a very pretty variety of *Polystichum angulare*, which we propose to call *Lathamii*. It is of dwarfish habit, with fronds of a broadly lanceolate outline, rather irregular as to the length of the pinnae, densely crowded, so that the upper pinnules of one pinna overlap the lower ones of the next, the pinnules themselves very much imbricated laterally, distinctly stalked, short, broad, auriculate, and spinulose toothed, the stipes and also the primary and secondary rachides densely scaly. In some respects it approaches the variety *densum*, but in its typical form, that has two or three lobules distinctly separated, while here the pinnules, though broad, are quite entire, except the spiny marginal teeth. We learn from Mr. LATHAM that the plant was exhibited in Birmingham as *P. angulare congestum*, and that seedlings have been sold under that name. It is, however, quite unlike the true *congestum*, which has an enlarged and crowded tip to each pinnule, which suggested the name.

— **EXHIBITION POTS FOR PELARGONIUMS.**—Some little misapprehension and uncertainty having arisen as to the exact meaning of the term "Chiswick standard," as applied to the sizes of the pots in which *Pelargoniums* are to be exhibited at the *Pelargonium Society's* shows, some growers having interpreted the brief note in the Society's schedule to mean that both depth and breadth were to be measured from an "inch below the rim," the subject was brought up at the meeting of the Floral Committee on Tuesday last, at which several members of the committee of the *Pelargonium Society* were also present, and it was decided by common consent that the dimensions given were to be understood as being "inside" measurement, the depth from the base to the pot rim being equal to the diameter at 1 inch below the rim. This indeed is the general understanding amongst metropolitan growers, the term "inside measure" having been omitted in the schedule as being a point considered to be generally understood. The object of measuring the diameter at an inch below the rim was to obtain a more correct average, as in some potteries, if not in all, the extreme edge is made to curve outwards, more or less, and if measured at the extreme edge it was considered that the fair average capacity of the pot must be curtailed. It is most desirable that the question should be definitely settled, in order to avoid the heartburnings arising from disqualification; and though mathematical exactness is not to be attained or expected, yet now a near approach to average capacity may be realised. Growers for exhibitions should make a note of this.

— **EASTBOURNE NATURAL HISTORY SOCIETY.**—From the report by the President, F. C. S. ROPER, F.L.S., "On the Additions to the Fauna and Flora

of the Crickmere District during the Past Year," we learn that some of the members of this young society maintain their activity. Up to the present time 2038 species of plants have been detected within this small district. Of this number 837 are flowering plants; 30, Ferns; 140, mosses; 27, Liverworts; 144, lichens; 99, seaweeds; 149, diatoms; 17, desmids; and 595, fungi. There still remain undiscovered thirty-four species enumerated for this district in *HEMSLEY'S Outlines of the Flora of Sussex*. Of this year's work, the most interesting is the discovery of *Sibthorpia europæa* growing in profusion in several fresh localities.

— **NATIONAL AURICULA AND CARNATION AND PICOTEE SOCIETIES.**—The annual general meeting of the National Auricula and Carnation and Picotee Societies (Southern Section) will be held at the house of Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W., on Nov. 23, at 3 P.M.

— **BOTANICAL EXPLORATION OF THE WEST INDIES.**—A few months ago we announced that Baron EGGERS, of St. Thomas, intended, subject to receiving sufficient support from botanists, undertaking the botanical exploration of the West Indies. It now appears that it is the islands of Hayti, Dominica, and Porto Rico, that are to be specially investigated, as very little is known of their vegetation.

— **CULTIVATION OF MANGOS IN JAMAICA.**—It is reported from Jamaica that some East Indian Mangos had been successfully grown in the island, the first of the kind that had ever ripened in Jamaica, some trees previously introduced from Bombay having never yielded fruit. The local press, it is said, consider this East Indian variety to be superior to the general run of Jamaica Mangos, but not equal to the best of them. The fruit, however, was such that it promised to keep well, and would probably therefore be useful for exportation to America.

— **THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.**—We have received from Mr. GEORGE MAW a further sum of £4 12s. 1d. on behalf of this Institution, the proceeds of the sale of the bulbs of the lovely *Chionodoxa*.

— **MANETTIA BICOLOR.**—This graceful climber is now flowering freely in the T range at Kew. Its long tubular flowers, scarlet at base and deep yellow at summit, are produced very freely from the axils of its rough, dull green, opposite leaves, and by their abundance and beautiful colour amply make amends for their somewhat small size. To Messrs. VEITCH—through their collector, THOMAS LOBB—belong the honour of introducing to this country so desirable a winter-blooming greenhouse plant. It is a native of the Organ Mountains of Brazil. *Manettia cordata*, another handsome climber, to be seen in the same house, has long-tubed scarlet flowers 2 inches long, and pretty heart-shaped glossy leaves with wavy margins. This was first sent to Europe from the woods of Buenos Ayres by TWEEDIE nearly half a century ago.

— **THE BOTANICAL RECORD CLUB.**—The Report for the year 1879 has just been issued. It comprises a record of additional localities and habitats for British plants. The referees are Professor CARDALE BABINGTON, Mr. BAKER, and Mr. HENRY BOSWELL, for Mosses; and Dr. CARRINGTON for Hepaticæ. Mr. ARNOLD LEES is Editor, and Mr. CHARLES BAILEY, of Manchester, secretary and treasurer.

— **IMPORTS OF APPLES.**—The Apple crop in America has (says *The Grocer*) been so exceedingly abundant this season that consumers there have had more than sufficient to supply their own needs. In referring to the total imports, it will be seen that by far the largest quantities of Apples enter this country at the port of Liverpool, which has the most direct shipping trade with the north-western parts of the New World, and it may astonish some to be told that in the single month of October last the aggregate receipts in Liverpool from that quarter alone amounted to about 167,400 barrels. So abundant is the flow of supplies that the cargoes of several steamers consist as largely of Apples as they do of other sorts of provisions, flour, or eatables, while a single vessel will often bring between 3000 and 6000 barrels. The heaviest quantity of Apples in any one ship was 10,673 barrels,

per *Iowa*; next to which came the *Germanic* and the *Bulgarian*, with an average of 7200 barrels each. On the other hand, the consignment sometimes comprised only a few hundred barrels at a time, and the importations into Hull and Bristol have been the smallest of all.

— **THE PROPOSED INTERNATIONAL HORTICULTURAL EXHIBITION AT MANCHESTER.**—At a meeting of the promoters of this exhibition, held in the Town Hall, Manchester, under the presidency of the Mayor, Mr. Alderman Baker, on Tuesday last, Mr. Bruce Findlay said he had received a telegram from Sir Henry Ponsonby, at Balmoral, stating that Her Majesty the Queen would patronise the proposed International Exhibition in the same manner as in 1873. The subscriptions promised up to date were as follows:—Her Majesty the Queen, £25; Lord Derby, £100; Messrs. John Mills & Co. (Limited), 100 guineas in special prices; Lord Egerton, Lord Wilton, Sir Humphrey de Trafford, and Mr. John Rylands, £50 each; the Duke of Devonshire, Earl of Stamford and Warrington, and Mr. Joseph Broome, £25 each; Mr. Hugh Mason, M.P., 20 guineas; Mr. W. Cunliffe Brooks, M.P., £20; the trustees of the late Duke of Bridgewater, £20; and smaller subscriptions amounting to £200, making a total of £800, which was increased to about £1000 before the close of the meeting. On the motion of Mr. T. Rose, seconded by Mr. C. S. Agnew, a resolution was passed requesting the Mayor of Manchester to accept the chairmanship of the general committee, and the Mayor signified his acquiescence in the resolution. An executive committee, to act in conjunction with the Council of the Botanical and Horticultural Society in making the arrangements for the International Exhibition, was appointed; and a resolution was passed that an appeal be made to the residents of Manchester and the surrounding districts for subscriptions to carry out the exhibition; and that any balance of subscriptions beyond what is needed for the exhibition be applied towards rebuilding the glasshouses at Old Trafford, and for the general purposes of the Society.

— **THE LINDLEY LIBRARY.**—The following books are missing from this library, and of which no entry appears in the loan-book:—*Brandis' Forest Flora*, Darwin's *Origin of Species*, 6th ed.; *De Candolle's Mémoires et Souvenirs*, 1862; Gray and Doehard's *Travels in West Africa*, Hooker's *Flora of British India*, pt. 4; Humboldt, *De Distributione Geographica Plantarum*, 1817; Lindsay's *Popular History of British Lichens*, Lowe's *Manual of the Flora of Madeira*, Neill's *Fruit and Flower Garden*, Matthew on *Naval Timber*, *Annales des Sciences Naturelles*, 6me sér., tom. iii., 1876. Whoever may have got any one or more of the above works in his possession, he is requested to return such at once, to the Librarian of the Lindley Library, Royal Horticultural Society, South Kensington.

— **THE PALM-HOUSE AT KEW.**—At present there are several plants in bloom in the Palm-house at Kew which deserve more than a passing notice. One of the most striking is *Gomphia Theophrasta*, a member of a large and handsome genus of which but few species have as yet been introduced to cultivation. Speaking of them some years ago in the *Botanical Magazine*, Sir J. HOOKER says that "no plants can be more suited for stove decoration, whether for the persistence of their bright shining evergreen foliage or the golden colour of their inflorescence." The species under notice was introduced from South America by LINDEN; it has slightly coriaceous leaves 1 foot long by about 3 inches broad, on short, thick petioles. The copiously-branched panicles are about 1 foot long, and bear a large number of golden-yellow flowers about a third of an inch in diameter. *Toxicophlæa spectabilis*, a Cape of Good Hope plant, with opposite oval leaves and axillary clusters of white Jasmine-like flowers, is a pretty and easily-grown greenhouse shrub. In 1872 it was exhibited by Mr. B. S. WILLIAMS under the name of *T. Thunbergii*, and under that name received a First-class Certificate. Its bark is poisonous, and amongst the *Hottentots* is used as an ordeal. A figure is given in the *Gardeners' Chronicle* for 1872, p. 363. *Rhodostoma gardenioides* has smooth glossy leaves and terminal cymes of pure white, very fragrant, *Bouvardia*-like blossoms: it is probably the only species of the genus in cultivation. *Aphelandra cristata*, the earliest

known species, in gardens at any rate, of a very beautiful genus, is conspicuous with its long spikes of bright scarlet flowers: it is a native of the West Indies, and, although surpassed in beauty of foliage and neatness of habit by some of the more recent introductions, is still worth a place in any stove. *A. Porteana* has fine bronzy leaves of more substance than the green ones of *A. cristata*. *Dahlia imperialis*, a very remarkable late autumn flowering species from Mexico, makes a magnificent object when carefully grown. It attains a height of 12 or 14 feet, and its large gracefully-drooping flower heads, 6 or 7 inches across, are of a pale lilac colour streaked with deep red at base. Under ordinary conditions the long bare stem detracts much from the beauty of the plant, but that defect can be successfully got rid of as shown in the *Gardeners' Chronicle* for 1870, p. 569, where there is a figure of a specimen grown by Mr. SALTER from a young shoot grafted into a tuber of one of the lilliputian Dahlias, the long bare stem being altogether absent, and instead of a tall plant, the upper part only of which is clothed with foliage, there is a dwarfer one perfectly clothed with branches and foliage to its very base.

—A NEW COVERING FOR PATHS AND ROADS.

—No one will be prepared to state that we have attained perfection in this matter. The common gravel is the covering generally used; and where gravel cannot be obtained, asphalt has to be employed, while for general paving purposes many subjects are called into requisition. The new material is "porphyritic" gravel. It is not new in regard to recent employment, but in relation to being only partially known. It is described in the *Metropolitan* as consisting of small fragments of the rock obtained from Jersey, where, of course, it is extensively used on the footways. It is of various tints, from bright red to faint pink, but the most attractive is the yellow. The fragments have irregular angular fractures, and when spread on the ground and rolled, bind together in a most compact manner, a feature which ordinary gravel does not possess. The finer pulverised particles which fill up the interstices cannot get washed out, as the moment they are wetted they form a natural cement, which renders the footway hard and durable. Its durability is one of the most remarkable features when used as footways, as "it does not require renewing once in a quarter of a century, and does not lose the bright colour it presents when first laid down. It is sufficiently porous to allow rain to drain away, and the surface when once rolled is equal in smoothness to asphalt. Another good feature is that grass and weeds do not grow upon it, as with ordinary gravel; so there is not the constant disturbance of the surface which weeding necessitates." The material is the naturally decomposed *débris* of the rock; so no further atmospheric change can take place, and frosts have no effect, upon it. It is at present much dearer than gravel, but its durability is so much greater as to make it cheaper in the end. In the London district this new gravel is but little known, though several private persons have used it at Highgate, to the extent of several hundred tons. The Corporation of Liverpool have used it for the past ten years: it is said the annual quantity used in that city is over 1500 tons. In Weymouth, the Corporation have laid some 600 tons this year.

—MESSRS. S. DIXON & CO.'S CHRYSANTHEMUMS.—There are thousands who reside in the neighbourhood of London and other large towns who are not only fond of flowers in the ordinary sense, but who prize those they can grow themselves very much more than those they buy, and who have in the Chrysanthemum a plant that will succeed under such adverse conditions as few other blooming plants will. That this is the case is evident from the splendidly bloomed collections that are grown amidst miles of surrounding streets, such as in Messrs. DIXON'S establishment, the Amherst Nurseries, Hackney. The plants occupy a very large span-roofed house, where they stand on a slightly raised bed with their heads close to the glass; they are mostly confined to one or two stems, the blooms severely thinned so as to get large fully-developed flowers. Amongst the newer varieties of the Japanese type, or what those who stand by the florist's model would call improved Japanese, but which are less elegant than the originals, Lemoine's Harlequin is a promising flower, centre straw-colour, back petals pink; and *Lutea striata*, orange-yellow, has the edges of the petals striped

lightly with red. Others of the meritorious Japanese sorts are Soliel Levant, canary-yellow, quilled, fringed petals; Hiver Fleur, flesh-white; Mons. Crousse, a fine medium-sized flower, almost the colour of Bob; Nuit d'Automne, crimson-amaranth. New large-flowered varieties seem few in number this year, but one, Mr. Bunn, a sport from Beverley, is a magnificent flower, full sized, beautifully incurved, and much deeper in colour than Golden Beverley; its shade of yellow is near that of Jardin des Plantes. Of the older kinds that are particularly fine may be named Prince of Wales, purple-violet; Barbara, bright yellow; Prince Alfred, crimson; Alfred Salter, rosy-lilac; Mrs. Brunlees, indian-red; Venus, peach-lilac; Golden John Salter, deep yellow; White Venus, pure white; Queen of England, white; Glück, deep yellow; Empress of India, white; Mr. Howe, amber; Golden Empress of India, yellow; Princess of Wales, white; Emily Dale, straw-colour; White Beverley; Christine, peach; Golden Dr. Brock, Golden John Salter, Refulgence, maroon; Mrs. Dixon, golden-yellow; Mr. Cobay, ruby-red; and last, but not the least meritorious, Mrs. Rundle.

—NEW PUBLICATIONS RECEIVED.—*Manures, their Respective Merits, from an Economical Point of View*. By A. W. Crews. (Field Office.)—*Familiar Garden Flowers*. Figured by F. Edward Hulme, and described by Shirley Hibberd. (Cassell & Co.)—*Ferns and Ferneries*. By the author of "Anatomy of an Earthworm, &c." (Marshall, Japp & Co.)—*The Plum: its History, Cultivation, &c.* By D. T. Fish. (Bazaar Office.)—*Engler's Botanische Jahrbücher zur Systematik, &c.* Vol. i., part 3.—*Die Krankheiten der Pflanzen*. Von Dr. B. Frank. (The Diseases of Plants.)—*Die Pflanzen-Mischlinge*. Von Wilhelm Olbers Focke. (Hybridisation in Plants.)—*Untersuchungen aus dem forstbotanischen Institut zu München*. Von Dr. Robert Hartig.—*Report of the Salmon Disease Commission.—A Smaller Manual of Modern Geography*. By John Richardson, M.A. (Murray.)—*Siberia in Europe*. By Henry Seebohm. (Murray.)—*The Gardens of the Sun*. By F. W. Burbidge. (Murray.)

—THE WEATHER.—General remarks on the weather during the week ending November 15, issued by the Meteorological Office, London:—The weather has been very dull in all parts of the kingdom; heavy rain fell in nearly all places, and at some of the northern stations snow showers. A thunderstorm was experienced at Hastings on the 15th. The temperature has been much higher than of late, and above the mean in all districts. The lowest of the minimum readings occurred on the 9th over England, and on the 15th over Ireland and Scotland, and varied from 19° at Glenalmond, to 22° at Cirencester and 25° at Brookborough. The thermometer was generally highest on the 13th, when it rose to between 60° and 63° over central and north-east England. The rainfall was more than the mean in all districts, the excess being very large over Ireland, "England, N.W.," and "Scotland, W." At Stonyhurst the total fall was 4.54 inch. Bright sunshine was very scarce in all districts, the percentage of total possible duration being greatest (26) in "Scotland, E.," and least (4) in "Ireland, N." The wind at the commencement of the period was south-westerly at all except our southern stations, and blew a fresh or strong gale in all the more northern districts. From the 10th until the 14th westerly or south-westerly winds prevailed, and, though moderate generally, blew a gale on the 13th and 14th at all except the Scotch stations. On the following day a fresh northerly breeze had appeared in the west, and a strong westerly breeze on our southern coasts, but elsewhere the wind was light and variable.

—GARDENING APPOINTMENTS.—Mr. JAMES FLETCHER, for three years Foreman to Mr. SHINGLES at Tortworth Court, has succeeded the late Mr. JOHN POWELL as outdoor Fruit Foreman at the Royal Gardens, Windsor.—Mr. D. ROBERTS, Gardener to the late Mrs. WRIGLEY, Aigburth Hall, near Liverpool, has been appointed Gardener to H. PACE, Esq., Prestwold Hall, Loughborough.—Mr. J. M. JOHNSTON, late Foreman to Mr. MOREWOOD, at Canwell, Tamworth, has been appointed Gardener, Steward and Forester to Lord DE CLIFFORD, Hints Hall, Tamworth.—Mr. W. O'MAHONY, formerly of Fota Island, Cork, and Kew Gardens, has been appointed Gardener to GEORGE BISHOP, Esq., Château de Barla, Nice.

Home Correspondence.

Non-Root-pruned Fruit Trees.—Having no photographs of my Apple or Pear trees, and being unwilling to make fancy sketches of what they ought to be to suit the opinions of the writer, I as soon as I had read the concluding portion of Mr. Fish's paper upon root-pruning, took a saw and cut off from both Apple and Pear trees of seven or eight kinds each, branches that exhibit far more truthfully than any pencil sketch can, not only what one would like the trees to be, but what they are. These branches are from 3 feet to 5 feet in length, all of not more than three years' growth, and are from end to end studded with stout, robust fruit-spurs. I am persuaded that no system of root-pruning or spurring could show better results. These branches are not taken from old trees, the roots of which have to some extent exhausted their feeding-ground, but from fine robust young trees, some ten years planted, and full of growth and vigour. With this sample of what a drain will be made upon the tree feeders, is it not evident that to prune or cut off the needful sources of supply of nutriment would be suicidal, indeed foolish? I would mention specially, as a remarkable fact, that whilst the previous year was credited with producing such a large amount of sappy, unripe wood, it is just that portion which is most thickly set with fruit-spurs. I submitted these branches for general inspection at South Kensington on Tuesday. After all, in support of my contention against root-pruning, I have the great fact that all our cheap market supplies of fruit are grown without such questionable culture. Market growers, even more niggardly than the "skilful pruner," refuse to admit the surgeon's knife at all. A. D.

The Cabbage Broccoli.—I can fully endorse the statements of Mr. Fish and Mr. Muir, at p. 635, in favour of Mr. Gilbert's Cabbage Broccoli. I think the Cabbage Broccoli is a fine acquisition to our winter and spring vegetables. It is a Cabbage in appearance, but quite distinct in its flavour, which is that of a superior mild Broccoli; and I have no doubt but that it will prove a general favourite amongst gardeners when it is better known, for its properties are good in every way, and I think the committee who awarded a Certificate to it deserves to be commended for so doing, for in it we have the Cabbage and Broccoli combined. Its hardness also is a great boon, especially in our changeable climate. W. Wynn, *The Gardens, Wothorpe Road, Stamford.*

Thuja aurea.—Two of the finest specimens of this tree that I have seen are at Quex Park, the gardens of which are under the able superintendence of Mr. T. Woodford, formerly gardener to H.R.H. the Duke of Edinburgh at Eastwell. They are fully 13 feet high and 12 feet through. Is not this unusually large? D., Deal.

The Whin or Gorse.—Your correspondent, who remarked in your issue of November 6 on the vast crop of acorns this year in Warwickshire and elsewhere, mentions accidentally the Whin or Gorse, and its continuous flowering throughout the year, which has led to the saying, that "when Gorse is out of blossom kissing is out of season;" but I fear, that when closely looked into, this will not hold good. For this character of the plant has reference to two distinct species of Gorse which are never in blossom at the same time. The *Ulex europæus*, which is the ordinary one, always flowers from spring till autumn, when the other, *Ulex nanus*, takes its place, and continues in blossom, unless cut down by the frost, through the winter months; unless, therefore, both are included in the pleasant saying, it is not exactly true. The two species are readily distinguished, the *europæus* being of much higher and stronger growth, and its blossoms more bright than the *nanus*. Besides which its spines are perfectly straight and spearlike, whereas the other, which is confined to commons and wild ground, is much more dwarf, seldom exceeding 3 feet, and its blossoms of a richer and more golden hue; moreover, its spines are slightly recurved instead of being straight, and it spreads close to the ground. It is for this reason that it is not used for fox coverts, the other being preferable from being less trailing, enabling thereby the wily animal and its pursuers to thread their way through it with greater ease. J. B.

Magnum Bonum Potatoes.—As yet I have had no experience of the Champion Potato, but the *Magnum Bonum* deserves all and more than I have yet seen or heard said in its favour, as all around this district it has withstood disease in a most exceptional manner, and the produce when compared with most others is something extraordinary, they having turned out even in poor land over a sack to the rod. Not only has the yield been great, but the quality is first rate, besides which the tubers are

handsome and have very fleet eyes, so that they may be peeled without any waste. It would be a great boon to cottagers if in different parishes some one would bring them under notice, and get seed distributed that the poor may be able to grow them in their gardens next year and benefit by the change, as what they have in most places are old sorts that have grown quite tired of the ground. *J. S.*

Wintering Garden Roots.—It is probably more than twelve years since that my attention was drawn by Mr. Jones, of the gardens, Mottisfont Abbey, Romsey, to his practice of laying in Beetroot, Carrots, Parsnips, and similar roots, beneath the overhanging branches of a grove of Filbert trees. The soil was always fairly dry, and the overhanging growth afforded considerable protection from frost, and in severe weather some litter or Fern proved ample for the purpose. I have stored Beetroot kept to produce seed beneath the branches of a large tree in the same way. Unquestionably the roots so treated are more pleasant to eat than when stored in sand or in any other way. *A. D.*

Plum Trees Dropping their Crop.—In your number for August 31, 1878, I gave a short note regarding a large standard Plum tree in my garden near Isleworth, which every year blossomed luxuriantly, set a large crop, and as regularly failed to bring it to maturity. As mentioned there, the treatment adopted was—firstly, cutting down a large Abele standing close by, of which the roots carried off much food and water that should have gone to the Plum, and afterwards having the soil cleared away round the Plum tree on all sides where it was accessible to the depth of about 3 feet, and as near to the stem of the Plum as it appeared safe to venture (from memory I should say between 2 and 3 feet). The trench, which was wide as well as deep, was filled in with all the rough decayed vegetable mould, or vegetable matter that would decay, branches charred in heaps of wood ashes, &c., mixed with good garden loam; the tree had some boughs shortened back, and now I can state the result has been satisfactory. In 1878 and 1879 the tree as before blossomed freely, in the latter of the two years enormously, and there was some slight improvement as to crop, but this season it has done nearly as well as could be wished. The flowering was good but not over plentiful, and consequently the setting was more healthy than before. A very fair allowance of fruit swelled properly, and there was a good sprinkling over the whole tree of fine well formed fruit. I do not know whether this may be of much interest, but as one of your correspondents mentioned a wish to be informed of the results of the experiment, I venture to offer this short note. *O., Dunster Lodge, near Isleworth, Nov. 15.*

Rats in Kitchen Gardens.—Your correspondent a fortnight ago did good service in publishing in your paper how he settled the rats destroying the root crops in his kitchen garden. The garden here is a quarter of a mile distant from the lake, and yet for three successive autumns the water rats have paid the Parsley beds a visit, and singularly enough, have kept to them. Traps and baits of all kinds were unavailing, until one of the men, a noted mole-catcher, was successful in ridding us of the "varmint." I do not remember to have seen it ever noticed that the water rat preferred Parsley roots, nor this mode of settling them. *J. Rust, Eridge Castle.*

Forest Tree Fruits.—I see accounts of the large crops of acorns and fruits of other forest trees in the middle and south of England. It is quite the reverse in Yorkshire. I have never known so complete an absence of fruit of every kind of tree and shrub. I have not seen a single acorn or Beech-mast, or Ash-key, or Sycamore seed, or Chestnut or Horse Chestnut: there is not a berry to be seen anywhere on any kind of Thorn or Holly; Lilacs, Laburnums, all kinds of shrubs are equally bare of fruit. I have only seen a very few seeds upon some large Box trees. It is just the same with coniferous trees and shrubs—there are no cones or seeds on any of them, except the Yew, which has a fair crop of berries in some places, though I believe that there are none here. How is this to be accounted for? I should have said it was from the cold and wet of last summer, but last summer was as cold in the South of England as in Yorkshire, and certainly much wetter. Can you explain it? *C. W. Strickland, Hildenley, Manton.*

Tomato Disease Under Glass.—Yes; and in a virulent form, too, is the answer I am able to give "Enquirer" (p. 636). Last spring we grew a fine batch of the two varieties, Orangehead and Stamfordian, in pots under glass, which were attacked and cured of the disease in a very short space of time. The house in which the plants were grown up to the time of their showing the first symptoms of disease stands in a very low damp situation; however, all went well till the fruit were about half grown, then the disease

made its appearance on leaves and fruit simultaneously. At this stage the plants were moved into a much drier house, and all diseased leaves and fruit cut off; after this I am pleased to say that not only did the then remaining fruit ripen off, but the plants continued to grow and fruit all the summer without any further trace of disease. *J. Horsfield, Heytesbury.*

—Although during the past summer the Tomato has been only but moderately affected by the *Peronospora*, yet it has exhibited itself considerably in some localities. In past years I have had plants under glass badly affected, but this year mine in pots growing in a house where the door opens to the west, and is always open in mild weather, were not in the least diseased. Mr. W. Cole, whose place at Feltham is about a mile from here, filled a low span open house with plants in pots to fruit late in the season, and he found a few weeks since all the plants so badly affected that he was compelled to throw them away. The plants were raised from seed nine years old, which germinated well. Pretty conclusive evidence of the keeping qualities of Tomato seed. *A. D.*

Fruiting of Ampelopsis Veitchii (fig. 126).—The fruiting of this plant I suppose is an extremely rare



FIG. 126.—AMPELOPSIS VEITCHII, IN FRUIT.

occurrence, and I have been able to find no mention of it. The specimens I send herewith grew in one of the courts of Clare College on a plant of wondrous beauty, 30 feet high at least, and of proportionate breadth. Nothing could surpass the brilliancy of its autumn colouring, and for neatness there is nothing can compare with it as it grows here. The fruit is produced on short branchlets, with or without leaves apparently, frequently with tendrils and disk attachments. When there are leaves they are always of the spreading kind, not pressed to the wall, as those of the young branches. *R. I. Lynch, Botanic Garden, Cambridge.*

Late Swallow.—With reference to the note in your last week's issue, of a swallow being observed at Holm Hill, near Carlisle, on October 30, it may be interesting to record the fact of a swallow being observed at Dunrobin Castle on November 12. Happening to be on the Castle terrace on the afternoon of the 12th, I observed the bird circling among the turrets and along the south front of the Castle in the manner of flight peculiar to swallows. As it is altogether unusual to see a swallow in this neighbourhood after the end of September or beginning of October I watched him for some time, and had the satisfaction of seeing him take several flights in the space between the terrace and the flower gardens below, where I had a good view of him, and saw that it was beyond doubt

a specimen of the common house swallow. He came pretty close to where I was standing several times in his flight, and at last a small bird, like a linnet, gave chase to him, when he took to higher space among the turrets, and was ultimately lost to view on the other side of the building. I looked up the tables in some of the Scottish Meteorological Society's reports concerning the arrival and departure of the swallow and other birds, and I find that the usual time of departure for the swallow from Scotland is from the middle of September to the first week of October. The latest date I found in the reports in my possession of the swallow's departure from the British Isles was October 30, from Jersey. From October 19 to the end of the month the weather was very cold here, with snow and frost. The first half of November has been mild, with a good deal of rain. November 12 was unusually mild and spring-like. *D. Melville, Dunrobin Castle Gardens.*

—Your correspondent of last week, at p. 634, gives an account of a friend of his having seen a laggard swallow on October 30; just exactly a week after—namely, on November 6—I was standing talking with a neighbour of mine, and during our chat I observed a bird with a very swift flight passing right and left of us. I said to my friend, "Do you see that bird passing and repassing?" He said, "Yes, it is a swallow—look!" said he, "there are two of them;" and true it was, there were two swallows, and they were by no means laggards, for they were darting in all directions as strong and swift as though it had been a midsummer day—a scene which I was perfectly amazed at, having had so recently 14° of frost. I remarked that they must be two renegades who had been disobedient to their instinct biddings of migration. We stood some considerable time gazing at them, and saw they made frequent visits to a hay-shed we stood by, and there, no doubt, they will finally retreat, to pay the penalty of their lives, either from want of instinct or in contempt of it. *R. Westcott, The Gardens, Raby Castle, Darlington.*

—Several of these summer visitors were skimming about high up overhead here to-day (16th inst.). Is not this unusually late for such birds? *J. C. S., Dorking.*

Autumn Tints: Elms.—Until I came into this part of Surrey I had not the slightest idea that these trees carried their foliage almost perfectly green up till quite the end of October, nor had I ever seen the common Elm in all its autumn glory, when every leaf turns to a golden-yellow, and is retained by the tree for at least a fortnight. No other tree, with the exception of the Beech, is so conspicuous in the landscape. I fancy the chalky soil must make a great difference in regard to the Elm. *J. C. A.*

The Celery Fly.—Last year every row of Celery (six) in my garden was so badly attacked by the fly as to become useless by decay after the first frost. No matter what the sort, or in what position in the garden, all were attacked alike. This year we have not been able to detect a single affected leaf, and our whole crop is as absolutely free from attacks of every kind as it was last year injured by the fly, the slug, and even epiphytes. Why this difference I am unable to determine, as the treatment of the crop was the same. This year, however, our Celery is much given to piping, in which case the best grown is reserved as the usual salad esculent, the thick-stemmed and piped stalks being stewed, in which state it is a very favourite vegetable. *J. B., Bradford Abbas.*

—I infer from Mr. Earley's remarks respecting the Celery fly that he is incredulous as to the truth of my statement with regard to the comparative absence of it in this and the surrounding neighbourhood during the past season, but if he will refer to your issue for Oct. 23, p. 537, he will observe that I am not singular in bearing testimony to the infrequency of the maggot during the past season, nor does my favourable report prove as exceptional as assumed by him, inasmuch that my remarks applied, not only to my own enjoyable immunity from the pest, but that observations of wider limits, although to some extent less favourable, induced me to report the facts, and at the same time to make a suggestion as to the probable reason for such comparative immunity, which suggestion, however, your correspondent seems entirely to ignore, on the ground that his observations differ from mine. It would be satisfactory to know the condition of Celery crops generally in this respect. Will not some of our extensive growers for market give their experience? *E. Morgan, The Butts, Harrow-on-the-Hill.*

THE BOTANICAL EXCHANGE CLUB.—The annual Report for the year 1879 has been published. It contains a large number of critical notes on the plants collected during the year. The Secretary of this useful Club is Mr. Charles Bailey, of College Road, Whalley Range, Manchester.

Notices of Books.

Pflanzen Physiognomie, &c. Von Dr. Hermann Berge. (Williams & Norgate).—The author follows the lines laid down by Humboldt, Grisebach, and others, and applies their teachings to decorative gardening. Under such heads as the Palm forms, the Tree Fern form, the Banana form, and so on, the author gives a slight sketch of the plants useful in gardens or for cultural purposes generally which fall under the headings given. A large number of woodcuts, including some very old friends, is given.

— *Deutsche Dendrologie*.—Under this title Herr Lauche publishes a descriptive list of the trees and shrubs cultivated in Germany, with cultural memoranda and numerous woodcuts. (Williams & Norgate.)

Reports of Societies.

Royal Horticultural: Nov. 16.—Colonel Trevor Clarke in the chair. At the afternoon meeting the Rev. George Henslow called attention to various objects exhibited, and gave a brief lecture on the Chrysanthemum, its history and improvement, which was the subject of two articles in this journal last week; and Mr. David Wooster called attention to some fruits of the Guava, Psidium Cattleianum, ripened against the back wall of a cool vinery in Sir Charles E. Trevelyan's garden at Wallington, Northumberland.

SCIENTIFIC COMMITTEE.—Sir J. D. Hooker, K.C.S.I., in the chair. At this, the first meeting since the recess, the number of objects brought forward was large.

Chamaerops Fortunei.—The Hon. and Rev. J. T. Boscawen brought fruiting specimens of this plant, which for some years previously had produced male flowers only, but which this year had formed female flowers and fruits only.

Phylloxera.—Dr. Masters stated that he had received from the Foreign Office a letter relating to the memorial that had been addressed by the Society to the Government with a view of procuring some relaxation in the laws relating to the introduction of plants into various foreign countries, into which the importation of plants was now greatly restricted, on account of the fear of introducing the Phylloxera. As the result of numerous communications with H. B. M. Consuls abroad, the Government had finally come to the conclusion that they could not interfere in the matter further with advantage.

Dr. Masters then alluded to the proceedings of the late Brussels International Congress, where this subject had been specially discussed, and stated that, in consequence probably of the representations made by various Governments, there was reason to believe that the regulations, though not rescinded, were less rigorously acted on than formerly. Mr. Schofield, however, stated as his experience that the Custom-house authorities at Isella (Italy) still made rigorous search of passengers' baggage, and absolutely forbade the introduction of any plant whatever.

Fasciation, &c.—Dr. Masters exhibited, on behalf of Mr. Webster, gr. to the Duke of Richmond and Gordon, specimens of fasciation in the Scotch Fir and Ash, presenting no special features different from what are not unfrequently met with. From the same exhibitor came a specimen of Larch with a tuft of contracted branches, similar to those in the Clanbrassil Fir. From Baron Ferd. v. Mueller came a remarkably curious looking specimen of fasciated Casuarina. All these specimens were destined for the Museum at Kew.

Ficus repens in Fruit.—Dr. Masters exhibited fruiting specimens of this Fig from Mr. Garnier, gr. to Mitchell Henry, Esq., of Kylemore Castle, Galway. The fruits (of which we propose to give an illustration) were borne upon shoots with the large leathery leaves such as the plant produces sometimes when it gets away from the wall upon which it is growing, and which were lately figured by us.

Orange Coccus.—Mr. M'Lachlan showed specimens of Oranges from Chio affected with a scale insect, which occurred in such abundance as to destroy the trees. The specimens had been referred to M. Signoret of Paris, who had determined the insect to be *Aspidiotus coccineus* of Risso. The remedies suggested were the application of sulphur, or of a mixture of paraffin oil, one tumblerful to a bucket of

water, well stirred up, and applied with a syringe. Mr. Boscawen suggested the use of an insecticide he had found very efficacious, and consisting of 1 oz. of camphor, one pint of methylated spirits, and 3 lb. of soft soap well incorporated. In the event of such applications being unsuccessful, Mr. M'Lachlan advocated the destruction of all the trees, the abandonment of the culture for a season, and subsequent replanting—extreme measures which had been taken in Madeira in the case of the Vine with great advantage. Mr. M'Lachlan also alluded to the horned gall, figured lately in our columns, and to some Rhododendron leaves curiously eroded at the margins, it was supposed by slugs.

Honey-collecting Ants.—Mr. M'Lachlan showed a specimen of the curious ant lately described by Sir John Lubbock from Australian specimens, under the name of *Camponotus inflatus*. This ant never leaves the nest, but is fed by the other ants till it becomes of very large size, and in time of need its stores are made use of by the other ants!

Galvanised Wire.—Mr. G. F. Wilson brought forward the subject of the injury done to Peach and other trees under glass and out-of-doors by galvanised wire—a subject frequently discussed without satisfactory conclusions being arrived at, it being generally admitted, however, that such injury does sometimes occur, and that it is prevented by painting the wire. It was suggested that the fault might lie in the faulty preparation of the wire.

Proliferous Verbascum.—Mr. Henslow showed specimens and a figure of a curious case of median proliferation in this plant, from Mr. Marshall, of Ely, and which is to form the subject of a detailed communication to the Linnean Society.

Salvias.—Mr. Cannell sent specimens of *Salvia Pitcheri*; a species unnamed, but known as the Pine-apple *Salvia*, from its fragrance; of *S. splendens* Bruntii, and of *S. involucrata*, from which *S. Bethelli* is not distinct.

Pleurorrhallis glassopogon.—Messrs. Veitch sent a specimen under this name, which was referred to the authorities at Kew.

The Winter of 1879-80.—Rev. G. Henslow stated that he sent additional circulars to various gardeners throughout the kingdom, and detailed the plan he proposed to adopt in the preparation of the report. Some discussion ensued, in the course of which it was suggested that certain test plants should, if possible, be selected in each district, with a view to determine their relative hardihood. Dr. Masters alluded to the importance of specifying the country whence the plants originally came.

Starry Puff-Balls.—Mr. W. G. Smith exhibited fine specimens of the rare *Geaster rufescens* (see p. 473), kindly sent for the inspection of the committee by Mr. J. Clarke, gr. to Sir R. J. Buxton, Bart., M.P., Shadwell Court, Thetford.

Coffee Culture in Mysore.—A paper on this subject was contributed by General Puckle, but as time did not allow of its being read, its consideration was deferred till the next meeting.

FLORAL COMMITTEE.—Dr. Denny in the chair. At November meetings we have always expected the Chrysanthemum to be the dominating flower, and as a rule have seldom been disappointed, but this year has proved an exception to the rule, for there were only three small plants and as many blooms as one could count on one's fingers brought forward. Cyclamens were admirably represented by a fine group of well grown and beautifully flowered plants, shown by Mr. H. B. Smith, of Ealing Dean, who was awarded a Cultural Commendation. Primulas were also fairly well represented by a group of strongly-grown plants of Mr. Gilbert's new double-flowered varieties, exhibited by their raiser; some very fine cut blooms of the same varieties, shown by Messrs. Osborn & Son; a group of double-flowered varieties of various colours, shown by Messrs. E. G. Henderson & Son; and plants of several varieties raised at Chiswick, brought up by Mr. Barron. Perhaps the best things shown on this occasion were very beautiful stands of cut blooms of *Salvia Pitcheri*, blue; the richly coloured *Salvia splendens* Bruntii, scarlet; and *Salvia Bethelli*, rosy-magenta, a seedling from *involucrata*, exhibited by Mr. Cannell, and all of which were awarded First-class Certificates. Some doubts were expressed as to their nomenclature, a point which has yet to be decided; but there can be no doubt at all as to their great beauty, and corresponding value as winter flowering plants; the variety of *S. splendens* is, we believe, of French origin, and is more vigorous growing and intensely coloured than the type; and the variety of *S. involucrata* was raised by Mr. Bethel while gardener at Sedgewick House, Milnthorpe. Mr. Cannell also staged a remarkable stand of cut blooms of double-flowered Zonal Pelargoniums—a singularly fine display of quality for the time of year. Mr. Balchin, of the Hassock's Gate Nursery, Keymer, Sussex, exhibited a free flowering, bright scarlet seedling *Bouvardia* named Dazzler, which was awarded a First-class Certificate; and Messrs. James Veitch & Sons received a similar award for *Cypripedium*

Fairreanum, a small plant with one flower, of which the upper sepal was strikingly streaked with purple. The same firm also showed *Dendrobium philippinense*, with large lemon-yellow blossoms; and a curious little Orchid named *Pleurothallis glassopogon*. *Griffinia hyacinthina maxima*, a species with white flowers tipped with violet, was shown by Messrs. James Carter & Co.; and Mr. Parker brought from Tooting some cut blooms of the Hawthorn-scented *Aponogeton distachyon*.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. Mr. J. Atkins, gr. to Colonel Loyd Lindsay, M.P., exhibited a collection of Grapes, consisting of three bunches each of Black Hamburg and Black Alicante, and half-a-dozen bunches of Muscat of Alexandria, all of very superior quality; and a fine collection of Apples, which gained a Cultural Commendation. Another very fine collection of Apples and Pears also came from Mr. Ross, gr. to C. Eyre, Esq., Welford Park, Newbury, and these also were Culturally Commended. Mr. Wilson, gr. to Earl Fortescue, Castle Hill, North Devon, again sent a grand lot of Smooth Cayennes, eight in number, and of the aggregate weight of 59 lb. 8 oz. From Chiswick Mr. Barron brought up a very fine sample of Gros Colmar and Black Alicante Grapes, and Mr. Brown, gr. Abercainery, Perthshire, again submitted the Grape which bears the name of that place. Mr. Ross also exhibited three fine Smooth Cayenne Pines. Messrs. Saltmarsh & Son, Chelmsford, exhibited a seedling Apple named The Queen, a large, handsomely coloured fruit, tender in the flesh, and considered a good cooking variety. It was awarded a First-class Certificate. Another seedling variety named the Schoolmaster was shown by Mr. Laxton, of Bedford, and this also was voted a First-class Certificate, being considered an acquisition either for cooking or the dessert, and having the appearance of being a good bearer. Messrs. James Carter & Co. exhibited a large and interesting assortment of vegetables, which included good examples amongst others of the Chou de Russie Kale, illustrated in these columns at p. 45, vol. xii.

Messrs. Sutton & Sons offered a series of prizes for vegetables, which brought out a strong competition, and an excellent display of garden produce. With collections of a dozen distinct kinds there were over a dozen exhibitors, and the 1st prize was won, in a close competition, by Mr. J. Austen, gr. to Sir Greville Smyth at Ashton Court, Bristol, who had very good examples of Leicester Red Celery, Nutting's Dwarf Red Beet, Stratagem Peas, Orangefield Tomatoes, Veitch's Self-protecting Cauliflowers, Telegraph Cucumbers, Tripoli Onions, Lapstone Kidney Potatoes, Scarlet Intermediate Carrots, Hollow-crown Parsnips, Canadian Wonder Beans, and Brussels Sprouts. Mr. Roberts, gr. Gunnersbury Park, was a very close 2d; Mr. J. Muir, gr. Margam Park, South Wales, 3d; Mr. Iggulden, gr. Orsett Hall, Romford, 4th; and Mr. S. Haines, gr. Colehill House, Highworth, 5th. Mr. Austen also won the 1st prize for the best dozen examples of the Improved Reading Onion; and Mr. Howard, of Canterbury, had the best of a considerable number of dishes of the Magnum Bonum Potato. For a dozen tubers of the Reading Abbey Potato Mr. W. Meads, gr. Beckett Park, Shrivenham, came in 1st; and in a similar class for Woodstock Kidney Mr. Iggulden took the highest award. The Messrs. Sutton also themselves exhibited a large collection of Potatoes, including a number of new varieties of recent acquisition.

Messrs. Hooper & Co. also offered prizes for a collection of nine sorts of vegetables, but only two competitors entered the lists. The best came from Mr. R. Phillips, gr. to Captain Jackson, The Deodars, Meopham, who had Market Favourite Onions, Beauty of Kent and Pride of America Potatoes, Intermediate Carrots, Acme Tomatoes, Canadian Wonder Beans, and Musselburgh Leeks. Mr. W. Iggulden was 2d. For a dozen tubers of the Beauty of Kent Potato Mr. C. Ross was 1st.

A meeting of the Fruit Committee was held at Chiswick on the 9th inst., J. Lee, Esq., in the chair, when the collection of Brussels Sprouts growing in the garden was inspected, in all thirty-three lots. A great proportion of these were found to be very much mixed, and also inferior. The following were considered by the committee the most approved stocks, viz.:—Aigburth, from Messrs. Kerr; and Otterspool, from Mr. Hinds, which are identical; Dalkeith Improved, from Messrs. Downie & Laird; Cragos Favourite, from Messrs. Cocker & Sons; Scrymgeour's Giant, from Messrs. Nutting; and The Chelsea, from Messrs. Veitch. A new Beet from Messrs. Rutley & Silverlock was examined and highly approved. Some Shallots raised from seed, sent to the garden by Mr. E. Pond, of Jersey, were examined. Examples of these when submitted to the committee at the meeting on October 14, 1879, were supposed to be Potato Onions, but as now grown in the garden have been found to be true Shallots, the silver-skinned variety being very distinct and pretty. Several new

Potatoes grown in the garden were examined, the most promising of which were Carter's New and Lye's Wiltshire Snowflake.

Edinburgh Botanical: Nov. 11.—The first meeting for this session was held in 5, St. Andrew Square, Mr. W. Gorrie, President, in the chair. The following communications were read:—

I. Opening Address, by Mr. W. Gorrie, President—"On Acquiring, by Selection, Hardier Varieties or Forms of Half-hardy Exotics."

The usual statement as to the numerical position of the Society was also made, in which it appeared that there were now 150 resident Fellows. The obituary list included the names of Professors Schimper of Strasbourg, Andersson of Stockholm, and Hanstein of Bonn. The names of the late Robert Fortune, the botanical collector, and Frederick M. Webb, late of the University Herbarium, were noted in this list from their long connection with the Edinburgh Royal Botanical Garden.

Dr. Cleghorn confirmed, from his Himalayan experience, the observation of the President, that fine Sikkim and Nepal plants are more injured by the alternating frosty and mild weather prevailing here from February to May than from the rigours of our winter climate. They had there cold enough winters, but immediately afterwards strong continuous sunshine. On these mountains they had none of the changeable spring weather so characteristic of Britain.

II. Description of an Oak tree Struck by Lightning near Musselburgh, By Mr. Robert Morham, City Chambers. Communicated by Sir Robert Christison, Bart. The President instanced a tree which was split in twain in a way very similar to that just described, and where the remaining wood in the standing tree appeared unaffected by lightning; but on its being sawn up for palping purposes it proved worthless. Mr. M. Dunn remarked that some trees in certain localities appeared liable to be recurrently struck by the electric fluid, other trees close beside them never being affected during repeated storms.

III. On Plant Preserving, By R. C. Prior, M.D.

IV. Mr. John Sadler described a curious form of Kohl Rabi which he had received about six weeks ago from Mr. George Pollock, seed merchant, Stirling, he having picked it up in a garden in the neighbourhood of that town. At first the plant was placed in a shallow basin of water, the water just covering the roots; in this position it continued to increase in size, so that many of the lateral swollen branches, of which there are eighteen, are now (Nov. 11) larger than turkey's eggs. It is now planted in a flower-pot amongst good soil, in the hope that it may flower and produce perfect seed next spring, although the progeny may not continue the peculiarity of the parent. If this could be accomplished it would certainly be a great addition to the kitchen garden, representing exactly what the Brussels Sprout is to the common Cabbage. The original upright growing shoot had withered probably before the two upright growing shoots had been developed.

V. Miscellaneous Communications. — Mr. Charles Howie, Largo, exhibited a monstrosity in the flowering spike of *Plantago lanceolata*, in which the spike was divided into ten small spikes. Mr. Sadler called attention to a good specimen of *Clethra arborea* lately in flower in one of the conservatories of the Royal Botanic Garden. This fine evergreen is about 17 feet in height, but would have been taller had it not been cut back on several occasions to prevent it going through the glass. The tree was first introduced to Kew in 1784 by Mr. Mason from Madeira. It was figured in the *Botanical Magazine*, t. 1057. Has the culture of this tree in the open air been ever attempted in England? The President said he had tried to do so with negative results.

Mr. Sadler intimated that operations for the erection of the new class-room at the Royal Botanic Garden had been commenced by the contractors, Messrs. Wm. Beattie & Sons. In clearing the ground for the site a number of trees and shrubs had to be cut down, and others where practicable transplanted. Two fine English Yews were removed and placed within the southernmost gate of the new Arboretum, permission to do this having been granted by Her Majesty's Office of Works, as the Arboretum and Botanic Garden are not yet amalgamated. This he believes, however, will shortly take place, as the rules and regulations for the Arboretum are at present under the consideration of the Government authorities.

Scottish Horticultural Association.—The ordinary monthly meeting of this Association was held in 5, St. Andrew Square, Edinburgh, on Tuesday, November 2. There was a good attendance of members, the President, Mr. Dunn, Dalkeith Park Gardens, in the chair. Mr. J. Newton Burns, ro, Lauriston Gardens, Edinburgh, read a paper "On the Vegetation of Past Epochs." He said that the branch of geological science which deals with the vegetation of bygone ages is termed palaeontology, or fossil botany, which is second only in importance to the study of the living plants themselves. Palaeontology claims the attention of all botanists who wish to completely understand the nature and relations of existing plant forms. It is true that while the study of plants may be prosecuted without a knowledge of palaeontology, the study of fossil plants depends in a great measure on our acquaintance with the present. Such knowledge leads to the understanding of their structure, and the study of the conditions of their occurrence in the rocks reveals a history of the times and surroundings which each such relic of the past furnishes to those who can decipher the strange language in which it is written. On the other hand, the study of the living forms is far from complete, unless the

botanist has extended his studies to the connections between the living and the dead, in which many problems regarding the distribution of plant life on the surface of our globe may find explanation. It is plain, therefore, that the relations and interests of these two important branches of our science are closely wrapped up in each other.

As each plant in our day carries in itself its history as to its structure, climate, and distribution, so every fossil plant, if properly understood, will reveal like details of the distant times in which it lived. Palaeontology, therefore, in its study affords not only enlightenment as to the various kinds of plants which at remote and successive ages clothed the surface of our earth, but at the same time enlightens us in many points relating to the distribution of land and water, the state of atmosphere and temperature, and many other mundane conditions. Mr. Burns sketched briefly the more prominent vegetations and their succession in past epochs from the first appearance of plant life on our globe, so far as indicated to us by the fossil remains of the rocks. The chart ordinal section of the rocks represents those which form what in geology is termed the "crust of the earth," which simply means that comparatively thin portion, about 25 miles in thickness, which in different parts of the world is open to the observation of man. The three great primary divisions are the Palaeozoic or ancient life, Mesozoic or middle life, and Cainozoic or recent life. These again are subdivided into a great many other parts, whose fossil remains, as shown on the diagram, again exhibit differences. In the lower parts of the earth's crust we find the first indications of life; it is still an unsettled point whether vegetable or animal life was first found. The microscope reveals myriads of minute protoplasmic particles of life-ended matter in the waters of our ponds and ditches. In the Laurentian period we have the earliest traces of organic remains. The Cambrian period contains vague traces of plant life resembling seaweed. In the rocks of the Old Red Sandstone vegetation, hitherto represented by mere fragments, seems to have received a sudden impulse. Throughout the remains of this age we find the remains of Ferns and allied classes. Plant life attained considerable dimensions in the Carboniferous age, or period of the Coal Measures. At this time the trees and shrubs which clothed the surface of the earth were strangely different from the trees and shrubs of the present day; and, so far as we can learn, no trees like our own were in existence. The most abundant trees of Coal Measure times seem to have belonged to the flowerless or cryptogamic class, and consisted of *Lepidodendron*, *Calamites*, and *Sigillarians*, with abundance of smaller Ferns. Mr. Burns then described some of the most prominent forest trees which grew in the Coal Measure forests, and which contributed largely to the formation of coal. If a piece of coal be sliced very thin and examined with a microscope a plainly vegetable cellular structure is seen, which shows that coal is a mineralised vegetable matter. The *Lepidodendron*, *Calamite*, and *Sigillaria* were then described in detail. There are many other trees, Ferns, and creeping plants whose fossil remains bear silent testimony of their existence during Carboniferous times, and these likewise duly added their fruits, leaves, and substance to the vegetable accumulations which have been so mysteriously changed and preserved in such a convenient form. The aspects of the Carboniferous forests, densely clothed with such trees, can be better imagined than described, and yet it would be difficult to conjure up a picture of a Midlothian landscape when any of the great coal seams was the site of a swampy plain, covered with a rank and lofty vegetation of Cryptogams, and whose universal hue of green was unrelieved by any flowering plants. We have learned incidentally that a marshy, swampy soil prevailed, and it is generally believed that the climate was much more genial than now exists, though there is absence of evidence of a tropical climate. Then there was a greater similarity between the floras and faunas of widely different countries than now exists. Climate is the influence which has worked most change in the vegetation of past epochs.

Mr. Burns then spoke of the other ages, mentioning their special vegetable characteristics. The vegetation of the Chalk Age was a luxuriant one, more highly developed and greater in variety than any previous epoch. Here were to be found species of Oak, Beech, Poplar, Myrtle, Willow, Fig trees, and *Magnolias*, all of which would seem to have suddenly burst into life. In the rocks of the Miocene Age were to be found many traces of vegetable existence. The Ice Age brought about a great change in the flora and fauna of the country. The peats of our own day are made of vegetable deposits, and many of them contain the trunks of trees and shrubs buried in them. In the ancient rocks plant life was of a meagre and lowly order, but as we passed upwards through the rocks, in time new and more complete forms dawned upon us. When we look upon animate nature around us—the forest and field, river and sea, and their living occupants—we must consider them the more highly organised descendants of primitive ancestors, whose root-stock lies away far down in the ancient rocks of the globe.

Mr. Andrew Kerr, Kelso Nursery, sent a paper entitled, "The Arrangement of Flowers in a Bouquet." He described the shapes in which hand and table bouquets were made, and condemned the many ugly forms which were sometimes imitated in bouquet making. The half-circle shape he considered the best for hand bouquets. In regard to colours white and green ought to be the predominant hues, and the flowers required to be arranged in a light and airy manner. No definite rule could be laid down to make bouquets, as the taste of the wearer, as well as other considerations, had to be taken into account.

Mr. McIntyre, The Glen, Innerleithen, exhibited two

new seedling Cucumbers; they were a cross between Telegraph and Long Gun. Mr. John Sadler, Royal Botanic Gardens, exhibited a Kohl Rabi which had been sent to him by Mr. Pollock, Stirling. Mr. Sadler also exhibited two volumes of Warner and Williams' *Orchids*, and Mr. J. Grieve exhibited some abnormal growths which he had found growing upon the roots of *Leeks*.

Putney and District Chrysanthemum Show: Nov. 16.—The third annual exhibition of this Society was held in the Assembly Rooms, High Street, Putney. The room is of moderate size and well adapted for the purpose, but on this occasion it was too small for the numerous exhibits brought forward. The principal feature of the exhibition was the collections of plants exhibited to form a group, the space not to exceed 40 feet super. There were six collections, all of them worthy of prizes. The 1st prize was awarded to Mr. G. Harding, gr. to T. D. Galpin, Esq., Bristol House, Putney. It comprised a few of the best Japanese and a splendid contingent of the incurved varieties. The plants were grown in a natural manner; the foliage healthy and good. The plants were from 3 to 5 feet high, and had from three to six blooms on each; 2d, Mr. H. West, gr. to H. Hoskier, Esq., Putney Park Lane. The following were very fine, amongst others:—Japanese Peter the Great and Elaine, large-flowered Empress of India, Golden Empress of India, and Prince Alfred. The 1st prize for six specimens was gained by Mr. Bentley, gr. to Sir Thos. Gabriel, Edgecombe Hall, Wimbledon; these were fairly good, but some of the others in this class were trained down like dumplings. Mr. Bentley also gained the 1st prize in the single specimen class with a good plant of Eva. Messrs. Mahood & Son, Windsor Nursery, Putney, were 2d with a good plant of a Japanese variety. The 1st prize for three specimens was awarded to Mr. J. Hoskins, gr. to S. Williams, Esq., The Laurels, Putney. Mr. J. Rithers, gr. to C. F. Williams, Esq., Munster House, Fulham, was a good 2d. There is room for improvement in the large-flowered specimens. Mr. Hoskins had the best six Pompons, the best of them being President, white and lilac Cedo Nulli. Mr. J. Bentley was 1st in the class for three with fairly good Cedo Nulli and its lilac and golden varieties. Mr. Hoskins had a 1st prize for a very good specimen of St. Michael's, it had fine large flowers, Messrs. Mahood & Sons being 2d with a very large specimen of Brilliant. There were very good cut blooms exhibited. Mr. E. Berry, gr. to the Countess of Leven and Melville, Roehampton House, Putney, was considerably in advance of the other exhibitors; he was 1st for twenty-four, for twelve, and for six—the best varieties being Golden Queen, Prince Alfred, Lady Slade, Eve, Mrs. Dixon, very fine; Mr. Brunles, good for that variety; and the old Nil Desperandum. Messrs. Mahood & Sons beat Mr. Berry in the Japanese class, both showing good blooms; Zonal Pelargoniums were invited, and Mr. J. Bennett, gr. to F. Rodman, Esq., Parkside, Wimbledon, was 1st with some very useful specimens; Dr. Denny, White Vesuvius and a pretty pink variety named Matilda were the best. A useful feature at these exhibitions are the plants for table decoration: there were four nice collections, Mr. Hoskins' being the best. Chinese Primroses obtained a place: out of eight collections, those from Mr. C. Woodhams, gr. to R. Davis, Esq., Earlsfield, Wandsworth Common, were the best. Mr. Stevens, St. John's Nursery, Putney, had the best Ferns out of four competitors. Grapes, Pears, and Apples were very well shown. The Muscats from Mr. J. Ward, gr. to H. D. Pochin, Esq., Barn Elms, were very well coloured indeed, as were those from Mr. Bentley, who gained the prizes in the order of their names. The 1st prize Black Grapes were Black Hamburgs from Mr. E. Martin, gr. to T. Brandreth, Esq., Devon Lawn, Wimbledon; Mr. Ward was 2d with good Lady Downe's. It was a good idea to give prizes for bouquets composed entirely of Chrysanthemum blooms; the one from Mr. Pragnell, gr. to T. C. Baring, Esq., M.P., The Cedars, Roehampton, was very good. The same exhibitor gained the 1st prize with another bouquet. Groups of plants and collections of vegetables were another excellent feature in a very creditable exhibition.

Stoke Newington Chrysanthemum Show:

Nov. 15.—The annual exhibition of Chrysanthemums at Stoke Newington was a marked improvement on its predecessors of late years, both in quality of plants and size of bloom, scarcely a badly grown plant having found its way into the exhibition. The specimens exhibited in pots were for the most part large and well grown, and numbered 162; these were largely represented by standards of huge proportions, well furnished with foliage and flowers. The 1st prize for four was awarded to Mr. S. Gilbey, gr. to W. Booth, Esq., Upper Clapton, with fine plants of Prince of Wales, Golden George Glenny, Mrs. Rundle and George Glenny. In the class for standard Pompons Mr. F. Wells, gr. to W. A. Smea, Esq., Woodberry Down, was 1st, with good plants of Cendrillon, Fanny, Violet, Unique, &c.; these were well done, and smothered with bloom. In the class for the best collection of ten plants (Pompons allowed) Mr. G. Prickett, gr. to Mrs. Bowerbank, Stoke Newington, was 1st with good plants of White Venus, The Cossack, Golden George Glenny, President, Prince of Wales and others; Mr. J. Howes was 2d in this class with fine plants of Mrs. G. Rundle, Scur Martine, Lilac Cedo Nulli, all compact and good. For four plants in 12 inch pots Mr. J. Balaam, Vine Nursery, Clapton, was 1st, with Lady Harding, Mrs. G. Rundle, Prince of Wales, and Golden George Glenny, well flowered and good foliage; 2d in this class came Mr. D. Donald, gr. to

J. G. Barclay, Esq., Leyton Green, his best plants being Lady Talford and White Venus. In the several classes of cut blooms close judging was necessary, the majority of the blooms being large and of good shape and substance. For the best twenty-four distinct varieties the 1st prize was awarded to Mr. Martin, gr. to — Appleford, Esq., The Cedars, Stoke Newington, who came forward with excellent examples of John Salter, Lady Hardinge, Golden Beverley, Princess Beatrice, Prince Alfred, Golden Empress, Nil Desperandum, Refulgence, Princess of Wales, and Isabel Bott. To this collection a Silver Cup, value £5 5s., was also awarded for the best twenty-four blooms in the exhibition, and which it well merited, the blooms being large and full and most regular in size. Mr. S. Gilbey came 2d in this class, his best blooms being Aurea multiflora, Lady Hardinge, Golden Empress, Barbara, Golden Queen of England, Abbé Pasaglia, Eve, and Emily Dale. The above awards were for nurserymen and gardeners resident only in the boroughs of Finsbury and Hackney, and were most spiritedly competed for. In the class for four Pompons the 1st prize went to Mr. M. Butcher, gr. to R. A. Glover, Esq., The Priory, Hadley, Barnet, with good plants of Fanny, White Cedo Nulli, and St. Michael; of the numerous other collections of cut blooms we can only state that they were all good and well grown. A new incurved variety called Angelina was shown by Mr. Peachy, Stamford Hill, and awarded a First-class Certificate: the bloom is neat and compact, not over large, but well formed, of golden amber and cinnamon-brown shaded; it is a decided acquisition and worthy of notice. Japanese varieties were but sparsely represented: in the class for twelve distinct varieties Mr. W. R. Strong, gr. to Mrs. Reid, Virginia Water, came 1st with excellent blooms of Peter the Great, Fulton, gold-orange, and remarkably fine; Red and Yellow Dragon, M. Deleaux, reddish-brown; Sarnia, very fine; Cry Kang, Elaine, Sultan, and Apollo, chestnut-red, gold shaded and gold tips. Mr. Monk came 2d, with fine blooms of Chang, Harlequin, Le Negre, velvet-crimson, gold tips, a fine flower; Fulgare, James Salter, Roseum pictum, deep rose, silver back, fine; Fair Maid of Guernsey, La Frisure, a variety in the way of James Salter, with smaller flowers and petals narrower.

A highly creditable lot of twenty-four incurved blooms, not for competition, came from Mr. Cochrane, of Finsbury Park, and which attracted much attention, being a neat even lot of blooms. From Mr. Balaam, Vine Nurseries, Clapton, came a selection of ten varieties in pots, large and well flowered, which were judiciously placed almost out of sight; his best were Barbara, with about eighty fine blooms, Prince of Wales 100 blooms, Mrs. Rundle, and other equally good in proportion—probably the best ten plants in the show: some, however, had not the abundant foliage, but which was doubly replaced by fine flowers. A fine specimen of Fair Maid of Guernsey, with sixty large blooms and grown erect, was shown by Mr. R. Dubridge, not for competition; the plant is a young one, and was intended to show how desirable such plants would be for large conservatory decoration. From Mr. Dubridge, jun., came two creditable bouquets, neatly arranged. From Mr. Gilbey, Stamford Hill, came a collection of Marrows, Gourds, Pears, &c. Fine plants of *Lantana borbonica*, and *Cyanophyllum magnificum*, with *Pandanus Veitchii*, made a background on the stage at one end of the hall.

Lambeth Chrysanthemum Show.—The show of the above Society was held this week in the Lecture Hall, Borough Road, and though not of an extensive character included a fair number of good plants in bloom and also cut flowers. Standard plants were represented in neatly trained specimens; the best varieties grown as such were Mrs. Rundle, George Glenny, and Golden George Glenny, the 1st prize being taken by Mr. Wilsher, the 2d by Mr. Tracey. For pyramid Pompons Mr. Fill came 1st, with Calliope, Mrs. Astie, and White Cedo Nulli as his best plants. For standard Pompons Mr. Summers was 1st with good plants of Calliope, White Cedo Nulli, Lilac Cedo Nulli, and Marie. For dwarf Pompons Mr. Ball was awarded 1st, with bronze, gold, lilac, and white forms of Cedo Nulli as his best. In the class for twelve incurved blooms, dissimilar, Mr. Richards was 1st, with fine blooms of equal size of Lady Slade, Prince of Wales, Hero of Stoke Newington, White Globe, Mrs. Cobday, Mrs. Howe, White and Golden Beverley. For Anemone-flowered kinds Mr. Richards was 1st, with King of Anemones, Margaret d'Anjou, Madame Goodereaux, Louis Bonamy, Fleur de Marie, and Gluck. Mr. Richards was also 1st for Anemone Pompons—Queen of Anemones, Antonius, Dick Turpin, Jean Hatchell being his best kinds.

Borough of Hackney Chrysanthemum Society: Nov. 17 and 18.—The thirty-fifth annual exhibition of this Society was held in the Royal Aquarium, Westminster. The 1st prize for a group of plants was awarded to Messrs. Mahood & Son, Windsor Nursery, Putney; and the 2d to Mr. G. Stevens, St. John's Nursery, Putney. It was a step in the right direction when the judges passed over the specimens trained and twisted to bring the plants into the dumping shape, and awarded the prizes to plants grown as Dame Nature intended they should be grown. The 1st and 2d prize collections were very fairly matched, but the best quality of the individual blooms were in Messrs. Mahood's collection. Mr. W. Hall, gr. to W. Stevens, Esq., Springfield, Tulse Hill, gained the 1st prize for six trained specimens, clean and well-grown, comprising the old standard varieties, such as Mr. Brownlee, Lady Hardinge, Mrs. Rundle, Mrs. Dixon, &c.; Mr. J. G. Drain, Southgate Nursery, Kingsland, was a good 2d. Standards of the large-flowered section were very good, although

the 1st prize form showed too much of the tying material. The Mrs. Dixon was a superb plant. Mr. Prickett, gr. to Mrs. Bowerbank, Stoke Newington, was 2d with much better trained specimens. Pompons were very well grown; the best six were from Mr. Butcher, gr. to R. Glover, Esq., The Priory, Hadley—Fanny, not different from Bob; La Vogue, Mdle, Marthe, Cedo Nulli, St. Michael, and Calliope. Sœur Maline, in the 3d prize collection, was superior to any other white Pompon yet seen, but it must be classed with the hybrid Pompons. A collection of six large specimens, much over-trained, of the large flowering section was exhibited by Mr. Richard Biggs, The Nurseries, Lewisham; in other respects they were fine healthy plants, and gained an extra prize. The above were exhibited in the open classes, the following in the "Boro" classes:—Ten plants in not exceeding 12-inch pots: Mr. G. Prickett showed five Pompons and five large-flowered specimens, and gained the 1st prize. He had a good standard Mr. Cobday, and a dwarf-trained specimen of Prince of Wales. In this section Mr. Drain gained a 1st prize for four dwarf-trained specimens; and Mr. Holmes, gr. to J. Hick, Esq., Manor Lodge, Clapton, was also placed 1st for very good standard Pompons, Mdle, Marthe being very fine. The cut blooms were certainly not quite so good as we have seen them in previous years. E. Saunderson, Esq., Felix Villa, St. Mary's Road, Willesden, gained the Silver Cup for twenty-four incurved blooms, the varieties exhibited being practically the same as we have been accustomed to for many years—Mr. Bunn, Incognita, Emily Dale, and Refulgence being the newest. Mr. C. Gibson, Morden Park, Mitcham, had much better blooms than Mr. Saunderson, but he is not such an adept at dressing; his Golden Empress, Mr. G. Glenny, Princess of Wales, Empress of India, White and Golden Beverley, were really good examples of skilful culture. The 1st prize for twelve blooms was awarded to Mr. E. Berry, Roehampton House, Roehampton. There were seven exhibitors of twenty-four blooms and seven of twelve. Mr. E. Berry had the best six blooms amongst seven exhibitors. In the class for six blooms for those who have not taken a prize previously Messrs. Mahood & Sons were 1st, with good blooms. Large-flowered Anemones were very well shown: Mr. G. Gibson gained the 1st prize, Mr. Berry being a good 2d. Anemone Pompons were not quite so good as usual. The best were from Mr. Butcher, gr. to R. Glover, Esq., The Priory, Hadley; Mr. Sewell, gr. to J. C. Lanyon, Esq., Birdhurst, South Croydon, had a nearly equally good twelve bunches. Mr. C. Gibson gained the 1st prize for twelve Japanese blooms; they were very fine indeed, clean and well grown. The sorts were Fair Maid of Guernsey, Grandiflora, Baron de Frailley, Ethel, Bouquet Fait, Elaine, Meg Merilees, Criterion, L'Incomparable, Fulgore, Red Dragon, and Nagasaka Violet, the last very pretty. Mr. Harding, gr. to T. D. Galpin, Esq., Putney Heath, was a good 2d; Messrs. Mahood showing the 3d best.

Grapes were very good, although but few bunches were shown. Mr. J. Ridout, gr. to T. B. Haywood, Esq., Woodhatch Lodge, Reigate, gained the 1st prize with two bunches of Black Alicante; Mr. J. Wallis, gr. to Rev. W. Sneyd, Keele Hall, Staffordshire, being 2d with very good Barbarossa. Mr. C. J. Goldsmith, Sandhills, Bletchingley, Surrey, obtained a 1st prize for a large, well set, and well coloured bunch of Muscat of Alexandria, Mr. Wallis being 2d with Golden Queen, very good. Mr. C. Ross, gr. to C. Eyre, Esq., Welford Park, Newbury, had by far the best dessert and cooking Apples. There were over a hundred dishes exhibited. Pears were very fine; the six dishes from Mr. W. Fowle, gr. to Sir H. Mildmay, Dogmersfield Park, Hants, were really splendid examples of skilful culture; they were Glou Morceau, Duchesse d'Angoulême, Doyenné du Comice, Pitmaston Duchesse, and Beurré Bachelier. Mr. G. Goldsmith, gr. to P. C. Hardwick, Esq., Hollander, Tunbridge, was a good 2d.—Mr. Longdon, gr. to Messrs. Monro & Adam, Brook House, Clapton, obtained a 1st prize for twenty-four blooms of incurved varieties in another section, two more stands being exhibited. Mr. Holmes, Frampton Park Nursery, was 1st for twelve Japanese. Mr. J. Broughton, 86, Winston Road, Stoke Newington, also took a 1st prize in what are called the "Boro" classes, not being open to all exhibitors.

Mr. Richard Dean, Ranelagh Road, Ealing, gained the 1st prize for a very fine collection of twelve dishes of Potatoes; Lord Mayor, Snowflake, Schoolmaster, Vicar of Laleham, Mr. Bresee, and Covent Garden Perfection were the best. Mr. W. Howard, Bridge, Canterbury, was 2d; Mr. C. Ross being a good 3d. There were nine competitors, many of them showing very good examples. Mr. W. Howard gained the 1st prize in the class for six dishes, the Woodstock Kidney variety being really splendid. Mr. J. Miller, gr. to the Marquis of Donegal, Hampstead Park, Newbury, was 2d, with very good examples. There were seven collections of vegetables, all very creditable. Mr. J. Austin, Ashton Court Gardens, Bristol, was well 1st, with a collection comprising sixteen varieties. Cucumbers, Tomatos, Stratagem Pea, and Lapstone Kidney Potatoes were very fine. Mr. Iggulden, Orsett Hall Gardens, Romford, was 2d. He had good Onions, Cucumbers, Schoolmaster Potatoes, Celery, &c.—in all twenty-one dishes. Messrs. Sutton & Sons, Reading, exhibited a very complete collection of Potatoes, comprising over seventy dishes, most of them up to exhibition form. A collection was also exhibited from Messrs. Lee, of Hammersmith. Messrs. Carter & Co., of High Holborn, also filled a long table with a very meritorious collection of Potatos and vegetables, all well grown, and worthy of the firm. A few groups of foliage plants completed the exhibition.

The General Horticultural Company (John Wills), Limited, exhibited a fine group of plants and fruit; a

basket of Gros Colmar Grapes were large in berry and splendidly coloured. The dishes of Apples were very fine also. The collection was Highly Commended. A label of Commendation was also attached to a fine lot of Alicante Grapes from Mr. Bennett, of Rabley; the berries had on a beautiful bloom and were well coloured. Mr. Cannell, of Swanley, also obtained a mark of Commendation for his stands of Salvia, Zonal Pelargoniums, &c. They occupied a long table, and formed a very attractive group.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, NOV. 17, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLASHER'S TABLE 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Mean of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.	Degree of Humidity. Sat. = 100.	
Nov.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
11	29.87	+0.08	52.6	38.6	14.0	47.0	+3.8	44.3	91	S.W. 0.05
12	29.79	-0.01	54.2	46.0	8.2	50.6	+7.7	44.9	87	WNW 0.06
13	29.56	-0.23	57.6	48.5	9.1	53.0	+10.9	48.7	83	S.W. 0.01
14	29.13	-0.64	56.0	53.0	3.0	54.3	+11.8	50.7	88	S.W. 0.19
15	29.42	-0.34	43.6	38.8	4.8	41.0	-1.3	37.2	86	WNW 0.35
16	28.69	-1.06	51.4	38.0	13.4	45.0	+2.8	39.6	82	S.W. 0.20
17	29.01	-0.62	45.3	32.5	12.8	38.2	-3.8	32.6	80	WSW 0.00
Mean	29.35	-0.40	51.5	42.2	9.3	47.1	+4.6	42.6	84	S.W. 0.06

- Nov. 11.—A dull day. Mild. Fine at night. Occasional thin rain in morning.
— 12.—Somewhat fine, but cloudy. Rain till 10 A.M. Mild. Strong wind.
— 13.—A dull day, very mild. Breaks in clouds at times, otherwise the sky was overcast. Windy.
— 14.—Very mild, occasional showers. Strong wind. A dull, wild, miserable day.
— 15.—A dull, cold, wretched day. Frequent rain. Generally overcast.
— 16.—Frequently fine, but generally dull and showery till evening. A gale of wind in morning and afternoon. Fine and cold at night, wind lulled considerably.
— 17.—A fine, bright, cold day. Cloudless and frosty at night. The barometer reading at 9 A.M. was 28.95 inches, at 3 P.M. was 28.99 inches, and at midnight was 29.12 inches.

* The reading of the barometer at 9 A.M. was 28.72 inches, at 10 A.M. was 28.68 inches, at 10.35 A.M. was 28.66 inches, at 11.15 A.M. was 28.64 inches, at 1 P.M. was 28.58 inches, at 2 P.M. was 28.55 inches, at 2.30 P.M. was 28.55 inches (lowest), at 3 P.M. was 28.56 inches, at 3.30 P.M. was 28.57 inches, at 4.10 P.M. was 28.59 inches, at 4.45 P.M. was 28.61 inches, at 6.30 P.M. was 28.69 inches, at 7.30 P.M. was 28.72 inches, at 9 P.M. was 28.79 inches, at 10.30 P.M. was 28.80 inches, at midnight was 28.82 inches.

LONDON: Barometer.—During the week ending Saturday, November 13, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.34 inches at the beginning of the week to 30.16 inches by the evening of the 7th, increased to 30.43 inches by the evening of the 8th, decreased to 30.01 inches by the evening of the 9th, increased to 30.01 inches by the morning of the 10th, and decreased to 29.70 inches by the end of the week. The mean reading for the week at sea level was 30.10 inches, being 0.17 inch below that of the preceding week, and 0.11 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 57½° on the 13th to 44° on the 9th; the mean value for the week was 51¼°. The lowest temperatures of the air observed by night varied from 27° on the 9th, to 48½° on the 13th; the mean value for the week was 39½°. The mean daily range of temperature in the week was 11¼°, the greatest range in the day being 17° on the 9th, and the least, 8¼°, both on the 7th and 12th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Nov. 7, 47.4, +2.7; 8th, 42, +2.3; 9th, 34.7, +9.2; 10th, 43.3, -0.2; 11th, 47, +3.8; 12th, 50.6, +7.7; 13th, 53.6, +10.9. The mean temperature of the air for the week was 45.5, being 1.9 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 98° on the 8th, 86° on the 9th, and 85° on the 7th; on the 11th the readings did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 19° on the 9th, 26° on the 8th, and 30½° on the 10th and 11th; the mean of the seven lowest readings was 34°.

Wind.—The direction of the wind was S.W. and N.W., and its strength strong.

The weather during the week was somewhat fine, though dull, and the sky at times very cloudy. The weather was cold on the 8th and 9th, but mild on the other days of the week, particularly on the 12th and 13th.

Rain.—Rain fell on four days during the week. The amount measured was 0.22 inch.

ENGLAND: Temperature.—During the week ending Saturday, November 13, the highest temperatures of the air observed by day were above 59° at Cambridge, Liverpool, and Sunderland, and below 55° at Brighton; the mean value from all stations was 57½°. The lowest temperatures of the air observed by night were below 28° at Bristol, Blackheath (London), Leicester, Cambridge, Wolverhampton, Nottingham, and Hull, and above 33° at Plymouth; the mean from all places was 28½°. The extreme range of temperature in the week was more than 32° at Leicester, Cambridge, Nottingham, and Hull; and less than 24° at Brighton and Plymouth; the mean range of temperature in the week from all stations was 29½°.

The mean of the seven high day temperatures was above 53° at Plymouth, Truro and Sunderland, and below 51° at Brighton, Leicester, Wolverhampton, Nottingham, and Hull; the general mean from all places was 51½°. The mean of the seven low night temperatures was below 38° at Wolverhampton and Nottingham, and above 43° at Truro, Plymouth, and Liverpool; the mean value from all stations was 40½°. The mean daily range of temperature in the week was more than 12° at Bristol, Cambridge, Wolverhampton, Nottingham, and Bradford, and less than 10° at Truro, Brighton, Liverpool, and Leeds; the mean daily range of temperature from all places was 11½°.

The mean temperature of the air for the week from all stations was 45½°, being 5½° higher than the value for the corresponding week in 1879. The mean temperature for the week was above 47° at Truro, Plymouth, and Sunderland, and below 44° at Wolverhampton and Nottingham.

Rain.—The heaviest falls of rain in the week were at Bradford, 1.37 inch, and Liverpool, 1.02 inch; and the least falls were at Sunderland, 0.07 inch, and Plymouth, 0.19 inch; the average fall over the country was 0.46 inch.

The weather during the week was fine, though dull at times, and much milder during the latter part. Snow was reported to have fallen slightly at Cambridge on the 7th inst.

SCOTLAND: Temperature.—During the week ending Saturday, November 13, the highest temperatures of the air observed by day varied from 56½° at Leith to 54° at Dundee and Greenock; the mean value for the week from all places was 55½°. The lowest temperatures of the air observed by night varied from 30° at Dundee to 36° at Leith; the mean from all stations was 33°. The mean range of temperature from all places was 22½°.

The mean temperature of the air for the week from all stations was 45½°, being 5½° higher than the value for the corresponding week in 1879. The mean temperature of the air for the week was above 46° at Glasgow and Leith, and below 45° at Dundee.

Rain.—The falls of rain were the heaviest at Greenock (3.05 inches), at Paisley (1.8 inch), and at Edinburgh (1.33 inch), and the least at Perth (0.34 inch); the average fall over the country was 1.31 inch.

DUBLIN.—The highest temperature of the air was 57½°, the lowest 28½°, the extreme range 29½°, the mean 47½°, and the fall of rain 0.74 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

ANTS AND COCKROACHES: *A. Rivers.* Sprinkle the runs of the ants with diluted carbolic acid; and spread some phosphorus paste, or any kind of beetle or cricket poison, on some bread-and-butter for the cockroaches.

BOOKS: *T. IV. Floral Decorations for Dwelling Houses*, by Annie Hassard (Macmillan & Co.). *R. N. Hooper. The Modern Peach Pruner* (171, Fleet Street, E.C.)

CAMELIAS: *H. Jarvis.* It seems to be a case of over-cropping; "seven or eight buds on a point" is more than the plant could possibly develop; you should have thinned them to about two buds on each shoot long ago. As it is, you had better leave the plants to themselves, taking care they experience no sudden changes of temperature or excess of drought or moisture, and you will probably have a fine crop left after all. But it is not wise to leave so many buds to swell, and you had better avoid it in future.

CYDONIA JAPONICA: *A. Henderson.* Its fruiting is not an unfrequent occurrence. The fruit is too astringent to be of any use in cookery.

FUNGUS: *O. M. B., Westover Park.* The name of the black fungus is *Nylaria polymorpha*, not uncommon

about old stumps, but frequently overlooked from being hidden by moss and grass. *W. G. S.*

GLEICHENIA RUPESTRIS: *H. B.* This Fern does best in a greenhouse temperature. The present dormant season is a suitable period for attacking the scale. Trim out all old fronds that can be spared without distressing the plant, and then have the others carefully sponged with any of the numerous insecticides now in use, testing the amount of dilution which may be necessary on some of the fronds which are to be cut away. It is a task that will require much patience. Whatever wash may be used to destroy the scale should be syringed off very shortly after its application—long before the whole plant is cleaned over.

HIPPEASTRUM AULICUM: *J. C.* The flowers appear to be suffering from cold. It should have a brisk stove heat. Has it been well ripened and thoroughly rested?

INSECTS: *W. Cobb.* We found no grubs on your Cattleya shoots, several of which had been gnawed at the base; but in two of them we found several small Hymenopterous chrysalids, the larvae of which had, we suppose, destroyed the grubs which had injured the plants. (See *Gardeners' Chronicle*, 1869, p. 1230.) *I. O. W.*

LUCULIA GRATISSIMA: *A. Reader.* Plant it against a wall in a warm conservatory, in good peat and loam. Give it plenty of root-room and good drainage.

MADRESFIELD COURT GRAPE: *A. Reader.* This Grape seldom cracks if grown in an inside border. It is an early Grape, and should not be kept long after being ripe.

MEDLAR: *C. D. Smith.* The sprig sent is not like the true Medlar, and no doubt, therefore, comes from the stock on which it was worked.

NAMES OF PLANTS: *W. Johnstone.* The leaf sent is that of *Bryophyllum calycinum*. We cannot name the Philodendrons without seeing them, but that with holes in the leaf is probably a species of *Monstera*.—*A. C.* *Adiantum concinnum*.—*E. C. P.* 2, *Selaginella cuspidata*; 4, *Cyanotis vittata*; 5, *Selaginella Martensii*; 6, *Thyracanthus rutilans*; 7, *Pteris serrulata cristata*. The rest quite insufficient.—*J. Sutton.* 1, *Selaginella pubescens*; 2, *Asplenium marinum*; 3, *Adiantum hispidulum*; 4, *Pteris cretica albolineata*; 5, *Onychium japonicum*; 6, *Pteris serrulata*; 7, *Doodia caudata*; 8, *Adiantum trapeziforme*.—*E. Cooper.* Your Orchid is *Colax jugosus*.—*F. Earle.* *Cestrum aurantiacum*.—*S. J.* 1, *Adiantum tenerum*; 2, *Adiantum hispidulum*; 3, *Doryopteris palmata*; 4, *Adiantum cultratum*, apparently, but rather too young for determination. The *Crotons* are too numerous and varied to name with certainty from casual specimens; 5 is possibly *interruptus*; and 6 perhaps *Weismanni*.

PELARGONIUM TRICOLOR: *GLAUCIUM LUTEUM:* *S. W. W.* For the first try Messrs. E. G. Henderson & Son, Pine-apple Nursery, Maida Vale, W.; and for the second, Mr. W. Thompson, seedsman, Tavern Street, Ipswich.

PRIMULAS: *J. Don & Son.* A first-rate strain of the ordinary fringed white-and-purple forms.

SETTING PEACHES: *J. D.* There is nothing better than a camel-hair brush, or a plume of Pampas-grass. What do you mean by "any kind of powder that can be used with safety"?

TACSONIA VAN VOLXEMII: *A. Reader.* Three parts of good rough peat, and one of loam, with a good admixture of sand and charcoal to ensure a free drainage, will suit admirably.

CATALOGUES RECEIVED.—Little & Ballantyne (Carlisle), Priced List of Forest and Ornamental Trees, Evergreen and Deciduous Shrubs, Roses, Fruit Trees, &c.—James Backhouse & Son (York), Catalogue of Forest and Ornamental Trees and Shrubs, Conifers, &c.—Thomas S. Ware (Hale Farm Nurseries, Tottenham, N.), Autumn Catalogue of Trees and Shrubs, Roses, Fruit Trees, &c.—Garlies Mitchell (Stranraer), Catalogue of Forest and Ornamental Trees, Conifers, Roses, &c.

COMMUNICATIONS RECEIVED.—*J. W.*—*D. T. F.*—*J. Day.*—*R. P.*—*L. V. N.*—*W. C. R.*—*F. W. E.*—*R. S.*—*T. S.*—*S. & S.*—*W. R.*—*T. C.*—*H. W. W.*—*W. H. D.*—*S. B.*—*W. B.*—*A. D.*—*W. C.*—*J. Mullins* (thanks).—*J. B.*—*J. W. C.*—*H. E.*

Markets.

COVENT GARDEN, November 18.

We have no alteration to report this week. The trade in home-grown fruit is quiet, and American goods are arriving in inferior condition. Sound samples are realising better prices. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Begonias, per doz. ..	6 0-12 0
Bouvardias, per doz. ..	12 0-24 0
Chrysanth., p. dozen ..	6 0-18 0
Cyclamen, per doz. ..	12 0-18 0
Cyperus, per dozen ..	6 0-12 0
Dracena terminalis ..	30 0-60 0
— viridis, per doz. ..	12 0-24 0
Epiphyllum, per doz. ..	18 0-30 0
Erica gracilis, dozen ..	0 0-18 0
— cafrica, per doz. ..	8 0-12 0
— hyemalis ..	12 0-36 0
Euonymus, various, per dozen ..	6 0-18 0
Evergreens, in var., per dozen ..	4 0-18 0
Ferns, in variety, doz. ..	4 0-18 0
Ficus elastica, each ..	1 6-7 6
Foliage Plants, various, each ..	2 0-10 6
Fuchsias, per dozen ..	0 0-12 0
Hyacin., Rom., doz. ..	15 0-18 0
Myrtles, per doz. ..	6 0-12 0
Palms in var., each ..	2 6-21 0
Primula, single, per dozen ..	5 0-6 0
Solanums, per dozen ..	6 0-18 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Abutilon, 12 blooms ..	0 3-0 6
Arum Lilies, 12 blms. ..	6 0-9 0
Asters, 12 bunches ..	9 0-12 0
Bouvardias, per bun ..	1 0-3 0
Camelias, per dozen ..	3 0-6 0
Carnations, 12 blms. ..	1 0-2 0
Chrysanth., 12 bun. ..	3 0-9 0
— 12 blooms ..	6 3-2 0
Cyclamen, 12 blms. ..	0 3-0 6
Epiphyllum, 12 blms. ..	1 0-1 6
Eucharis, per doz. ..	4 0-9 0
Gardenias, 12 blms. ..	5 0-9 0
Heliotropes, 12 sp. ..	0 6-1 0
Hyacinth., Roman, 12 sprays ..	2 0-3 6
Lapageria, white, 12 blooms ..	4 0-6 0
— red, 12 blooms ..	1 0-3 0
Lilac, Fr., per bunch ..	8 0-13 0
Marguerites, 12 blms. ..	0 4-0 9
Vignette, 12 bun. ..	4 0-9 0
Narcissus, Paper-White, 12 sprays ..	3 6-4 0
Pelargoniums, 12 sprays ..	1 0-1 6
— zonal, 12 sprays ..	6 0-9 0
Primula, double, per bunch ..	1 0-1 6
— single, 12 sprs. ..	1 0-1 6
Roses (indoor), doz. ..	2 0-6 0
— outdoor, 12 bun. ..	9 0-18 0
Stephanotis, 12 spr. ..	9 0-15 0
Tuberolium, 12 bun. ..	1 0-3 0
Tuberose, per dozen ..	1 6-3 0
Violets, 12 bunches ..	1 6-2 6
— Neapolitan, Fr., per bunch ..	3 6-5 0
— Crar, Fr., bunch ..	2 0-3 0

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Apples, ½-sieve ..	2 0-5 0
Cobs, per lb. ..	1 6-1 10
Grapes, per lb. ..	1 0-4 0
Lemons, per 100 ..	6 0-10 0
Pears, per dozen ..	1 6-5 0
Fine-apples, per lb. ..	2 0-5 0

VEGETABLES.—AVERAGE RETAIL PRICES.

s. d. s. d.	s. d. s. d.
Artichokes, Globe, per doz. ..	3 0-4 0
Asparagus, Fr., bndl. ..	1 6-2 0
Beans, French, p. lb. ..	0 9-1 0
Beet, per doz. ..	1 6-2 6
Cabbages, per doz. ..	1 0-2 0
Carrots, per bunch ..	0 4-0 6
Cauliflowers, English, each ..	0 3-0 6
Celery, per bundle ..	1 6-2 0
Chilis, per 100 ..	3 0-4 0
Cucumbers, per doz. ..	6 0-9 0
Endive, per doz. ..	1 0-1 6
Garlic, per lb. ..	1 0-1 0
Herbs, per bunch ..	0 2-0 4
Horse Radish, p. bun. ..	4 0-5 0
Lettuces, Cabbage, per doz. ..	0 6-1 6
Mint, green, bunch ..	0 4-1 0
Mushrooms, p. basket ..	1 6-2 0
Onions, per bushel ..	5 0-6 0
— Spring, per bun. ..	0 6-1 0
Parsley, per bunch ..	0 4-1 0
Radishes, per bun. ..	0 2-1 0
Seakale, per basket ..	3 6-4 0
Small salading, pun. ..	0 4-1 0
Spinach, per bushel ..	4 0-5 0
Tomatoes, per lb. ..	0 9-1 0
Tunips, new, bunch ..	0 4-1 0

POTATOS.—Kent Regents, 8s. to 10s.; Champions, 6s. to 8s.; Early Rose 6s. to 7s. There is no alteration in English produce, but all foreign samples are much lower.

SEEDS.

LONDON: Nov. 17.—More inquiry for Clover seed has, during the last few days, sprung up. Fine samples of yearling red, in particular, meet with increasing attention, and a slight hardening in values is observable; however, the large stocks which were held over prevent any undue advance in prices. From the American official figures just published, it appears that the exports of Clover seed from the United States during the twelve-month ended June, 1880, were 11,842 tons, valued at £480,300. Trefoils keep firm. Alsike and white are for the moment quiet. Imported Italian realises full prices. Timothy seed is exceedingly scarce. The supply of large blue Peas appears now to be nearly exhausted; quotations, consequently, show a further upward movement. Some fine new Haricot Beans are now obtainable at moderate terms. For Canary seed the trade is featureless: the consumptive demand keeps small, but late currencies are fully maintained. Hemp seed is still very cheap. Buckwheat, Millet, and Linseed find buyers at Monday's rates. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CATTLE.

At the Metropolitan Market on Monday there was a shorter supply of beasts than for some time past, especially of choice qualities. The demand was not large, consequently prices did not advance much. The number of sheep was exceptionally small, yet the trade was equally bad. Prices advanced on choicest qualities, which were very scarce. Choice calves were in demand and rather dearer. Quotations:—Beasts, 4s. to 4s. 8d., and 5s. 2d. to 5s. 10d.; calves, 5s. to 6s.; sheep, 4s. 8d. to 5s. 6d., and 6s. 2d. to 7s.; pigs, 4s. 6d. to 5s. 4d.—On Thursday trade was firm in tone, owing to the cold weather. Supplies were moderate for the day. There was a good demand for both beasts and sheep, and prices ruled against the buyer. Calves were firm.

HAY.

Tuesday's Whitechapel Market report states that trade was dull, and prices had a downward tendency. Straw was cheaper. Quotations:—Prime Clover, 100s. to 128s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 105s.; inferior, 30s. to 70s.; and straw, 30s. to 40s. per load.—On Thursday there was a rather large supply of fodder on sale. The trade was dull for middling hay, but there was no alteration in prices.—Cumberland Market quotations:—Superior meadow hay, 95s. to 105s.; inferior, 50s. to 80s.; superior Clover, 120s. to 128s.; inferior, 80s. to 105s.; and straw, 36s. to 42s. per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that moderate supplies were on offer. Fine samples were in demand at full prices, otherwise business was quiet. Quotations:—Scotch Regents, 100s. to 110s.; Victorias, 100s. to 110s.; Champions, 90s. to 100s.; Essex Regents, 90s. to 100s.; do. Champions, 80s. to 90s. per ton; German Reds, 4s. 6d. to 5s.; Belgian Kidneys, 4s. 3d. to 4s. 6d. per bag.—The imports into London last week were:—Rotterdam, 3 hampers to baskets 581 bags; Rouen, 920 bags; St. Nazaire, 2 barrels; Harlingen, 314 bags; St. Malo, 100 tons; Gotthenburgh, 310 bags; Hamburg, 68,791 bags; Brussels, 368 bags; Ghent, 3542 bags; Uddewalla, 384 bags; Antwerp, 11,095 bags; Montreal, 6 barrels; Boulogne, 1516 bags; Dunkirk, 71 bags; Dantzig, 3697 bags; Amsterdam, 2 hampers; Bremen, 77 tons 600 boxes 1604 bags; Stettin, 20,472 bags; Rostoff, 84 tons; Havre, 22 bags.

LIST OF NOVELTIES, 1880-81.

CHARLES SHARPE & Co.,

SEED GROWERS AND SEED MERCHANTS, SLEAFORD.

CULVERWELL'S GIANT MARROW PEA.



Culverwell's Giant Marrow Pea.

The block being engraved by W. G. Smith, Esq., from a photograph, and the meshes in wire netting being 2 inches in diameter, the size of the pods under ordinary garden cultivation may be arrived at. Not a pod had been removed, or the plants stopped in any way to promote length of pods at a sacrifice of their number.

This, the most recent of Mr. Culverwell's introductions, is decidedly the best Pea he has raised. It is a Blue Wrinkled Marrow, growing from 4 to 6 feet in height with a strong branching habit, the haulm being covered from top to bottom with Giant Pods, containing ten to thirteen very large Peas of the most exquisite flavour. As a main crop Pea for the Gentleman's Gardener who requires a long succession of Peas, or for the Amateur growing for Exhibition, it is unequalled.

The Stock being small a limited quantity only will be sent out this Season, as we are anxious its merits should be fully tested as early as possible.

Sealed Packets 5s. each, Post-free.

As the Pea requires to be planted, not sown, the Packet is sufficient to afford a fair trial.

Mr. Culverwell, the raiser, says:—

"My own opinion is, the Giant Marrow is the King of all my New Peas. It is an immense cropper, the pods a great size, with twelve very large Peas in a pod, quality as good as my Prolific Marrow, height in ordinary seasons about 5 feet. Should be used for general crop."

"I received a First-class Certificate for the Giant Marrow Pea at Harrogate Flower Show in August, 1879; the same Award was given at Saltburn-on-the-Sea in August, 1879, by a most competent set of Judges, and a High Commendation from the Committee and Judges at the Kirby Fleetham Flower Show."

"The best testimonial of all was from Richmond, in Yorkshire, where the immense pods were exhibited and the best stolen by the excited admirers of the Peas. I must refer you to p. 182 of the *Gardeners' Chronicle*, August 7, also the Commendation from the Royal Horticultural Society's Committee, when only a bunch of pods was exhibited before them."

From the "Gardeners' Chronicle," Sept. 7, 1878.

"Culverwell's Giant Marrow Pea.—This fine new Pea, raised by Mr. W. Culverwell, Thorpe Perrow Gardens, Bedale, and to which reference was made on p. 200, was exhibited at the annual show of the Bishop Auckland Horticultural Society on August 30. Its value lies in its late character, in the size and handsome appearance of the pods, which much resemble those of Superlative, but, unlike that puffy impostor, the pods, which are very long, are filled with large Peas."

From the "Gardeners' Chronicle," Aug. 7, 1880.

"Culverwell's Giant Marrow Pea—I am much pleased with this fine Marrow Pea, of which I enclose you a sample. In height and general character it much resembles the wrinkled or light green portion of the Telegraph, called Telephone, but with me it is a heavier cropper, and produces enormous pods and Peas. This only requires a trial to establish itself as a general favourite, and will do much credit to the raiser, Mr. Culverwell, of Thorpe Perrow. I am indebted to Mr. Towler, of Bedale, into whose hands I believe the stock is placed, for the opportunity of again testing this Pea. T. Keely, Darley Abbey, Derby. [A fine sample; quality excellent. Eds.]"

Mr. R. Towler, Mowbray Vale Nurseries, Bedale, in a letter to us says:—

"I grew the Giant Marrow by the side of the principal new kinds of Peas; it exceeded them all in productiveness and quality, the long, broad pods completely covering the haulms, and the weight of the Peas breaking down the strong rods with which I had attempted to support them. Many of the Giant pods contained twelve to thirteen immense Peas, which are superior in flavour to any I ever tasted. The Giant Marrow surpasses all, by its robust habit, enormous crop of large pods, and the exquisite flavour of the Peas."

SHARPE'S INVINCIBLE, NEW LONG-PODDED BLUE MARROW PEA.

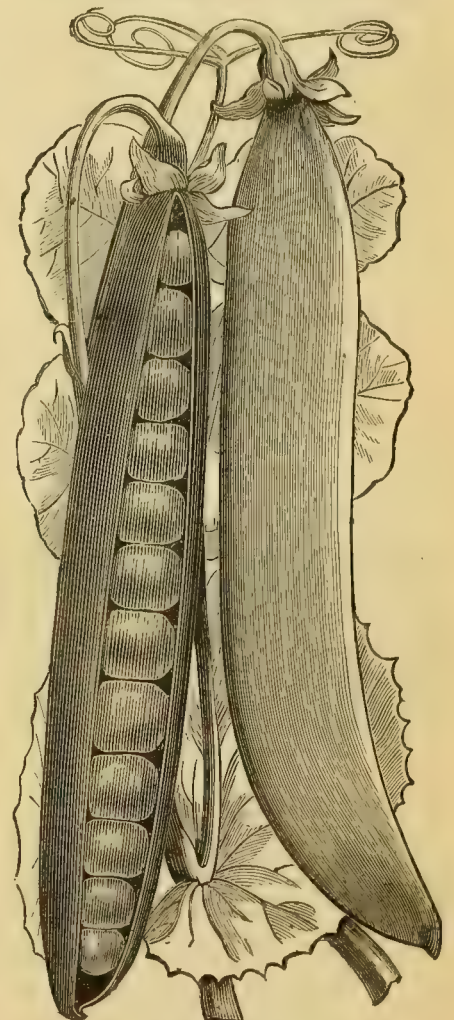
The Invincible is a cross between Veitch's Perfection and Essex Rival, and has the advantage of being but little liable to the attack of mildew.

The Plant is about 3 feet in height, of a robust branching habit. The pods are produced in pairs and occasionally three together, from near the ground to the top of the stem—the rows having the appearance of being clothed with pods from top to bottom. The pods are closely packed with from ten to twelve large Peas, which, when cooked, are of exquisite flavour, and of a beautiful deep green colour.

The Editor of the *Gardeners' Chronicle*, in his review of New Vegetables in the spring of 1878, mentions Sharpe's Invincible as one of the three Peas of the season worthy of notice.

Price, per Quart, 3s. 6d.

Half-pint Packets, free by post, 1s. 6d.



Sharpe's Invincible.

RAUCEBY HALL MELON.

Price, 2s. 6d. per Packet.

ASWABBY PARK SEEDLING MELON.

Price, 2s. 6d. per Packet.

TOMATO.—NISBET'S VICTORIA.

This is a seedling from Vick's "Criterion," and for cultivating under glass or in the open air there is no Tomato can approach it for fruitfulness. The plant requires no stopping, as it keeps growing and fruiting in the greatest abundance. The fruit is pyriform, and grows in bunches, each bunch containing from eight to twenty fruit, which are the size and colour of a Victoria Plum; it contains but few seeds, and for flavour is unsurpassed.

Price, 2s. 6d. per Packet.

SHARPE'S "CONQUEROR" LONGPOD BEAN.—The longest and best of all Longpods.

Price 1s. 6d. per Pint.

SHARPE'S "EMPEROR" RED BEET.—

Splendid stock—dwarf, very deep in colour and glossy. *Price 1s. per Packet.*

SHARPE'S PRIZE WHITE SPANISH ONION.—

It is impossible to obtain anything finer for exhibition purposes than the Seed we now offer. *Price 1s. per Packet.*

SHARPE'S EXQUISITE CURLED PARSLEY (The Lincoln Green).—

The perfection of garnishing Parsley. *Price 6d. per Packet.*

EDELWEISS.

(GNAPHALIUM LEONTOPODIUM, Jacq.)
(LEONTOPODIUM ALPINUM, Cass.)

Price, per Packet, 2s. 6d.

SHARPE'S Extra Choice CALCEOLARIA.—

Price 2s. 6d. per Packet.

SHARPE'S Extra Choice CINERARIA.—

Price 2s. 6d. per Packet.

SHARPE'S Extra Choice PRIMULA SINENSIS, Red, White, and Mixed.—

Price 2s. 6d. per Packet.

These three varieties of Florists' Flowers are the finest ever offered, having been carefully selected for years and grown specially for us.

TRADE PRICES ON APPLICATION.

A. M. C. JONGKINDT CONINCK
has to offer large quantities of the following Hardy
Plants, at very low prices:—
Saxifraga granulata, fl.-pl. Tradescantia virginica alba.
Selaginella helvetica. " " cœrulea.
Spiraea Aruncus. " " rosea.
" filipendula, fl.-pl. " " rubra.
" palmata elegans. " " violacea.
Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

Seakale—Seakale.

RHUBARB and ASPARAGUS for Forcing. The best house in
the Trade. Also DUTCH BULBS and FLOWER ROOTS.

H. THORNTON and CO. (late A. Dancer),
NURSEYMEN and SEEDSMEN, Fulham, London, S.W.
HYACINTHS, TULIPS, CROCUS, and other BULBS of the
very best quality. Priced CATALOGUES free on application.

N.B. We make the Growing of Seakale a speciality, so that
intending purchasers may depend upon being supplied with
the very best that can possibly be procured in the Trade.

To insure their being supplied, we beg that our Customers
may give their orders early, to prevent disappointment, as we
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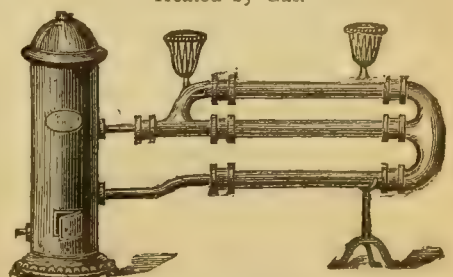
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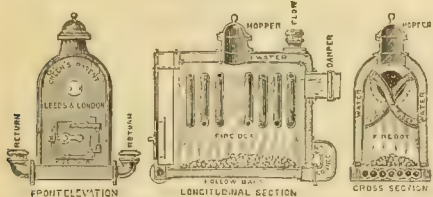
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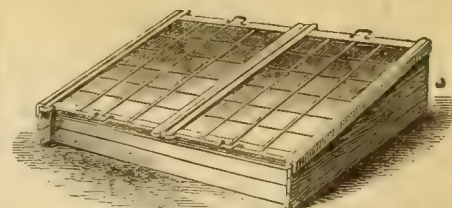
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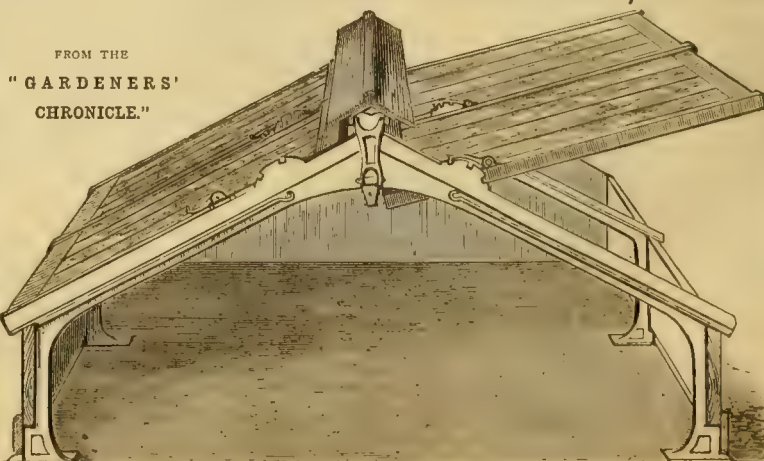
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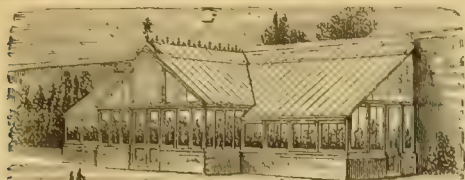
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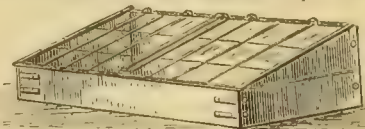
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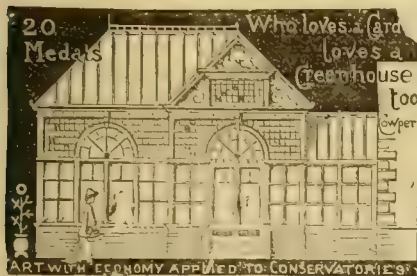


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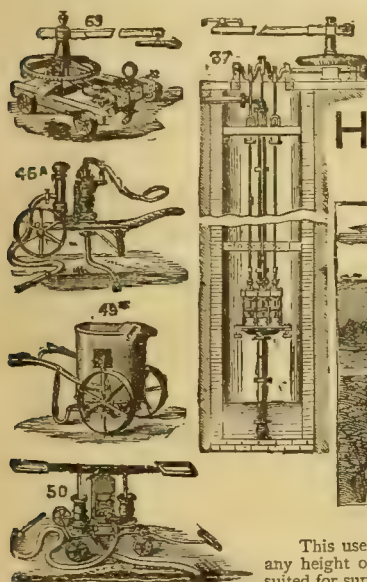
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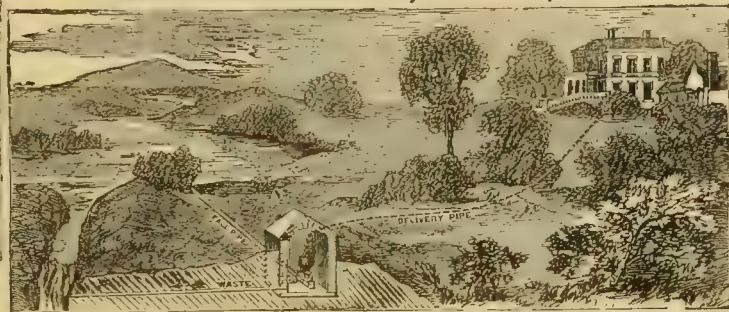
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No. 361.—VOL. XIV. { NEW SERIES. } SATURDAY, NOVEMBER 27, 1880.

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TUBEROSE, LILIES OF THE VALLEY, CHRISTMAS ROSES, &c.—50 Double American TUBEROSE Pearl, and how to grow them, for 25s. 100 Berlin LILIES OF THE VALLEY, single crowns, and how to grow them, for 15s. 25 Christmas ROSES for 12s. 6d. Consignments will shortly arrive, the best that can be procured. LAURUSTINUS, fine bushy plants and well rooted, 1½ to 2 feet, 50s. per 100; 2 to 3 feet, 75s. per 100. On receipt of Post-office Orders the above will be forwarded to any address carriage paid.—R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

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SEED POTATOS.—Sutton's Magnum Bonum, 4s. 5s.; Myatt's Ashleaf, 4s. 6s.; Rivers' Ashleaf, 4s. 7s. 10s. per ton; Scholmaster, 7s. per bushel. Free on Rail. The above are choice selected samples, grown expressly for seed; perfectly sound, and true to name.

BRINKWORTH AND SONS, Potato Growers, Reading.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—White Garden LILIES, 12s. 6d. per 100; DIELYTRA SPECTABILIS, 25s. per 100; ANEMONE FULGENS, 16s. per 100; single French CAMELIONS, 10s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to SANDER AND CO., Seed Growers, St. Albans.

Note Prices.**FOR AUTUMN PLANTING.**

CABBAGE PLANTS Warranted free from Club-root.

Early Enfield Market
Early Nonpareil
Early (Dwarf) York
Early Battersea
Sugarloaf
Thousand-head
East Ham

At 4s. per 1000.

LETTUCE PLANTS.—Hardy Hammersmith, Hicks' Hardy White Cos, Giant Brown Cos, Bath Cos, Broad-leaved Batavian and Green Curled Endive, at 4s. per 1000.

Testimonials and samples on application.

EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

N.B.—Above Plants are from Messrs. Gibbs' Seed, and Purchasers may depend on good Plants, and true to name.

E. L. will not be undersold by any respectable Grower, and will be pleased to quote low quotations to large Buyers. All Packages included; delivered on Rail—Godalming or Guildford. Extra Plants to compensate Carriage.

PLANT FRUIT TREES EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite Inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

Descriptive Price CATALOGUE, free on application.

CRANSTON'S NURSERY & SEED CO.

(LIMITED).

KING'S ACRE, HEREFORD.

SEED POTATOS.**THOMAS IMRIE & SONS**

can offer the following varieties:—

KIDNEYS.

MYATT'S ASHLEAF.

RIVERS' ROYAL ASH-

LEAF.

MONA'S PRIDE.

OLD ASHLEAF (true).

LAPSTONE.

FLUKE.

MAGNUM BONUM.

PRINCE ARTHUR.

INTERNATIONAL.

SCOTCH BLUE.

ROUNDS.

DALMAHOVS.

RED BOGS.

GRAMPIANS.

FORTYFOLDS.

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RINTOUL'S PINK-EYED.

WHITE DONS.

REGENTS, Scotch.

CHAMPIONS (true).

SCHOOLMASTER.

RADSTOCK BEAUTY.

RED EMPEROR.

Prices per Cwt. or Ton on application.

A Y R, N. B. — November 20, 1880.

**NOTICE.**

THE

GENERAL HORTICULTURAL CO.

(JOHN WILLS, (Limited),

Warwick House, 142, Regent Street, W.,

IS NOW IN CONNECTION WITH THE

EXCHANGE SYSTEM

OF THE

UNITED TELEPHONE COY.,

and Orders for Fruit, Bouquets, Floral Decorations, Plants, &c., can be sent by that medium, and will have immediate attention and prompt despatch.

FRUIT and FLOWERS, for SHOOTING and OTHER PARTIES, will be forwarded to any part of the country on receipt of Letter or Telegram.

JOHN WILLS, General Manager.

Strawberries!—Strawberries!

ALL THE LEADING VARIETIES, GUARANTEED TRUE TO NAME.

Strong plants from ground, 3s. 6d. and 5s. per 100

" " in small pots, for forcing, 12s. 6d. per 100.

LIST of Sorts on application.

CRANSTON'S NURSERY & SEED CO.

(LIMITED),

KING'S ACRE, HEREFORD.

THE MOST SUPERB ROSES

that money can buy.

Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.

Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade and Large Buyers.

LEWING AND CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and ELBETTES BUSHES; ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees, MYROBELLA (PRUNUS MYROBALANA), for fencing, &c.

The Royal Norfolk Nurseries, Eaton, near Norwich.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

RASPBERRY CANES.—200,000 of the celebrated CARTER'S PROLIFIC to dispose of at 30s. per 1000. Samples of 100 for 4s. Money Orders on Knockholt, with commands. Apply to

A. AND E. BATH, Colgate Farm, Sevenoaks.

N.B. Free in London. No change of rail.

Garden and Flower Seeds.

MR. CHR. LORENZ begs to inform his numerous English Customers that his this year's harvest of VEGETABLE and FLOWER SEEDS has been a most splendid one, and that he is now ready to supply this year's seeds.

Early Orders will oblige, and will enable Mr. Lorenz to send by cheap monthly opportunity. Those who have not yet received Mr. Lorenz's Spring CATALOGUE for 1881 will please apply to

HERKUN CHR. LORENZ, Samenhandlung, Erfurt, Prussia.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

STRAWBERRIES IN POTS.

Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

H. CANNELL, Swanley, Kent.

A. M. C. JONGKINDT CONINCK has to offer large quantities of the following Hardy Plants, at very low prices:—

Saxifraga granulata, fl.-pl.	Tradescantia virginica alba.
Selaginella helvetica.	" " corulea.
Spiraea Aruncus.	" " rosea.
" filipendula, fl.-pl.	" " rubra.
" palmata elegans.	" " violacea.

Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.

Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWs, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

" Golden, many thousands, 3, 4, 5 to 10 feet high.

" Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

" laurifolia, myrtifolia, Scottica, Hodgson's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

" Variegated, a very large number, 5, 6, 7, 8 to 10 feet high.

" Golden Queen, 4, 5, 6 to 10 feet high.

" Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high

hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the

Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

" ARGENTEA, 4 and 5 feet.

LICEDRUS DECURENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet

hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUIA AUREA, 2, 3 and 4 feet high.

SEMPER-AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.

RICHARD SMITH AND CO., Nurserymen, Worcester.

SACCOLABIUM BLUMEI MAJUS.—A large importation, in good condition, has just been received, nice plants at 5s. each, or 42s. per dozen.
Mr. WILLIAM BULL, Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Beautiful, Healthy, and Faultless.
SEED OF STALK-FRUITED OAKS
(*Quercus pedunculata*), in loads by car (up to 10,000 kilo.), 1s. 6d.; **ACORNS** for FEEDING (up to 10,000 kilo.), 1s.; smaller quantities under 10,000 kilo., 17s. 6d. The above prices are for 100 kilo. free, in bags, on board ship at Hamburg against an advance bill of exchange on London. Samples can always be had. Immediate orders are requested.

LEWIS FOLDESSY, Seedsmen, Budapest, Hungary.

New Melon, "Haddo House" (Forrest.)
CARDNO AND DARLING have much pleasure in bringing under the notice of Horticulturists the above **NEW MELON**. It was raised three years ago by Mr. John Forrest, Gardener to the Right Honourable the Earl of Aberdeen, Haddo House, and is one of the hardiest and most productive varieties we have seen. The fruit is of medium size, oblong shape, weighing from 3 to 4 lb., flesh deep orange, flavour delicious, and very thin, and beautifully netted outside. It gained the 1st Prize at the Royal Horticultural Society's Show at Aberdeen, once in 1879 and twice in 1880, being very highly spoken of on each occasion for its beauty and flavour.
C. & D. being entrusted with the entire sowing of Seed, are now prepared to offer it in sealed packets, at 2s. 6d. each. Trade price on application.
Seed Warehouse, 80, Union Street, Aberdeen, N.B.

Come and See.

500 Chrysanthemums in Flower.
H. CANNELL (F.R.H.S.) AND SONS have erected a large spacious house expressly for the full development of their flowering Stock Plants of the above, so that one and all may see the distinct features, and also to prevent any possible mistake in supplying the wrong varieties. Will without doubt form the most complete display of this family ever brought together. All are invited.
CUTTINGS, 2s. per dozen, post-free.
H. C. & SONS' Selection, 1s. 6d.

7000 Chrysanthemums.
SPECIALLY PREPARED FOR EXHIBITION PLANTS.
ALL LOVERS OF THE ABOVE will be pleased to hear that, to prevent mistakes, we have devoted a quarter of an acre to the growth of 500 varieties in pots, each having their allotted space, mostly in large 60's, carrying a flower, and all who order early before frost destroys them will have the gratification of seeing the bloom on their plants, and therefore quite sure there will be no disappointment the following year. **PLANTS**, 6s. per dozen.
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New Illustrated, and the best and most correct Descriptive CATALOGUE ever issued.

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H. CANNELL AND SONS beg to say that they have now a very fine stock of the above, consisting of all the best in cultivation. Price per dozen, 10s, or 1000 on application.

Calceolarias (Herbaceous).
ALL FROM OUR BEST STRAIN.
Established Plants in 60's, 2s. 6d. per dozen, 18s. per 100. Picked-out Seedlings, 1s. 6d. per dozen, 10s. per 100. Post-free.

THE HOME FOR FLOWERS

PLANTING SEASON.
100 Acres to Select from.

FOREST TREES

OF ALL SIZES, CONSISTING OF

FIRS, LARCH.

" SPRUCE.

" SCOTCH.

ASH, SPANISH CHESTNUT, QUICKS, &c.

Samples and prices forwarded. Also Descriptive Priced CATALOGUES of Ornamental Trees, Roses, &c.

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GROOMBRIDGE, TUNBRIDGE WELLS.

LANDSCAPE GARDENING.
GARDEN PLANS.

Previous to Laying-out a Garden, however small, a Plan should be had, showing how the Grounds will appear when finished. This prevents disappointment and unnecessary expense.

Designs and Estimates given for artistically Laying-out Gardens of all sizes.

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TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

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WORCESTER

TWO HUNDRED THOUSAND HERBACEOUS AND ALPINE PLANTS, for Borders, Rockwork, &c. See Descriptive LIST, giving colour, height, time of flowering &c., free by post for one penny stamp.
R. S. & Co.'s selection of 100 good showy varieties, for 25s.
RICHARD SMITH AND CO., Nurserymen, Worcester.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Enfield Market and Rainham. Apply to Mr. T. DAVIES, Tangle, near Guildford.

To the Trade.
ROSES, 25,000 Dwarf, on Manetti, 35s. per 100, £14 per 1000; 20,000 1-yr. cultivated Seedling BRIERS, 20s. per 100. Extra strong SEAKALE, for Forcing, 80s. per 1000; strong SEAKALE, 60s. per 1000; Planting SEAKALE, 35s. per 1000. For cash with orders.
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RASPBERRY CANES—Raspberry Canes.—100,000 to offer. Also SEAKALE, ASPARAGUS, and RHUBARB, including all the leading kinds, both for Forcing and Planting.
N.B. The cheapest and best house in the Trade.

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N.B. We make the growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can be procured in the trade. We are also large growers of all the various kinds of Herbs, both culinary and medicinal. Price per dozen or 100 on application.
Best Milltrack MUSHROOM SPAWN.

FOR SALE, SPRUCE FIR, 12 to 18 feet, well furnished plants; have been well cut round in the spring. Price on application to
H. APPLEBY, Box Hill Nursery, Dorking.

LARCH and QUICKWOOD PLANTS for Sale.—2,000,000 Larch, 1 to 2 and 2 to 3 feet; 2,000,000 Quickwood, 1 to 2 and 2 to 3 feet; also a quantity of SPRUCE, SCOTCH FIR, and BEECH, all transplanted, at greatly reduced prices. For particulars apply to
FRANCIS BELL, Nurseryman, Easingwold

Geometrical Mosaic and Encaustic
TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
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SUN FIRE OFFICE.
THREADENEDLE STREET, E.C. CHARING CROSS, S.W.
OXFORD STREET (Corner of Vere Street), W.
ESTABLISHED 1710.
Home and Foreign Insurances Effectuated.
Sum insured in 1879, £462,492,461.
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COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, £1, bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, free on rail, £1 3s.
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COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons, invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1s. each; 15 Sacks, 12s.; 30 Sacks, 20s. (all Sacks included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 300 bushels), free on rail, 25s. Terms cash with order.

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CHOICE IMPORTED ORCHIDS—DENDROBIUM LOWII, &c.

(Sale No. 5743.)

MR. J. C. STEVENS will **SELL by AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, December 2, at half-past 12 o'clock precisely, by order of Messrs. HUGH LOW & CO., of Clapton, fine imported plants, in the best possible condition, of the rare and lovely **DENDROBIUM LOWII**, **CYPRIPEDIUM LAWRENCEANUM**, **DENDROBIUM VEITCHIANUM**, **CYPRIPEDIUM JAVANICUM** or **VIRENS**, **ANGRÆCUM SESQUIPEDALE**, and other choice Imported and Established **ORCHIDS**. At the same time will be offered a vigorous young plant of **ANTHURUM ANDREANUM**, coming into bloom, and a specimen **ANGRÆCUM SESQUIPEDALE**, showing two spikes of bloom.

On view the morning of Sale, and Catalogues had.

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MESSINGER & COMPANY,
MIDLAND HORTICULTURAL BUILDING & HOT-WATER
ENGINEERING WORKS, LOUGHBOROUGH.



Horticultural Buildings erected on MESSINGER & Co.'s Patent Method of Construction are very strong, most durable, light, elegant, amply ventilated, perfect efficiency for intended purpose is guaranteed, are economical in cost and maintenance; combine the peculiar advantages of Wooden and of Iron Houses, without their disadvantages.

MESSINGER AND CO., from their long experience, and having large Works exclusively devoted to the Construction and Heating of Horticultural Buildings, are in a position to execute with despatch, in the best manner, the Orders with which they are entrusted. Only thoroughly well seasoned timber used.

The Plans of Landscape Gardeners, Architects, and Others carried out.

Plans and Estimates forwarded free on receipt of Particulars by Post. Gentlemen waited on.

Illustrated CATALOGUES of GREENHOUSES, VINERIES, HEATING APPARATUS, &c., sent free on application. Richly Illustrated CATALOGUE of HORTICULTURAL BUILDINGS and HEATING APPARATUS (the Designs taken from Works executed by M. & Co.), post-free for twenty-four stamps. Gentlemen consulting this Catalogue have the advantage of inspecting designs whose efficiency has been tested by actual experience.

AIGBURTH BRUSSELS SPROUTS.

*The Best-flavoured, Hardest, and Most Productive Variety in Cultivation. In use from October to March.
In Sealed Packets only, 1s. each.*

ROBERT P. KER & SONS



Have the pleasure to announce that, for the first time, they have harvested a sufficient quantity of this remarkably fine variety of BRUSSELS SPROUTS to enable them to offer it for general cultivation. It has been grown in Aigburth for some years, and so much appreciated for its excellence that, heretofore, every packet of Seed has been absorbed by the home demand. The Seed now offered is home-grown, and has been saved from the very best plants, selected for the size, solidity, and number of their sprouts, from a batch of 9000 fully developed plants; so that it is now the finest strain it is possible to obtain of this best and most useful of all winter vegetables. The following facts, from thoroughly practical gardeners, justify our statement that it is

THE BEST VARIETY IN CULTIVATION :—

From Mr. SPEED, Gardener to the Right. Hon. Lord Penrhyn, Penrhyn Castle, Bangor, October 27, 1880 :—

"DEAR SIR,—I have a remarkably fine quarter of the Aigburth Brussels Sprouts again this season. Its hardness and quality, also its productiveness, makes it a great boon to us, who have to supply large families with really fine vegetables.—Yours faithfully,
"WM SPEED."

From Mr. JAMIESON, Gardener to the Right Hon. the Earl of Crawford and Balcarres, Haigh Hall, Wigan, November 8, 1880 :—

"DEAR SIR,—Last season I formed a very favourable opinion of your Aigburth Brussels Sprouts, and this season's trial has convinced me that it is, without exception, the hardest, most productive, and the best in quality of any variety I have ever grown.—I am, yours, very truly,
"ANDREW JAMIESON."

From Mr. BARHAM, Gardener to the Right Hon. the Earl of Sefton, Croxteth Hall, West Derby, November 3, 1880 :—

"DEAR SIR,—I find the Aigburth Brussels Sprouts is a very distinct variety, very hardy, and of much less disposition to 'bolt' than other kinds. Its sprouts are exceedingly firm,

the stem being covered with solid large sprouts from top to bottom, which last year, albeit a bad season, remained much longer in fine condition than any other variety: this makes it doubly valuable. I consider it a valuable acquisition. Shall give it exclusive culture next year.—Yours faithfully,
"B. BARRIAM."

From Mr. HARRISON, Gardener to the Right. Hon. the Earl of Derby, Knowsley, Lancashire, November 1, 1880 :—

"GENTLEMEN,—I have grown the Aigburth Brussels Sprouts along with Scrymger's and one or two other sorts, and find it to be a distinct strain, of robust and even growth, very hardy and productive, and of excellent quality.—Yours truly,
"F. HARRISON."

From Mr. WALLIS, Gardener to the Rev. W. Sneyd, Keele Hall, Newcastle, Staffordshire, October 13, 1880 :—

"DEAR SIR,—I have a very good piece of your Aigburth Brussels Sprouts. They are a very even good lot. I like them better than any variety I have yet grown or seen. We are gathering beautiful close sprouts from them now, as good as possibly can be.—Yours faithfully,
"J. WALLIS."

SPECIAL OFFERS TO THE TRADE ON APPLICATION.

A List of all Firms who will be able to supply the above will be duly advertised in the "Gardeners' Chronicle," &c.

ROBERT P. KER & SONS, Basnett Street and Aigburth Nursery, LIVERPOOL.
London Agents: MESSRS. NUTTING & SONS, Seed Merchants, 60, Barbican, London, E.C.

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THE

COTTAGER'S CALENDAR

OF

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ORIGINALLY COMPILED BY THE LATE SIR JOSEPH PAXTON, M.P.

Price 3d.; post-free, 3½d.

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Price 1s. stitched.

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By WILLIAM EARLEY.

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CRANSTON'S NURSERIES. (ESTABLISHED 1785.)

New Rose Catalogue for 1880-81,
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Awarded over 60 First Prizes for Rose Blooms
this season.

CRANSTON'S NURSERY and SEED CO. (LIMITED),
King's Acre, Hereford.

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WM. CUTBUSH & SON'S CATALOGUE

Is now ready. Post-free on application.

HIGHGATE, LONDON, N., or BARNET, HERTS.

NEW CATALOGUE

FOR
AUTUMN, 1880,
OF THE BEST

PLANTS, TREES, BULBS, ROSES,

&c., REQUIRED FOR

Garden or Conservatory Decoration,
Post-free.

The prices are much lower than goods of the same first-class
quality are usually offered at. Comparison and inspection of
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ALL OUR SELECTION.

BULBS for GARDEN.

The most showy and finest sorts, specially selected for the
purpose.

	Per doz.	Per 100.
HYACINTHS, in separate colours ..	3 0	21 0
ANEMONE, finest mixed ..	0 6	3 6
CROCUS ..	15 4d.	10 2 0
RANUNCULUS ..	0 6	3 0
TULIPS ..	1 0	7 0

BULBS for CONSERVATORY.

Will produce a beautiful display at about two-thirds of the usual
cost.

	Per doz.	Per 100.
HYACINTHS, 12 fine named sorts ..	5 0	40 0
.. 12 extra named sorts ..	7 6	60 0
.. Roman ..	2 6	18 0
ANEMONE, finest named ..	1 0	7 0
CROCUS, finest named ..	15 6d.	10 2 0
RANUNCULUS ..	0 6	3 0
TULIPS, finest named ..	15 2 6	10 2 0

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laneous Bulbs, in great variety, see Catalogue.

SPRING FLOWERING PLANTS.

About 100,000 now ready of the best and finest plants for
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Violas, the newest and most showy varieties; Daisies, of all
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Primroses, Hepaticas, Sweet Violets, Alyssum, Cheiranthus of
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new variety "elegantissima," Sedums, Saxifrages, &c. All in
good plants, to stand the winter and produce a fine spring
display. For prices, &c., see Catalogue.

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A stock of many thousands of good plants, in good named
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Pansies, Show and Fancy; Carnations, Picotees, Pinks, fine
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*All the leading kinds of Hardy
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PAUL'S NURSERIES, WALTHAM CROSS, HERTS.

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STANDARDS, DWARF STANDARDS, DWARFS, CLIMBERS, FORCING ROSES,
HALF-SPECIMEN and SPECIMEN ROSES, of unsurpassed quality, orders for which they
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All for delivery first week of January, 1881, or before, weather permitting. The above varieties are well grown, true to kind, and free of disease. Special prices on application.

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The Nurseries, Knut-ford, are now offering their celebrated stock of FRUITING and PLANTING CANES of the above, which are unusually fine, and thoroughly well ripened, consisting of:—

Black Hamburgh.	Black Alicante.
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KING'S ACRE, HEREFORD.



THE

Gardeners' Chronicle.

SATURDAY, NOVEMBER 27, 1880.

MARKET PLANTS.

A VAN containing thirty to forty dozens of plants, though not of considerable bulk, very often represents a far greater value than does a huge load of Cabbages or other field produce. There is, therefore, much less of the wear and tear of horses and vehicles in the plant trade than in the more strictly market-garden line, and a long distance from the market is much more easily travelled over. It is thus of less importance to the plant grower than to the producer of vegetables, if by the force of circumstances and the expansion of brick-work, he is driven to seek habitations much further afield than hitherto. The plantsman can get along with no considerable bulk of manure; soil can be found rather in the reverse of the town direction; firing may be had in near contiguity, and pots also. Thus his energies are not so heavily taxed to obtain the needful articles of his trade as is the market gardener, who finds in the article of manure alone a large drain upon his resources. Not long since passing mention was made in these columns of the market plant nursery of Messrs. SMITH & LARKE at Ashford, near Staines. The establishment, as compared with the dépôts of some of the giants of the trade, is not a large one, but it turns out very many thousands of plants during the year, and the quality of the stuff sent to market is not measured by the quantity. Messrs. SMITH & LARKE'S plants may neither be better nor worse than other people's; but they are, at least, young beginners in a vocation in which the competition is now becoming very trying, and the pushing of a business under adverse circumstances by young men naturally induces towards them a feeling of sympathy. Ashford is about 16 miles west of Covent Garden Market; thus journeys are necessitated that differ somewhat from those of olden times, when market gardeners could find convenient locations at Kensington, Hammersmith, or Brompton.

The chief plant stock just now growing at Ashford in quantity consist of Tuberoses, Chinese Primulas, Cyclamens, Pelargoniums—show and Zonal, Solanums, Ericas, Chrysanthemums, and Echeverias. These are all for immediate sale, but of course there are plenty of other things for successional culture, such as Cinerarias, Calceolarias, Genistas, &c. Tuberoses are for the supply of cut flowers only, and of these 5000 bulbs are planted yearly. The double is the favoured kind, but the best strains will sometimes show some single flowers. The firm have been badly served for their present stock, as quite two-thirds purchased as double are producing single blooms, yet these came to them through a high-class seed-house. The greater bulk are growing in 48's, two bulbs in a pot—this as a matter of convenience; but it is best to pot singly in large 60's, as some will not push a flower-spike; and thus when, in a 48, one bulb does bloom and the other does not, there is waste of room and labour. In long, low span houses, where on either side stages usually are found, these Tuberoses are standing on the soil bed, where they are freely fed with manure-water, and the flower-stalks carry

their heads of highly perfumed blossom up near the glass. By dint of successional pottings and keeping some bulbs as cool as possible flowers are to be had nearly all the year round, and wherever white flowers are in request there the Tuberose is indispensable.

It is made here pretty evident that although private gardeners for very obvious reasons cannot make a good show in Cyclamen culture market growers can do so and produce them in unlimited numbers. How many thousands there are in the various houses need not be stated, but the earliest stock pushing fast into bloom show that they are robust, clean, and as good as the short time they have been growing can possibly make them. There is one very noticeable feature in the fact, that quite one half of those in bloom show rich dark colours—a capital characteristic, for the Cyclamen hitherto has been too much associated with pale tints. Whether the Cyclamen or the Chinese Primrose be the better winter decorative plant, at least market men have good reason to bless the day and the man or men who brought this fine pot plant to its present important position. Chinese Primroses are here a very fine lot of plants indeed. It is almost monotonous as we look down the long stages filled with whites and reds to observe the plants are so even that they might have been specially mown over for the occasion. "Do you save your own seed?" we enquire. "Sometimes, but not always." "And when you do not where do you get seed of such a true strain?" "Oh! from some other market growers upon whose strains we can rely." And "At what price do you purchase seed?" "Well, they don't sell per ounce; but the custom in our trade is to charge so much for a thimble or tobacco-pipe full, and that may be 10s. or 20s. according to the seed crop." Hearing this we wonder what the framers of the Weights and Measures Act would say to such a curious custom.

What a valuable winter plant is the Erica hyemalis. Here it is grown in large numbers, charming plants in 48's coming into beautiful bloom two years from the cutting bed; a capital plant for the window or the cool greenhouse, quite hardy, but wanting the protection of glass to enable it to bloom in all its beauty. There is also a fine batch of Echeveria retusa, in pots, now in beautiful bloom at 8 inches in height. It is a first-rate winter pot plant. Vesuvius Pelargonium blooming freely in fine young plants almost makes us fancy it is May, and not November; but the myriads of Chrysanthemums in pots blooming freely tell a different tale. How beautifully white is Elaine here; nothing in this class of plants can produce flowers so elegant and pure for cut bloom as this. There are thousands of Solanums finely berried, and thousands of cuttings just put in for next year's growth. Cinerarias in huge masses, Hydrangeas in pits, Calceolarias, and lots of other things; for in a big market plant establishment the production of successions of plants is unceasing—the work is as regular as sunrise and sunset. Whether the place be small or large gardeners will rarely omit to pick up some new idea in market nurseries.

HEATING BY HOT WATER.

IN commenting on this subject, as again broached in your columns at p. 660, I wish it to be distinctly understood that I am simply stating my own personal views, and not necessarily those of my partners, who must not be held responsible for opinions with which they may not unreservedly coincide. Your suggestion that a competition between the rival boilers, valves and fittings connected with hot-water heating should be organised at the great International Exhibition next autumn is very good, but great care should be taken that such a trial does not degenerate into a farce, as at Birmingham a few years ago. In that case the so-called trial was no trial at all, the sizes and capacities of the various boilers being dissimilar and the circumstances and conditions of the various apparatus not identical. To render a boiler trial of the slightest value it would be absolutely necessary that accurately defined and stringent conditions and regulations should be laid down, and no boiler or apparatus not answering these conditions should be permitted to compete.

Being myself a manufacturer, I naturally feel some hesitation in advancing my opinions on the principles of constructing hot-water boilers and apparatus, lest I should be deemed incapable of impartially considering the subject. To divest myself, therefore, of even the appearance of partiality, to give the subject the breadth and scope it deserves, and to enable those with practical knowledge to contribute the result of their experience, it would perhaps be as well to lay down approximately the lines upon which, in my opinion, the discussion should be conducted. Without some such sketch-plan the old worn-out generalities may be indulged in and but little profit result.

To this end, therefore, I submit the following questions, which appear to me to embrace most of the salient points which should determine the form and construction of hot-water boilers, and which will afford the students of all or any of them an opportunity of stating their experience.

QUESTIONS.

1. Assuming that boilers are vessels made of various sizes, for containing liquids intended to be boiled, what is the best mode of determining the size of such boilers, whether by their water contents, superficial contents, or weight of metal?

2. Will a given body of water heat more quickly in a one-chambered vessel (as a washing copper or saddle boiler) or in a many-chambered vessel (as a multitubular or upright tubular boiler), the quantity of water, the quantity and quality of fuel, and the temperature of the furnace being the same in each case?

3. If there be any difference, state it, and to what extent, also note the cause and indicate which form of boiler or vessel has the advantage.

4. Does the general tendency of a boiler to the horizontal or perpendicular positions affect the circulation of the water, and in what way, and to what degree?

5. Given, the fact that every form of boiler possesses a certain quantity of useless surface, that is, useless for the purpose of generating heat, which form of boiler possesses the largest amount of such useless surface, and what are the relative proportions in a one-chambered as against a many-chambered boiler, the water contents of the two boilers being identical.

6. To what extent is a boiler benefited by the addition of hollow bottom-bars—in other words, to what extent is the water heated before entering the boiler proper, and what is the saving effected?

7. Why is it that two boilers, differing in form, using the same water, and professedly doing the same work with the same kind of fuel, will not corrode similarly in manner or degree?

8. Given the fact that wrought iron, exposed to fire and water, decays quicker than cast, are there any known methods of preserving it, and which is the best?

9. Does a large or small water-way in a saddle boiler affect the circulation of the water, and if so, to what extent and in what manner?

10. Do the temperature, and consequently the motion of the water in a many-chambered boiler differ from that in a single-chambered boiler, the fire in both cases being the same, if so, in what manner and degree?

11. Given, two boilers, the one a one-chambered and the other a many-chambered boiler, placed side by side and attached at the same junction to the same apparatus, the water-contents of each boiler, surface of furnace-bars, and quality of fuel being identical, is it possible, regardless of time engaged or quantity of fuel consumed, to produce parallel results—it being understood that the scope of the apparatus be so proportioned to the size of the boiler as to limit the capabilities of the former to a temperature say 170° , or 180° in the latter?

12. In constructing horizontal boilers or flued saddle boilers consisting of a series of layers of water-ways, to what point may the extension of such layers be continued with corresponding advantage—in other words, when does the addition of such layers cease to be of use?

These are a dozen among the many questions that affect and regulate the principles of boiler-making, and I venture to say that any answer giving a mere expression of opinion cannot in the face of ascertained facts be considered satisfactory. Nothing short of practical research and the outcome of working experiments will supply the information sought for on this important subject. As you remark, the subject is not difficult, and this is quite correct as regards general principles; but with regard to their practical application, the saying, "A little learning is a dangerous thing," is also very true, for the numerous failures that occur show how little the best mode of applying them is understood by many even of those who profess to be hot-water engineers. Many equally important questions could be put affecting the fixing of a boiler and of an apparatus, but for the present this is enough.

Geo. Deal, partner in the firm of T. Weeks & Co., Chelsea. [We are quite willing to devote some space to the discussion of this important matter, but as the demands on our space are already much greater than we can possibly comply with, we must request our correspondents to confine themselves as strictly as possible to the results of their own practical experience, and not to indulge in vague theories and generalisations based upon insufficient premises. EDS.]

TEA ROSES.

NEXT to the hybrid perpetuals the Tea Roses (*Rosa indica odorata*) are the most popular, and for growing in pots are even preferable to them. I fancy the capability of the Tea Rose for producing cut flowers early and late in the season has not yet been fully developed. The Zonal Pelargonium has been grown everywhere, but not until Mr. H. Cannell, of Swanley, devoted special attention to it did we know how valuable it was to produce bright glowing flowers in dreary dull November. We know how valuable the Tea Rose is for producing delightfully scented Roses in March and April, and the fine collection of them exhibited by Messrs. Paul & Son, of Cheshunt, at the Auricula exhibition in April of this year is still fresh in our memory, and greatly were they admired by the Northern florists. I had the privilege of looking over the collection of pot Roses at Cheshunt on November 9; a very large proportion of them belong to this family, and a few are hybrid Teas. The Roses intended to be forced early next season are pruned this week; the wood being thoroughly well ripened, the leaves have mostly dropped off, and the buds are quite prominent. Indeed by the appearance of the buds the experienced Rose grower can tell whether the variety will be a good forcer or not. Mr. Paul also considers it of the utmost importance that the wood should be well ripened before the Roses are pruned, and he is also careful to cut out all weak and undeveloped growths.

Welcome as are the Tea Roses early in the year, while the snow is yet on the ground, and few living things can face the east wind with impunity, they are equally welcome in the dull cold days of November and December, and there are no unsurmountable obstacles in the way. All that is necessary is to have the wood ripened and the useless growths thinned out; every shoot that starts from good wood will produce flowers, the right temperature and degree of moisture with careful management will do the rest. In order to make everything clear, it is desirable to start at the beginning. If the Roses are to be grown in pots they can be propagated in three ways—on their own roots, on the seedling Brier, and on the Manetti. They are easily propagated from cuttings which may be put in at different seasons. I have been most successful with cuttings in September, scarcely any of them failed to form plants. They were taken off the plants with heels, and six or nine of them were planted in 6-inch pots, using good sandy loam with a little leaf-mould. The pots were plunged in cocoa-nut fibre refuse, and covered closely with glass lights. The plants when rooted were potted separately in 4-inch pots, and produced a goodly number of flowers the following season. The seedling Briers, of one year's growth from the seeds, may be planted in the open ground; if the plants are to be taken up for potting they should be 2 feet between the rows, and 1 foot asunder in the rows; bud in July, and before doing so, scratch some soil away from the stem, then insert the bud in the portion from which the soil has been removed. If the Manetti stock has been planted out-of-doors, they must be budded in the same way, and they should be treated alike while making their growth the following season.

It is usual to propagate those on the Manetti stock by grafting them in heat early in the year. There are very few amateurs, far less gardeners, who will be at the trouble to graft Roses in heat in the spring. Time can seldom be spared for it, and forcing-houses are wanted for other things; and, taking it altogether, it is cheaper as well as better to trust to the nursery-men who make a speciality of it. It is not necessary to enter very fully into the minute details of pot culture, as this was done in vol. xiii., p. 135. Still the successful culture of Tea Roses demands rather different treatment to that accorded to hybrid perpetuals and the other more vigorous sections. The potting material should be much lighter—say good

turfy loam two-thirds, and about one-third of good turf peat with a little leaf-mould added, and a small portion of sand. I also add an 8-inch potful of bone-dust to a barrowload of the compost, and one barrowload of rotten manure to every five barrowloads of the loam. The plants should be kept quite free from insect pests and mildew, either of which will cause the leaves to lose their glossy green tint, the hue of exuberant health. They should, I fancy, always be grown under glass, in light airy houses, the plants arranged so that the air from the side ventilators may freely circulate amongst them, and this in addition to ample top ventilation.

All through the summer and early autumn months the plants ought to be syringed once and even twice daily, except when they are in flower. The Tea Roses are truly perpetuals; if the plants are in good health every shoot from well ripened wood will produce a wealth of flowers; but to succeed perfectly there must be a resting period before starting the plants into bloom. We in these northern climes consider winter to be the resting period for all classes of plants, and it is so for most of them; but we must not forget that in warmer sunnier climes there is no winter, and the resting period for plants and trees is a time of heat and drought. The earth dries and cracks, the leaves drop off, and animation is suspended as much as if it had been chilled with the breath of a northern winter. It is evident, then, if we want our Tea Roses in winter we must put them to rest in summer, and if they are grown in pots this can easily be done. Say the Roses have been forced to flower early in the year; let the plants be grown on until the longest day, then gradually withhold water, open all the ventilators, and let them remain so night and day.

By the end of August the wood will be perfectly ripened, and about that time the Rose bushes should be pruned. Cut out all the weak and unsuitable wood, and merely shorten those that the flowering growths are to start from. Do this when the soil in the pots is comparatively dry. In a week after pruning them they should be watered and syringed. In September the days and nights are warm, and it will not be necessary to close the ventilators until the nights are cold, and the days are much contracted. Those who wish to grow Tea Roses to bloom in winter would do well to read a most suggestive article by Dr. Bennet in the *Rosarian's Year Book*, 1880. His experience in the Genoeve Riviera is the same as we can obtain artificially in England. He says, "The Rose rests in the north of Europe through cold frost, it rests on the Riviera through heat and drought, and in either case with equal facility without its health or vigour being in any way impaired. In ordinary years there is scarcely any rain on the Riviera from the end of April to the end of September. . . . Roses lose their leaves all but entirely, except in damp places, and ceasing to grow become dormant. Tea Roses keep their leaves longer and better than hybrids. They are left with all their spring growths, and start spontaneously into life in autumn." The Doctor further adds that pruning begins in September, and "the flowering commences about four or five weeks after the first free rains, and goes on throughout the winter, more or less freely until the middle of January." We are not able to command the bright sunshine of the Riviera, and shall have to wait until the electric light can be utilised, but the warm elastic temperature can be obtained in our hot-house, and when we can call in the electric light to our aid, a Rose show at Christmas ought to be in the programme of the Royal Horticultural Society, with the tent illuminated at night. This, however, is a matter to be still left in the misty future—the year 1900 A.D. perhaps.

Tea Roses for Christmas are now easily within our reach. A light span-roofed house, heated and well ventilated, is necessary; and a select variety rather than a large collection of Roses is necessary to begin with. One of the very best for winter flowering is the well known Niphetos. Messrs. Paul had a number of fine plants of this variety in a heated house; they were in 9 or 10-inch pots, and had an average of a dozen flower-buds on each. Madame Falcot, with its deep apricot flowers, so beautiful in bud, is also a valuable variety. Safrano and Safrano à fleurs rouges are also valuable varieties to cut in the bud. They are exceedingly pretty in small glasses and for button-hole flowers. Following these, and for some purposes preferable to them, are Madame Willermoz, a fine full Rose, almost white; Madame Charles, also bright and beautiful in bud; Isabella Sprunt, a very free flowering variety; Souvenir d'un Ami is to be recommended for its large drooping rosy-salmon coloured flowers. Perfection de Monplaisir is a lovely Rose, with clear yellow flowers, and blooms very freely.

The following hybrid Teas will probably be found very valuable for winter flowers, they were recommended to me for this purpose by Mr. Paul, viz., Alexandre Bernaix, Pierre Guiot, and Alphonse Karr. J. Douglas, Loxford, Ilford, E.

NEW PLANTS CERTIFICATED

AT THE ROYAL BOTANIC SOCIETY'S EXHIBITIONS, 1879.

* * B.C., Botanical Certificate; F.C., Floral Certificate; both being equal to a First-class Certificate.

<i>Aceria spherocephala</i> ..	Bull, April 21—B.C.
<i>Acer polymorphum</i> septem-	Veitch, June 16—B.C.
<i>lobum elegans</i> ..	Bull, June 16—B.C.
<i>Adiantum aneitense</i> ..	Gen. Hort. Co., B. S. Wil-
.. Bauseix ..	iams, April 21—B.C.
.. <i>mcnochlamys</i> ..	Veitch, May 19—B.C.
<i>mundulum</i> ..	B. S. Williams, April 21—B.C.
<i>Aloe myriactema</i> ..	Buller, April 21—B.C.
<i>Alsophila tomentosa</i> ..	Veitch, April 21—B.C.
<i>Amaryllis</i> Duchess of Con-	Veitch, March 24—F.C.
.. naught ..	Veitch, March 24—F.C.
.. <i>Emilia</i> ..	B. S. Williams, March 24—F.C.
.. <i>Exquisite</i> ..	Little, March 24—F.C.
.. <i>International</i> ..	Veitch, March 24—F.C.
.. <i>Iris</i> ..	B. S. Williams, April 21—F.C.
.. <i>Mrs. Burroughs</i> ..	Veitch, March 24—F.C.
.. <i>Princess Augusta</i> Vic-	Little, April 21—F.C.
.. <i>Princess Dagmar</i> ..	Veitch, March 24—F.C.
.. <i>Thalia</i> ..	Bull, June 16—B.C.
<i>Anthurium insignis</i> ..	Veitch, May 19—B.C.
.. <i>Scherrerianum</i> Roths-	B. S. Williams, March 24—B.C.
.. <i>childianum</i> ..	Henderson, May 19—B.C.
.. <i>semi-plenum</i> ..	B. S. Williams, June 16—B.C.
<i>Asparagus consanguineus</i> ..	Turner, April 21—F.C.
<i>Asplenium Baptistii</i> ..	Henderson, June 16—F.C.
<i>Auricula</i> (alpine) Mrs. Ball ..	Henderson, June 16—F.C.
<i>Begonia argenteo-zebrina</i> ..	Osborn, June 16—F.C.
.. <i>Comtesse de Thelluson</i> ..	B. S. Williams, May 19—F.C.
.. <i>Madame Triquaneaux</i> ..	Laing, June 16—F.C.
.. <i>Vandermeulen</i> ..	Laing, May 19—F.C.
.. (tuberous) <i>Lady Hume</i>	Veitch, May 19—B.C.
.. <i>Campbell</i> ..	Veitch, May 19—B.C.
.. <i>Mrs. Laing</i> ..	Laing, May 19—F.C.
<i>Burbridgea nitida</i> ..	Veitch, March 24—B.C.
<i>Calceolaria Stanstead Rival</i> ..	Laing, May 19—F.C.
<i>Cattleya amethystoglossa</i> ..	Veitch, March 24—B.C.
<i>Ceratostylis fusco-velutina</i> ..	Bull, June 16—B.C.
<i>Cereus C. M. Hovey</i> ..	Bull, June 16—F.C.
<i>Choisyia ternata</i> ..	B. S. Williams, April 21—B.C.
<i>Chrysanthemum frutescens</i> ..	Howard, April 21—F.C.
<i>Etoile d'Or</i> ..	Kaile, March 24—F.C.
<i>Chorozema aureum floribun-</i>	Veitch, March 24—F.C.
<i>dum</i> ..	Veitch, June 16—F.C.
<i>Cineraria</i> Mr. Thos. Lloyd ..	B. S. Williams, June 16—F.C.
<i>Coleus Acme</i> ..	Veitch, June 16—F.C.
.. <i>Mrs. G. Simpson</i> ..	B. S. Williams, June 16—F.C.
.. <i>Pharo</i> ..	Veitch, June 16—F.C.
<i>Cologne ocellata maxima</i> ..	B. S. Williams, Mar. 24—B.C.
<i>Crinodendron Hookeri</i> ..	Veitch, May 19—B.C.
<i>Crinum petiolatum</i> ..	Henderson, June 16—B.C.
<i>Croton Baronne James Roths-</i>	Gen. Hort. Co., April 21—B.C.
.. <i>child</i> ..	Bull, May 19—B.C.
.. <i>Chelsoni</i> ..	Bull, June 16—B.C.
.. <i>insignis</i> ..	Veitch, June 16—B.C.
.. <i>Nevilliae</i> ..	B. S. Williams, June 16—B.C.
.. <i>Rodeckianus</i> ..	B. S. Williams, May 19—B.C.
.. <i>Warrenii</i> ..	Smith, March 24—F.C.
<i>Cyclamen persicum picturatum</i> ..	Smith, March 24—F.C.
.. <i>Rosy Morn</i> ..	B. S. Williams, June 16—B.C.
<i>Cypripedium robusta</i> ..	Veitch, April 21—B.C.
<i>Cypripedium marmorophyl-</i>	Bull, June 16—B.C.
<i>lum</i> ..	Gen. Hort. Co., April 21—B.C.
<i>Dieffenbachia rex</i> ..	Gen. Hort. Co., April 21—B.C.
<i>Dracaena aurantiaca</i> ..	Gen. Hort. Co., April 21—B.C.
.. <i>Ernesti</i> ..	Gen. Hort. Co., April 21—B.C.
.. <i>Thomsoni</i> ..	Gen. Hort. Co., April 21—B.C.
<i>Drosera filiformis</i> ..	Bull, April 21—B.C.
<i>Eriophyllum crenatum</i> × <i>Ac-</i>	F. & A. Smith, May 19—F.C.
.. <i>kermanni</i> ..	Henderson, June 16—B.C.
<i>Freesia odorata</i> ..	Veitch, May 19—F.C.
<i>Gloxinia Coronet</i> ..	Veitch, March 24—F.C.
<i>Hyacinth Captain Boyton</i> ..	Veitch, March 24—F.C.
.. <i>Cavaignac</i> ..	Veitch, March 24—F.C.
.. <i>Distinction</i> ..	Patton, March 24—F.C.
.. <i>Lady Headley</i> ..	Veitch, March 24—F.C.
.. <i>Queen of Yellows</i> ..	B. S. Williams, May 19—B.C.
<i>Ixora Pilgrimii</i> ..	Bull, April 21—B.C.
<i>Juncus zebrinus</i> ..	Veitch, June 16—B.C.
<i>Laelia Philbrickiana</i> ×	Veitch, May 19—B.C.
<i>Lastrea Maximowiczii</i> ..	Veitch, May 19—B.C.
.. <i>Richardii multifida</i> ..	Bull, June 16—B.C.
<i>Lilium nitidum</i> ..	Chambers, June 16—F.C.
<i>Lobelia magnifica alba</i> ..	B. S. Williams and E. G. Hen-
<i>Lycopodium ulcifolium</i> ..	derson, May 19—B.C.
<i>Maranta Gouletii</i> ..	B. S. Williams, May 19—B.C.
.. <i>Kerchoviana</i> ..	Bull and B. S. Williams,
..	April 21—B.C.
<i>Masdevallia bella</i> ..	Bull, May 19—B.C.
.. <i>Wallisii</i> ..	Bull, April 21—B.C.
<i>Microtylis calophylla</i> ..	Bull, May 19—B.C.
<i>Nepenthes compacta</i> ..	B. S. Williams, June 16—B.C.
<i>Odontoglossum Roezlii</i> su-	Low, April 21—B.C.
.. <i>perbum</i> ..	Veitch, May 19—B.C.
.. <i>vexillarium splendens</i> ..	Bull, June 16—B.C.
.. <i>picturatum</i> ..	Veitch, May 19—B.C.
<i>Oncidium concolor majus</i> ..	Bull, June 16—B.C.
.. <i>crispum grandiflorum</i> ..	Wiggins, May 19—F.C.
<i>Pelargonium</i> (decorative) <i>Cri-</i>	Wiggins, May 19—F.C.
.. <i>terion</i> ..	Wiggins, May 19—F.C.
.. <i>Miss May Gill</i> ..	Turner, June 16—F.C.
.. <i>Reamie</i> ..	Foster, June 16—F.C.
.. (fancy) <i>Sarah Bernhardt</i> ..	Turner, June 16—F.C.
.. (show) <i>Alice</i> ..	Turner, June 16—F.C.
.. <i>Duchess of Con-</i>	Peed, June 16—F.C.
.. <i>naught</i> ..	Foster, June 16—F.C.
.. <i>Emperor William</i> ..	Turner, June 16—F.C.
.. <i>Martial</i> ..	Foster, June 16—F.C.
.. <i>Minotaur</i> ..	Matthews, June 16—F.C.
.. <i>Russell</i> ..	Turner, May 19—F.C.
.. (tricolor) <i>Mrs. H. Cox</i> ..	Veitch, June 16—B.C.
<i>Pinanga Veitchii</i> ..	Veitch, April 21—B.C.
<i>Polyschidium tripterum</i> ..	Bull, March 24—B.C.
.. <i>viviparum</i> ..	Veitch, May 19—B.C.
<i>Pothos celatocaulis</i> ..	Little, March 24—F.C.
<i>Primula sinensis var. Meteor</i> ..	B. S. Williams, June 16—B.C.
<i>Pteris intercana</i> ..	Veitch, June 16—B.C.
.. <i>moluccana</i> ..	Shore, April 21—B.C.
.. <i>serrulata Shorei</i> ..	Veitch and Henderson, June 16
<i>Quercus cuspidata argenteo-</i>	—B.C.
<i>variegata</i> ..	Bull, April 21—B.C.
<i>Rhododendron assamicum</i> ..	Henderson, May 19—F.C.
<i>Rose</i> (fairy) <i>Little White Pet.</i>	Bull and E. G. Henderson,
<i>Sarracenia flava ornata</i> ..	May 19—B.C.

<i>Sarracenia flava picta</i> ..	Bull, April 21—B.C.
.. <i>purpurea sanguinea</i> ..	Bull, May 19—B.C.
<i>Selaginella Kraussiana aurea</i> ..	Bull, March 24—B.C.
.. <i>involuta variegata</i> ..	Bull, June 16—B.C.
<i>Spiraea japonica foliis aureis</i> ..	Veitch, March 24—B.C.
<i>Tradescantia</i> Mad. Leguense ..	Veitch, March 24—B.C.
<i>Tillandsia tessellata</i> ..	Gen. Hort. Co., April 21—B.C.
.. <i>musica</i> ..	Bull, April 21—B.C.
<i>Trichomanes parvulum</i> ..	Veitch, May 19—B.C.
<i>Yucca filamentosa aurea ele-</i>	
<i>gantissima</i> ..	Veitch, May 19—B.C.

New Garden Plants.

SALVIA PITCHERI.*

This is a very ornamental herbaceous Salvia, with branching stems 2—3 feet in height. The leaves are covered with stiffish white hairs, and are very narrow, entire at the margins, or slightly saw-toothed. The



FIG 127.—SALVIA PITCHERI. (FLOWERS DEEP AZURE BLUE)

flowers are deep blue, in dense clusters along the ends of the branches. The plant is botanically described by Mr. Bentham in the *Prodromus*, so that all that it is necessary for us to say here is that it is allied to *S. angustifolia*, but differs in its pubescence, denser flowers, and shape of the calyx-teeth. The cultivated plant differs from the description in being pilose rather than softly tomentose. It is a native of the Red River, New Mexico, and was introduced, so far as we know, by Messrs. Haage & Schmidt some few years since. Our specimens were obtained from Mr. Cannell, who showed a fine series of *Salvias* at the late meeting of the Floral Committee. The present species, with its lovely blue flowers, produced too at this season, is so desirable a plant to cultivate under glass that we gladly avail ourselves of this opportunity of making its merits known. It is not quite hardy enough to stand out unprotected, except in very favoured situations, and it is consequently advisable to preserve a supply in pots in a cool dry frame during the winter.

* *Salvia Pitcheri*, Torrey ex Benth., in D.C. Prod. xii. (1848), p. 151.

ERIA CURTISH, n. sp.*

This is much in the way of *Eria myristiceiformis*, Hook., and *scabilinguis*, Lindl. It has bulbs longer than those of the first-named species, nearly fusiform, chartaceous, ligulate-acute leaves, and lateral racemes of yellowish white flowers, which are equal to those of *Eria Ibero* and similar species. The lip is cuneate oblong, trifid at the apex, with a nearly orbicordate anterior lacinia covered with tubercles; three keels run over the middle part between the lateral laciniae. The bracts are oblong, unusually developed, in the way of those of *Eria bracteosa*, Lindl. There is an angular orange blotch at the base of the column, and the rachis and the ovaries are covered with stiff blackish hairs. The bulbs are covered with wrinkles, nearly as in an *Eriopsis*. It was gathered in Borneo by Mr. Curtis for Messrs. Veitch, and may bear the name of its discoverer. *H. G. Rehb. f.*

LÜDDEMANNIA LEHMANNI, n. sp.†

A fresh member of the mysterious genus *Lüddemannia*, discovered in New Grenada by Mr. F. C. Lehmann, and found nearly at the same time by Mr. Edouard Klaboch. Three fine herbarium specimens, two living plants, and a nice sketch prepared in water-colours by the excellent discoverer, are at hand. The bulbs reach the length of 7 inches, having at the base a circumference of nearly 3 inches; they are elongate, pear-shaped and furrowed. The leaves are long, petioled, cuneate oblong acute, very strong. The long peduncle bears very numerous flowers, comparable in extent to those of *Lacena bicolor* and *spectabilis*. They have salmon-coloured sepals and orange petals and lip. It must be a very curious thing. *H. G. Rehb. f.*

NOTES FROM A LANCASHIRE GARDEN.

November 22.—When last I wrote it was in May, and I complained, as well I might, of the dry East winds, which shrivelled up all the fresh vegetation of the spring. To-day I am complaining of the early winter, which came upon us long before we were prepared for it, and when our trenching had only just been started. It was the night of October 19 that the first frost came, and such a frost, registering in some places no less than 14°. It was the very moment when we should have been enjoying a "summer of St. Luke;" and in that one night Dahlias, Tritomas, and every other autumn flower, were destroyed.

"Heavily hangs the broad Sunflower
O'er its grave 'till the earth so chilly;
Heavily hangs the Hollyhock,
Heavily hangs the Tiger Lily."

Except that my Tiger Lilies were over earlier than Mr. Tennyson's appear to have been, these lines exactly describe the borders on either side of the grass walk down the garden; clumps of Hollyhocks, in which the combinations of colour, white and scarlet, sulphur and maroon, were often most effective, alternated with huge Sunflowers, on whose dark discs "big bees their burly bodies swung" with a pleasant, murmurous sound. I never saw finer Sunflowers. And now in one single night Sunflowers and Hollyhocks were all cut down, nearly a month before their time.

I hear people speak of the beautiful summer we have had. They remember and are grateful for the glorious August and the fine weather of early September; they forget the cold ungenial spring, the soaking rains of June and of July, and this premature and cruel winter. But gardeners and the owners of gardens have good cause to remember it all.

In the spring our flowering shrubs gave us hardly any blossom; in the autumn our fruit trees have given us hardly any fruit. We never had fewer Apples (except, indeed, Ribston Pippin, which does not know what failure is) or fewer Pears. Our Figs were only half what they usually are, and as for Peaches and Nectarines we had not a dozen altogether on the open wall. Apricots were few and far between, and the only two trees which did us any good were a Green Gage and a Golden Drop, both of them laden with their delicious Plums. Tomatoes would not ripen

* *Eria Curtishii*, n. sp.—Aff. *Eria myristiceiformis* et *E. scabilinguis*, Lindl.: labellum triangulato retuso antorsum trifido, lacinia lateralis oblonga, lacinia mediana brevissima emarginata, tuberculis parvis onusta, carinis tenuis a basi in basin, laciniae anticae omnibus basi hispidis, lateralibus rectis, calina mediana longiori flexuosa. Ex Borneo, ubi leg. dom. Curtis, Hort. Veitch. *H. G. Rehb. f.*
† *Lüddemannia Lehmanni*, n. sp.—Aff. *L. Pescatorei*: racemo pendulo; labellum in basi angusto demum dilatato, antica trifido, lacinia triangulari, gibbera conico obtuso in basi, gibbera in dicto trifido, disco anteriori velutino; columna gracili, juxta foveam, utrinque quadrato alata. New Grenada. F. C. Lehmann: E. Klaboch: *H. G. Rehb. f.*

properly, and one single ear of Indian Corn alone reached perfection. On the other hand, we had a tolerable show of small fruit, always excepting Cherries, and some vegetables, especially Peas, white Haricot Beans, and Globe Artichokes, were very good indeed.

And now let me leave the kitchen garden and turn again to flowers and flowering shrubs. Is it not Goethe who says "Take care of the beautiful, for the useful will take care of itself"? I only wish this were *exactly* true; how much labour it would save us all; but the flower garden certainly does take up a large share of time. One great pleasure I have had this summer is to see how the large Buddleia has come round; strong vigorous shoots have sprung up from the roots, and I shall make a handsome tree of it again, handsomer perhaps than ever, for it was becoming thin and "leggy." But another favourite of mine, the Gum Cistus, has been utterly destroyed. In former years it was always a delight to me to see the hundreds of beautiful blossoms open each day, falling gently off, like large snowflakes, as evening came slowly on. And, as they fell, the evening Primrose began to open out its large bright stars, so that the two plants together would just circle the twenty-four hours of the clock with transient bloom. Southey speaks of his bees as still at work—

"After the fall of the Cistus flower,
When the Primrose of evening was ready to burst,"

and if these bees had been visiting my garden they would have seen the Primrose of evening in great perfection. The tall Enothera was all alight with yellow blossoms, and low down, as a carpet to a bed of standard Roses, the Enothera taraxacifolia unfolded its broad white petals to the dews of night.

One of my best beds this year has been a bed of mixed Zinnias; they are for some reason but little grown about here, and I need not say how much they were admired. "They are all the new artistic colours," one critic remarked!

The Cannas, Agapanthus, and Liliums, were also good; but Roses suffered from the wet summer, and were very disappointing. There is one Rose, however, I must except. A friend had sent me the Japanese Rose—*Rosa rugosa*. I had never seen it before, and I was delighted with its rich green foliage, its succession of pink open blossoms, and its magnificent, red, glossy fruit. Another friend had given me an addition to the herbaceous garden, which was also new to me—it was the curious Cleome, or Spider Plant, with its long seed vessels and its aromatic scent.

But the best of everything I had this summer to show was the long hedge of Sweet Peas, which extended in front of the vinery. It was full of blossom of every varying hue, and lasted for quite four months. There is a pretty and fanciful passage in one of Keats' less-known poems, in which he speaks of Sweet Peas:—

"Here are Sweet Peas, on tiptoe for a flight,
With wings of gentle flush o'er delicate white,
And taper fingers catching at all things,
To bind them all about with living rings!"

Has any poet ever described a flower more delightfully?

I cannot wind up these notes of the past season without speaking of the two special insect plagues, with which we have been worried. One was the "Cuckoo-spit" (*Aphrophora spumaria*), which was more abundant than I ever saw it. It clung in white wet patches to the blades of long grass, to the flowers in the garden, to everything, and very disagreeable it was. But in autumn we had a plague that was hurtful as well as disagreeable. The wasps attacked the outdoor fruit, what little we had, and then found their way into the vineries, and began upon the Grapes. We hung up bottles of beer to entice them, and swathed our fruit in canvas-bags to thwart them, but until, night after night, we had gone out, and, attacking them in return, had taken a number of their nests, we got no peace. But at last the victory remained with us, and we secured our share of the produce of wall and vinery. H.

"THE VIRTUOUS GARDENER."—Through the kindness of Mr. W. E. Rendle, the gardeners in the employ of the Royal Horticultural Society at Chiswick were enabled to witness and thoroughly enjoy the performance of *Billee Taylor, or the Virtuous Gardener*, at the Imperial Theatre, Westminster, on Saturday evening last.

DISEASE IN PLANTS.

(Concluded from p. 658.)

RESTING STAGE.—In all these points you may, I think, find help in the study of specific diseases. I will add only one more. Usually, the gall begins to grow directly after the deposit of the egg; but sometimes there is a long delay, a long period of suspense, an "eiruhe,"* which may last for many months before the growth begins. What is going on during this time? I believe we may see here an instance of events very difficult to study in our own pathology, in which two or more conditions must concur to the production of some disease, and one of them must wait for the complete efficiency of the rest. In the case of these long delayed galls, either the egg, after being laid, requires a long time for the completion of changes ending in the production of the necessary morbid poison, or the plant-structure in which it is laid requires the time for changes to make it susceptible of the poison; or both egg and plant may need to change. So, in us, two or more conditions must concur. A tendency to gout may be inherited, and the blood may have slowly acquired the necessary morbid condition; but no structure may be susceptible of gouty disease till a blow, or a strain, or some disturbance of nervous force makes it so. So with cancer; a general tendency may be inherited, but it must wait till the material of some structure is, by age, or injury, or long continued "irritation," changed into fitness for concurrence in morbid action with the material on which the general tendency depends. Then, when the two materials meet in mutual fitness, the result may be a change so great that we may compare it with that from an act of impregnation.

But it is more than time that I should have done with galls. If I have been tedious, let me assure you that I am myself ashamed to have gathered so little from the rapidly increasing records concerning them to which the botanists, and still more the entomologists, of our time are contributing. And, even for that little, I feel as if I deserved to be compared with one of those burglars of whom I spoke feeding on the results of others' labours. Let it be my apology to them, that I believe I have taken nothing they would have used. I have only taken, from their rich stores of facts, some that may be much more useful in pathology than in natural history. And I am sure, from all I know of naturalists, that they will gladly let any of you into their fields, though you may use them for your own purposes much more than for theirs. It would be difficult to find a field for the study of the very principles of pathology larger or richer than this offers to you. The objects are within easy reach; hundreds of morbid processes are at hand for deliberate study; experiments may be made at will; and, during many months, thousands of insects, as natural vivisectioners, will be at work for you; and it must yet be some years before they will be required to take out licences.

TUMOURS.

I do not know if there be any morbid growths in plants which may justly be compared with our cysts or cystic tumours. Foreign bodies lodged in them usually give rise to such changes in the immediately surrounding textures as produce layers of cork tissue, which may be compared with the capsules of connective tissue similarly formed around foreign bodies in animal structures;† but I do not know if there be any such diseases as cysts filled and enlarging by the increase of secretions or growths from their own walls.

Growths which may be coarsely, and only coarsely, compared with our cheloids are common on Elms and other trees, especially on Apple trees. They are called cankers, or in Germany by the same name as cancers—*Krebs*.‡ They are usually rounded and coarsely nodular masses of wood covered with bark, sessile singly or in clusters on branches, and depressed at the middle of their projecting surfaces. Thus, in form, they are not far unlike masses of scirrhous cancer projecting from the breast or axillary glands; and the likeness is the nearer when, as is usual, the

depression on their surface leads into a cavity bounded by decaying wood. The imitation of an ulcerating cancer may justify the use of the same name; but, in the canker of the trees, the central cavity usually indicates the beginning, not the advance, of the disease; for cankers, like most cheloids, are formed after wounds—whether from frost, or blow, or injury of parasite, or any other cause. Around these wounds, layers and bosses of wood are annually heaped up, as if with an exaggeration of the process of repair, and with concentric growth they may close in and complete the likeness to the cheloid. But, more commonly, while the outer part of the canker is annually increasing, its inner part is constantly decaying, under the attacks of the parasites which the wound let in, and which plants seem to have no power to expel. Thus, within a kind of shell of laminated wood, outstanding like a tumour on the branch, you may find a great hollow space filled with rotten wood and other residues. It may look very like a mass of cancer with central softening and decay; and the likeness is even greater when, as not rarely happens, the central decay keeps pace with the formation of new wood. Then is formed what some call an open cancer, others gangrene or brand. In these, an uneven surface of rotting and dead wood is surrounded by an undulating, knotted, and everted or overhanging border of the wood annually formed, but in its turn destined to decay, and thus to imitate the constantly enlarging cancerous ulcer with its nodular uplifted borders.

It is impossible not to be struck by these likenesses between cankers and cancers; and I commend them to your study, though I fear they are much more apparent than real. The nearer, yet still distant, likeness seems to be that to cheloid growths; for these also appear as morbid troubled processes for repair, and they are so far like to tumours that no line of definition between them seems yet clear.

The growths in plants which may, I think, be deemed most nearly like our tumours, are those which are called exostoses,* knaurs, or wens. They may, indeed, be regarded as only prominent examples of that disorderly growth of adventitious buds which produces the various strange and beautiful knots and veins in ornamental woods; but they are too like tumours for me to pass them by. You may find plenty of them on the trunks of the Beech, Hornbeam, Ash, Birch, Holly, and Cedar. The best specimens appear as ovate or nearly spherical masses of hard wood partly covered with bark, which is reflected on them from the continuous bark of the trunk on which they rest. They range from a few lines to many inches in diameter, and are attached sometimes broadly, sometimes by short narrow pedicles continuous with the wood of the tree. Some are without pedicles, and lie as free encapsuled masses in the growing wood.

In many of these conditions there is a very strong resemblance between these growths and some of the bony exostoses after which they are named. Especially when one breaks them off the trunk of the Beech, or the Holly, or Cedar, and sees their pedicle of attachment and the bark, like integument and periosteum, continued over them, one cannot but compare them with the narrow-based ivory-exostoses of the skull or the pedicled exostoses which are common on the femur and humerus, or with the sessile fibroid uterine tumours.

On section, they show themselves formed of very hard wood; and their pedicles appear as cylinders of wood passing from their centres into continuity with the normal wood of the trunk. Through these pedicles, while they last, the exostoses probably obtain some of their materials for growth; when detached, they wholly subsist and increase on materials derived from the cambium spread out over them. In this continued growth, when encapsuled, they resemble the typical tumours of our pathology more than do any other morbid growths on plants; and they may continue to grow so long as nutritive material is supplied to them.

Now, the history of those growths is very suggestive to us. They are derived from buds, which remain, as Trécul says, in a sort of lethargic state for several years, and then become active, and form either a little branch or a *loupe* or exostosis, which,

* Schenck, *Beiträge zur Kenntniss der Nussanischen Cynipiden*, p. 21. He cites the case of *Trigonaspis megaptera*, which lays its eggs in May, and the galls do not appear till the next April; others lay in buds, and the galls appear at the time of opening of the leaves. Hartig mentions similar facts (*Zeitschr. für die Entomologie*, Band ii., p. 176, 1840).

† See Arloing in *Ann. des Sc. Nat.*, 1874, tome iv., p. 27.

‡ Sorauer, *Handb. der Pflanzenkrankheiten*, 1874, p. 109, &c.; Göthe, *Ueber den Krebs der Apfelbäume*; Leipzig, 1877.

* Berkeley in *Gardeners' Chronicle*, 1855 and 1857; Trécul . . . des Loupes et des Broussins, in *Ann. des Sc. Nat.*, t. xx., 1853. An excellent account of the knots and veins of wood to which they are related is given by Frank; *loc. cit.*, *Mater. bot.*, p. 394.

in its increase, will project more and more beneath the bark. Surely, they may thus confirm that theory of tumours which regards those whose structure does not differ widely from the natural structures, as growths derived from portions of germinal substance remaining, though one knows not why, for years "lethargic," and thus becoming active, growing in their own method, and subsisting on materials derived from the living parts around them.* *From Sir James Paget's Address on Elemental Pathology.*

CLIVE HOUSE, ALNWICK.

NOVEMBER is not one of the pleasantest months in the year for visiting gardens, when the only attractive portions are the glass structures. Especially did I find this the case, as journeying northward I found the ground more heavily coated with snow, and the trees, although decidedly beautiful with their plumelike snow-clad branches, wanting in interest from a gardening point of view. Finding myself in the vicinity of the old border town of Alnwick (so recently noticed in the *Gardeners' Chronicle*, in the article on the Castle grounds of Alnwick), I availed myself of the opportunity to see the vineries at Clive House, the residence of Mr. D. P. Bell. Having heard various opinions expressed as to the value of the Alnwick Seedling Grape as an acquisition to our late Grapes, I naturally wished to see how it was doing where fairly established; and having seen, I thought it might be of interest to your readers to give a short account of the vineries and their contents.

The first house entered was a curvilinear lean-to conservatory about 40 feet long, the roof of which is devoted to the cultivation of Black Hamburgs. From those the Grapes had been cut for some time, and the foliage was falling fast from beautifully ripened growths. The house was full of the ordinary decorative plants suitable for a cool house, amongst which were many nice examples of Ferns. From thence we descended to the vineries proper, which are placed on the side of a rather steep incline, each range running across the slope in terrace fashion. The first of those ranges we entered is a span-roofed house, 80 feet in length and 18 feet wide, devoted to Lady Downe's Seedling; in this house a heavy crop of medium sized bunches is hanging—700 I was informed. Here is growing an exceedingly fine Vine of the Alnwick Seedling, several canes being carried from it bearing a heavy crop of grand fruit; this is the Vine from which the bunches were shown that were certificated at South Kensington. After leaving this house we enter another range filled with Black Hamburgs, also span-roofed, 66 feet long and of the same width as the last house described. The greater part of the Grapes were cut, but those that remained fully testified to the high quality of the produce—the berries being fine and the bunches of good size. A few other sorts are grown in this and the next house which is also devoted to Black Hamburgs, showing equally good results over a little less extent, this house only being 40 feet long but of the same breadth as the others. After passing a new house just being put up for the cultivation of Tea Roses, we enter a lean-to house filled with Lady Downe's Seedling, also about 40 feet long. A finer lot of Grapes of the variety, for crop or finish, could not be wished for—colour and size of berry and bunch being equally fine.

But still the special object of my visit, and the *raison d'être* of these notes, had not been seen, namely, the Alnwick Seedling house. This is a lean-to house erected by Mr. Bell three years ago for the culture of this variety. Its dimensions are—width, 15 feet; height, 15 feet; and length, 180 feet. As the canes have only been planted three years, only about half of the length of rafter is cropped, yet the effect on entering the house is very fine—in fact such a house of late Grapes it has never been my lot to behold; the bunches being large, and the berries equally so, and jet black. There is not in the whole house of 1000 bunches a single evidence of shy setting, but in this, I am informed, they were assisted. The appearance of the Grape is equal to that of the Alicante, while the flavour of the fruit as grown here approaches more nearly than any other late Grape to that of the Hamburg. It is generally conceded

that the best criterion of the quality of any article is its commercial value, and this variety of Grape well bears that test although as yet not widely known by consumers, fetching 5s. per pound wholesale price. The heaviest bunch of it cut this season weighed over 6 lb., but the average weight I should judge to be between 2 and 3 lb. The natural soil is apparently suitable to the cultivation of the Grape Vine, as the border for this house is but the garden soil with a dressing of turf and half-inch bones added. The autumnal tints of the foliage of the Alnwick Seedling Vine are very distinct and beautiful, the leaves varying much in colouring from a brilliant yellow through the various pinks and scarlet to the deepest claret hue.

The earlier vineries as the fruit is cut, or is in process of cutting, are filled with Chrysanthemums, many of which were just commencing to bloom and make the houses gay at the time of my visit (November 16). I take this opportunity of thanking Mr. Bell for his courtesy, and of congratulating him on his success in the cultivation of a Grape that is likely to take the same high place amongst late varieties that the Black Hamburg does amongst early sorts. *R. Crossling.*

DONINGTON PARK.

THE large and elegant residence here is built in the true Gothic style, and is situated on the south side of the river Trent, which at this point separates the counties of Leicester and Derby. It is the seat of the recently created Baron Donington, formerly C. F. Abney Hastings, Esq. It is little more than a mile from the little picturesque town of Castle Donington, and the road known as Park Lane leads directly to the mansion. And this may possibly be considered as the principal entrance; there is, however, another from the Melbourne Road, also one from the road leading to Ashby-de-la-Zouch, about a mile south from the town of Castle Donington. This is placed upon the right hand side of the road, and consists of very heavy wooden doors, enclosed in high sandstone walls, with lodge, or gatehouse—presenting altogether a somewhat gloomy aspect. From this the mansion is approached by a drive or coach-road, some mile, more or less, in length. About a third part of this drive is between two lines of remarkably fine trees, consisting of Oak, Ash, and Elm, the gnarled and Ivy-festooned boughs of which overhang, and to some extent darken it, producing a noble although somewhat sombre effect, which is to some extent marred by the narrowness of the drive itself; but this drawback could be easily remedied. The drive now passes through a coppice, or covert, consisting of healthy young trees of various kinds, together with evergreens, chiefly of the common Yew. Some of the trees are of considerable dimensions, although all are evidently young, and their healthy condition goes far to indicate the excellent quality of the soil, which appears to be of a rich loamy character.*

Passing under one of the arches of a strong stone bridge, wreathed with Ivy, over which is a roadway, the park is entered by a high gate. Such altitude in gates and fences is doubtless absolutely necessary, as the park contains two fine herds of deer, one of the common or park species, and another of the red deer; the two varieties keeping entirely distinct and separate, not even condescending to fight with each other. The drive, or road, now bears to the right, and the scene which at once presents itself is exceedingly beautiful. There are possibly few parks in England, or elsewhere, for which Nature has done more than she has done for that of Donington. The soil, as has been said, is of a rich loamy character; so the verdure, as a natural result, is of the brightest possible green at nearly all seasons of the year; while the surface of the soil is alternately thrown into bold swells and sunk into gracefully sweeping valleys, presenting altogether, from various points of view, scenes of great and picturesque beauty. Near to the northern extremity of the park is a precipice, which overlooks the river Trent, and is known as the Donington Cliff; and this is greatly admired on account of its wild and romantic beauty, commanding, as it does, extensive views of the counties of Derby, Leicester, and Nottingham, including many miles of the winding Trent; with Swarkeston Bridge, at least a mile long, and which the Pretender's—"Charles Edward's"—army were said to have refused to cross, suspecting it to have been mined with a view to their entire destruc-

tion. So greatly was this romantic spot admired by the late Countess of Loudon, that by her will she directed that her right hand should be buried there. We cannot say whether or not this strange request was complied with; but an unfinished monument at present marks the spot, in the form of a large stone cross, bearing the inscription, "I bide my time"—her ladyship's family motto.

The almost precipitous banks of the Trent are here richly clothed with hanging wood to almost the water's edge; while they are at the same time intersected by somewhat breakneck-looking walks, some of which lead to a very ornamental boat-house, with pleasure-rooms, &c., above it, while a short distance from this the river is intersected by a fine large weir, at what is known as King's Mills.

Donington Park contains nearly 400 acres, and offers many charming sites for a residence, but it is doubtful if the present mansion could have been placed in a more desirable situation than that which it occupies, facing, as it does, the south, and placed at the termination of a beautiful valley, the sides of which are studded with fine old trees, and commanding an extensive prospect of the richly-wooded park. The mansion, as has been stated, is a Gothic structure, and is built of the fine white sandstone which is found upon the estate. The south, or principal front, is remarkably beautiful. In the centre is a fine lantern-tower, over the portico, all of which are most chastely and elegantly executed; while the principal apartments are splendidly furnished, containing large collections of valuable paintings, &c. It was built by the first Marquis of Hastings, and over the doorway is the following inscription, together with various armorial bearings, &c.:—"To the memory of uncle Francis, Earl of Huntingdon, from whose affection he received the estate, this edifice is gratefully dedicated by Francis Rawdon Hastings. 1793."

On the east side and adjoining the mansion is the chapel, some 60 feet by 20, which forms a wing to it, and at the same time conceals the inferior offices. And to correspond with this on the west side is a lofty conservatory composed of wood and iron, some 80 feet long by 40. This fine lofty structure, which communicates with some of the apartments of the mansion, could well accommodate and allow considerable development to a fine collection of the larger growing kinds of stove or greenhouse plants, but at the present time its contents are utterly unworthy of it. A small flower garden lies on the south side of the conservatory, and at a short distance to the north-west of this is some very naturally constructed rock-work, surrounding a small piece of water, the rock-work being formed of large blocks of sandstone.

As a very unfavourable contrast to the south or principal front of this fine mansion and its otherwise noble surroundings, the fine entrance hall is approached by a mere gravel walk, as from its lack of width it can hardly be designated a drive or coach road, and this passes round a very small circle of greensward which could well be dispensed with, and its place occupied by a considerable breadth of clean gravel, which would harmonise much better with the noble frontage of the mansion.

The great features, however, of Donington Park are its fine undulating surfaces of greensward and its wealth of grand and gigantic old trees, more particularly Oaks, some of which are as much as 18 yards in circumference, and must be of great antiquity. In *Domesday Book* it is said that "In Dunitone there is a wood 12 furlongs long and 8 broad;" and these dimensions correspond so nearly with those of the ancient boundary of Donington Park that Nichol, in his *History of Leicestershire*, thinks it probable that some of them may be coeval with this ancient record:—

"Those hoary trees, they look so old,
In truth you'd find it hard to say
How they could ever have been young.
They look so old and grey."

The kitchen gardens lie to the north of the mansion, and are only a short distance from it. They are of considerable extent, 4 acres being enclosed by an excellent brick wall some 12 feet high, and the various kinds of fruit trees trained upon them are generally in good condition; and the garden, at the period of our visit (middle of October), was well stocked with the usual kinds of culinary vegetables peculiar to the season. We particularly noticed a considerable breadth of what we supposed to be Veitch's Autumn

* I think that many examples of "club" on the roots and stems of Cabbage and other species and varieties of the same order may illustrate the growth of tumours. But some are certainly insect-galls, and the parasitic origin of others is suspected.

Giant Cauliflower in fine condition. In addition to the space enclosed by walls some acre or more, in the form of outside borders, is devoted to the production of culinary vegetables, together with some 2 acres of orchard on the west side of the garden. But this, like most orchards during the present season, has been far from productive.

The principal range of glass structures are lean-to's placed on the south side of the south wall of the garden, and are consequently outside the walls. They consist of a Peach-house and three vineries. The old Peach trees are about to be replaced by young ones, and the house has in the interval been made to furnish a fine crop of Tomatos. The appearance of the plants in the early vinery give promise of abundant crops next season, and the two remaining houses in this range are devoted to late sorts, such as Alicante, Lady Downe's and Muscats. All these structures are heated by hot-water pipes, but the roofs are old and in want of repairs; although they must have been erected at considerable expense, the astragals being all of copper, and the rafters cast-iron. In addition to the structures mentioned there are also two span-roofed erections, more recently constructed in the form of a plant-stove and a green-house; they are also heated by hot water, and are each about 40 feet long by 18 feet wide, together with sundry forcing pits, &c. Mr. Maclean, who was formerly gardener at this place, is now a successful landscape gardener with an extensive practice, and has also for some years occupied the kitchen gardens and orchard as a commercial or market garden. And the soil being of good quality, with skilful management, he seldom fails in obtaining excellent crops of fruit, as well as of culinary vegetables.

The town of Castle Donington is in itself very interesting, being of great antiquity. It is built upon a hill, or rather rock, of soft sandstone, and owing to the declivity of the hill, and the various elevations of the different houses, it not unfrequently happens that the doorstep or the garden of one house is upon a level with the roof of the next. The soil, however, is in most instances of excellent quality, as is shown by the crops of culinary vegetables produced in the various cottage gardens, and the healthy condition of the various kinds of fruit trees, such as the Apple, Pear, Plum, and even the Apricot and the Peach, while in the numerous villa residences ornamental trees and shrubs of various kinds appear to thrive remarkably well; there are consequently to be seen fine examples of the Cedar of Lebanon, *Araucaria imbricata*, *Picea Nordmanniana*, *Cupressus Lawsoniana*, *Thuopsis borealis*, various *Retinosporas*, common and Irish Yews, variegated Hollies not less than 40 feet high, *Aucubas*, &c., and all appear to have survived unscathed the severity of last winter's frosts, with the exception of some fine specimens of the Deodar Cedar, all of which are killed outright. This appears somewhat remarkable when the altitude of the situation is considered, and when such species as the *Aucuba* escaped injury in the same garden.

Eustace, Baron of Haulton during the twelfth century, built a castle upon a lofty summit on the north side of the town, which commands a most extensive prospect of the surrounding country; but in the year 1216 the castle appears to have been held by John, Baron Lacy, one of the barons who took an active part in enforcing the observance of Magna Charta: his castle was in consequence demolished by order of the king. Remains of the outer wall can yet be distinctly traced, and in the early part of the present century, during the operation of some excavations in its vicinity, various antiquities are said to have been discovered, such as coins and implements and weapons of war.

The church is a very large and ancient structure, and has at various periods undergone repairs or restorations. It is dedicated to St. Luke and St. Edward, king and martyr. It has a remarkably handsome tower, surmounted by a spire which rises to the height of 180 feet, which is quite a landmark, being distinctly seen from great distances.

The church and its chancel contain many interesting monuments, some of which are of considerable antiquity. Among others are two fine altar-tombs, each of them representing a knight in armour, with a lady by his side, one being in brass while the other is of marble. The effigies upon the latter have undergone considerable mutilation, and sacrilegious hands have in very many instances scratched their initial or other letters upon the marble figures, not even respecting the cold marble face of the recumbent lady; while on the male effigy, amidst many other rudely formed letters, the name of Bradshaw can be indistinctly traced, and this is said to be the

handiwork and name of one of Oliver Cromwell's generals. Close to the north wall of the chancel, to the left of the communion-table, we observed the recumbent figure of a priest in marble, whose shorn head reclined in a sort of canopy with flowered finials, while his hands are elevated in a praying posture. This figure has every appearance of very great antiquity, and we were assured that it was coeval with the foundation of the church itself, the date of which we could not ascertain. *P. Grieve.*

A PROLIFEROUS KOHL-RABI.

ABOUT two months ago I received from Mr. George Pollock, seed merchant, a somewhat re-



FIG. 128.—A PROLIFEROUS KOHL-RABI.

markable specimen of Kohlrabi (*Brassica oleracea caulorapa*) which he had picked up in a garden in the neighbourhood of Stirling. I placed the plant at first in a shallow basin of water—the water just covering the roots—and lately I planted it in a flower-pot with good soil. It has continued to grow ever since it came into my possession, so that many of the lateral swollen branches—of which there are eighteen—are now larger than turkeys' eggs. I am hopeful that the plant may flower and produce perfect seed next spring. If it does so, what are the chances of the progeny continuing the peculiarity of the parent? [Slight.] If this could be accomplished, it would certainly be a grand addition to the kitchen garden—representing what the Brussels Sprout is to the common Cabbage. I enclose you a photograph of the plant (see fig. 128). The original central shoot had withered before the present two fresh upright shoots were deve-

loped. Could this give rise to the peculiar growths? [Probably.] *John Sadler, Curator, Royal Botanic Garden, Edinburgh, November 9.*

ILEX DECIDUA, WALT.

WE are so accustomed to think of the Holly as an evergreen that some surprise may be felt at the statement that there is a whole group of deciduous Hollies, of which the one figured at p. 689 (fig. 129) may be taken as an illustration. The figure represents a small spray of *Ilex decidua*, a native of the Southern United States of America. Our specimen was kindly sent us by Messrs. Rodger McClelland & Co., of Newry, and is, as they say, most distinct among the Hollies. Its shortly-stalked leaves are thinner in texture than in the case of most Hollies, glabrous, or nearly so, oblanceolate, acute, and finely serrated.

THE SELECTION OF HARDY PLANTS.*

THE term half-hardy is here applied to such introduced exotic plants as have been found to withstand our milder winters without artificial protection, but which suffer more or less in those of unusual severity, as well as to unimported kinds which are natives of such low temperatured climates that their successful cultivation in Great Britain may be deemed probable. The disastrous effects of the last two unusually severe winters upon many of the highly interesting ornamental and useful plants which have been introduced to our gardens and pleasure grounds from the milder temperate regions as well as from high tropical mountain ranges, have caused such losses and disappointment to plant cultivators, that any means by which the recurrence of such disasters may be prevented or materially modified must be deemed of paramount importance, and that such desirable results are attainable by the carefully continued selection of young plants that have been grown from seeds I hope to be able to demonstrate in the course of the following remarks.

The plants that are best suited for withstanding the vicissitudes and rigours of our rather fickle climate are those that make and mature their annual growths within that portion of the year in which frosts are altogether or nearly absent, and that, consequently, neither commence expanding their buds too early in spring, nor continue growing too late in the autumn. Hence, in selecting the hardier varieties, these essential characteristics should be carefully kept in view, unless in those occasional instances which happen when an ungenial summer and autumn such as we had in 1879 is followed by a severe winter like the last, when highly satisfactory results may be readily obtained by merely selecting plants that have best withstood the inclemency.

In further elucidation of the subject in hand I have, in order to combine brevity with distinctness, arranged my explanatory and confirmatory, as well as suggestive remarks under the following seven headings:—

I. *Plants that expand their buds earlier in spring than others.*—Among a quantity of any given species of young plants that have been reared from seeds, whether in the seed-bed, in nursery lines, or after being planted out, some will be found that expand their buds much earlier than others, and are consequently more liable to be injured by the later spring frosts. This is peculiarly characteristic of the Himalayan plants, showing that in their natural habitats, when the winter or dormant season ends, it is quickly followed by the growth-promoting warmth of spring; and that they are there free from that alternating frosty and mild weather which prevails from February till past the middle of May, in our changeable climate, and which often destroys or irrevocably disfigures the fine Conifers and other plants of Upper India even after they have passed unscathed through very severe frosty weather in the course of the preceding winter.

Growers of the many unsurpassably fine Nepal and Sikkim Rhododendrons are too familiar with these disappointing results, and in order to insure the

* By William Gorrie, Esq., Rait Lodge, Trinity. The opening Presidential Address to the Botanical Society of Edinburgh, delivered at the November meeting, 1880, intitled "On Obtaining by Selection Hardy Varieties or Forms of what are usually termed Half-hardy Plants."

unimpaired blooming of their favourites have to provide greenhouse protection for them in spring, although, as in the past winter, they were not perceptibly injured by a December temperature of fully 30° under the freezing point.

II. *Plants that expand their buds later in spring than others*, and that consequently are exempt from, or much less liable to be injured by late frosts. The common Sycamore (*Acer Pseudo-Platanus*), may be instanced as showing that the difference in time between the expansion of buds in the earliest and latest plants of the same species is much greater than is generally supposed, for while the leaves are on some plants fully expanded in March, others may be seen growing among them that scarcely begin to open their buds till May. Although the Sycamore is so hardy that even its earliest varieties seldom suffer from frosts, yet its large leaves are by no means exempt from being torn and disfigured by equinoctial and other early spring gales. It is admittedly one of the most suitable trees for withstanding both land and sea winds on very exposed places, but persons planting it in such places would do well to select only the latest budding plants. In proof of this I may mention, that

in the case of any individual plant on the mere fall of the temperature to a stated or even an approximate low point, but that the amount of injury sustained by the said plant is largely dependent on the influence which the preceding growing season may have had upon the maturation or non-maturation of its growth. Thus the Lombardy Poplars around Edinburgh and in other districts were either killed or irrecoverably injured to an extent previously unknown by the slightly above zero temperature of last December happening after an unprecedentedly late and unfavourable autumn for perfecting their growths, although in previous seasons they had endured fully as low temperatures without injury; and although extensively grown in America it does not there suffer from the much greater intensity of the winters. Again orchard or standard Peach trees that have had their annual growths ripened or matured by the summer and autumn warmth of Canada and the Northern United States retain perfect health and fertility, although the winter temperature is often 30° below zero, while it is only in a few of the most favoured Scotch gardens that they are occasionally so far matured on the warmest southerly exposed garden walls, as to withstand our winters and produce fair crops of fruit.



FIG. 129.—*ILEX DECIDUA*. (SEE P. 688.)

for clothing the ground about wind and sea spray exposed marine residences, I have found young Sycamores taken promiscuously from the nurseries to be quite incapable of maintaining their existence; but having replaced them with only the latest budding plants that could be found, their success has been highly satisfactory. Having about twenty-five years since planted an arboretum in which those splendid Silver Firs, *Picea Pindrow* and *P. Webbiana*, were wished to form conspicuous features, their early budding habits led to frequent disappointments, till visiting a nursery where a great number of them had been reared from Himalayan seeds, I selected a few plants of each towards the end of April, in which the buds had scarcely begun to swell, although those on many of the others were well expanded, and the after success of the former was all that could be desired.

III. *Plants that continue growing latest in autumn* are most liable to suffer from early autumnal frosts. While unusual coldness or lowness of temperature has doubtless been the main cause of that recent plant destruction which has resulted in great pecuniary losses to nurserymen, as well as to the vexatious disappointments of plant growers, it must be kept in mind that such unwelcome results are not dependent

IV. *Plants that take less time than others to mature their growths*.—It is a generally known as well as an easily confirmed fact, that plants of the same species which expand their buds earliest often do not mature their autumn growths earlier, or even so early as others which do not put forth their young leaves till all chances of injury from late spring frosts are past. Orchardists and horticulturists are familiar with the fact that varieties of Pears and Apples (*Pyrus communis* and *P. Malus*), as well as of other fruit trees which are latest in budding and blooming, are often the best growers as well as the most regular bearers; and that kinds which ripen their fruit comparatively early frequently continue growing so late in autumn that their young shoots, as well as their blossom and leaf-buds, get materially injured by the succeeding winter frosts. Confirmatory proof of these averments, as well as highly interesting and useful cultural information may be obtained by carefully selecting a number of trees or other plants belonging to the same, as well as to different species, and recording the dates at which their buds were burst, when their leaves attained to full size, time of flowering, fruit or seed ripening, the completion of their autumn growths, as well as the autumnal tinting and falling of their leaves, which observations should be continued over at least three seasons.

V. *Chance opportunities for the selection of hardier varieties or forms*, which happen after such plant destructive winters as the last, should be taken advantage of when they occur for selecting such plants as have retained their vitality when others of the same kind that had been reared from seeds under exactly the same circumstances have either been entirely killed or severely injured. Such selections can now, as well as in the next two or three planting seasons, be readily made in "nursery breaks" of *Araucarias*, *Deodar Cedars*, the large-coned *Cypress* of North-West America, and other important trees, as well as of such shrubs as *Arbutuses*, *Aucubas*, *Hollies*, *Rhododendrons*, *Roses*, *Sweet Bays*, &c.

VI. *Natural selection of plants*.—The trite saying that "All the trees of the wood do not grow alike," has reference to the commencement, completion, and time requisite for maturing their annual growths, and to the relative lengths or bulk of the same, in the members of any given species, as well as to trees forming a mixture of many kinds. Take, for instance, any kind of tree or other plant having an ordinary range of natural habitats, and ascending from the lower to the higher of these. Those requiring most time for making their growths will gradually disappear as the altitudes become less suitable for their maturation, leaving in the upper regions only such as have been best able to perfect their growth and ripen their seeds for the continuance, or, it may be, the extension of the species in the highest and most inclement parts; hence, if seeds or roots are there gathered, it may be fairly assumed that plants grown from them will be found much hardier than others reared from seeds or roots taken from the lower native habitats; and were collectors of exotic plants to send home only seeds garnered in their highest and coldest natural habitats we might get many hardy forms of what are now deemed half-hardy and greenhouse plants from the mountain ranges of Southern Europe, Asia, Africa, Central and South America, Australia, New Zealand, Japan, and other parts, which would form new, valuable, and highly interesting features in our plantations, pleasure-grounds, and gardens.

Our native forests of the Scotch Pine or Fir (*Pinus sylvestris*) may be instanced as affording important examples of the beneficial effects of natural selection on that most important and extensively grown of timber trees. In 1874 I had an opportunity of carefully examining much of the famous Ballochbuie forest on the Braes of Mar, which since then has fortunately become the property of our society's most respected patron, Her Majesty the Queen. And I here use the word fortunately, advisedly, as from this grand old forest having become Royal property, a guarantee is afforded that it will be permanently preserved as a worthy remnant of those magnificent Pine forests with which our Highland glens and mountains were once so widely clothed, but of which many have even recently been cleared away; and that it will continue to exhibit through far future generations as many noble specimens as it now does of the true valuable timbered, gigantic, smooth reddish stemmed native Scotch Pine or Fir, with its picturesque, horizontal branched, umbrella-like tops. In Ballochbuie I observed many varieties and sub-varieties of the *Pinus sylvestris*, among which I had no difficulty in identifying the four described in the Caledonian Horticultural Society's *Memoirs* for 1814, by that renowned Scottish botanist, the late Mr. George Don, as having been found by him in some plantations in the neighbourhood of Forfar, where he ascertained that the forementioned best native variety (which he called *Pinus sylvestris horizontalis*) only existed in the proportion of about one tree to ten or twelve of the others. In those parts of Ballochbuie forest which were most favourable for tree-growth, such as in proximity to the drive from Balmoral to Invercauld, as well as in dry-bottomed hollows, &c., I found Don's *P. sylvestris* var. *horizontalis* almost exclusively or largely prevalent, having by their more rapid and larger growth overtopped and destroyed most of the others; which were only seen in excess where the soil was surcharged with moisture or from other unfavourable causes, and where consequently they were thinner and had more room for developing their characteristic appearances. In places where all the varieties were intermingled the greater abundance of cones on the dwarfier as well as more fastigate or upright branching trees than on those of the horizontal

variety was very marked, showing the accuracy of Don's opinions that the degeneracy of the Scotch Fir in low country plantations was, in consequence of the best native variety producing its cones much more sparingly than the others, while they were also less easily got at; and the seed gatherers, being paid for quantity and not for quality, they seized upon those cones that were most easily obtained, which practice, having been continued throughout many generations of planted trees has resulted in the too great predominance of the comparatively worthless common or lowland Scotch Fir.

(To be continued.)

Foreign Correspondence.

WELWITSCHIA GERMINATION.—I was reading lately your journal of the 30th ult., and under the heading of "Welwitschia" I found a description of the mode of germination differing from what I have observed. Allow me, therefore, to describe how the seeds germinate with me. One of the closest resemblances in germination to the Welwitschia is the *Commelina celestis*, a common plant in English gardens, so that your readers may understand me better by referring to this plant's germination. The square seeds of the *C. celestis* throw out a fine stem (stalk of the cotyledon?), and at its end a germ is formed whence a radicle protrudes downwards, and a plumule upwards. The same thing happens with the Welwitschia mirabilis, only that the thread is not prolonged to the same length, the germ being developed quite close to the seed, whence a plumule of two germinal leaves grows upwards, of a dark red colour, and a long radicle (very fine) downwards, which is prolonged to a considerable length. These germinal leaves and stem become afterwards glaucous and grow to about 2 inches, when the true leaves appear in an opposite sense [at right angles?] to the germinal leaves, the seeds swell up a little, and the cotyledons seem to make growth, and either take or supply nourishment. About twelvemonths afterwards the seeds detach themselves entirely from the plant; the young plant forms a head, and the two secondary leaves continue to grow and form the two celebrated leaves once supposed to be the persistent cotyledons. That such is not the case I proved by some plants of mine, now more than two years old, and which have never shown up to this day any other leaves but the aforesaid secondary leaves. It is erroneous, therefore, to say that the cotyledons are the leaves of the plant.

I have for some years been forming a collection of observations on germination, a thing I find very little attention paid to, and I should certainly be very pleased to learn that there are readers of your journal who are on the same track as I am, as we could mutually bring into notice a very curious department of vegetable life.

I have had lately an increase to my African collection which may prove quite a novelty; a friend of mine sent me by the last mail seeds of what he termed *planta odre*, or wine-skin plant, and which, he says, is just like an *odre* in the ground. It is from the interior of Benguela. It is certainly not the Elephant's foot, nor is it the Elephantorhiza of British Africa, as the seeds are too large and very flat; but on a future occasion I shall do myself the pleasure of writing for your journal a note, should you think it worth while, on my African and Oceanic collections. *Chr. D. J. de N. Monteiro, Almada, Portugal.* [Please do. Eds.]

Natural History.

BIRDS AND FRUIT.—Does your correspondent, Mr. Willis, writing at p. 530, seriously mean that the tomtit and the bullfinch are equally harmless? If so, I trust none of your readers will be misled by such a statement. The former bird is, I believe, mainly insectivorous, for though in time past I have shot several that were engaged in disbudbing, I could never discover the slightest trace of a bud in their stomachs; so if they would kindly pay less attention to the stalk end of our finest Pears in the autumn, I should consider their presence a blessing. The bullfinch, on the other hand, is pretty well known to subsist for several months in the year almost entirely on the buds of trees, having a special liking for those of the Plum and the Gooseberry. The only thing to

their credit appears to be the indirect benefit they confer by feeding on the seeds of weeds. Sparrows, too, I consider, do about ten times more harm than good. Most gardeners estimate these birds at their true value, but many of their lady employers consider it so cruel to kill the "poor little birds" (of whatever kind), that the use of a gun is prohibited. Such ladies expect fruit, though, and green Peas also, and, unfortunately for their consistency, have often no objection to a dish of larks. My advice to those who love their gardens for the crops they produce is, exterminate the bullfinch, and in the case of the sparrow, say, restore the balance of Nature, which in many districts has gone sadly wrong since the decrease of his natural enemies—the hawks. Sparrows, by-the-way, are not bad eating if carefully cooked. I look forward to a pie composed perhaps of those wretches that destroyed the greater part of my Peas last June, with which I had hoped to obtain a prize. *A. G. Bridgeman, Marlow.*

HABITS OF THE COCKROACH.—In the article under the above heading, given in your last issue, occurs the following passage:—"Though to its other crimes the cockroach does not apparently add that of cannibalism." Surely this is contrary to ordinary beliefs. I admit I have never seen them actually eating each other, but have known them decrease in numbers by the disappearance of the smaller ones when several have been imprisoned in a trap. If a few are smashed or scalded and left on the floor overnight they invariably vanish by the morning. Are they eaten, or taken away by their comrades to be buried? Some few years since a writer in *Chambers' Journal*, who had been pretty well acquainted with the cockroach on board a cruiser off West Africa, graphically described their habits, and, among other things, stated that the only chance of getting sleep was to "play possum" for a time, then suddenly start up and lay about him with a slipper, and afterwards go quietly to rest, while they were feasting on the dead bodies of their companions. *A. G. B., Marlow.*

Apiary.

THE HONEY BEE.—I commenced bee-keeping as a boy. How delighted I was with my first hive. Our garden was favourably placed—on the south, within a mile, there was an extensive heath; on the north, beyond the rectory, a wood; and all around us lay the gardens of a well-to-do village, in the centre of which we lived, with plenty of cornfields and pastures, and excellent bee grazing within easy reach. My first hive was a straw skep, then I had eight straw hives enclosed in a bee-shed, and then I invested in more elaborate hives with side boxes and supers, and glass windows. But it is not of hives but of bees that I would speak. In spring their first golden grist comes from the Willow catkins! It is curious to see the little creatures come home with dusty coats, and yellow balls on their legs. The bee population is small in spring, but you will find your industrious bees hunting over the first spring flowers—the early Anemones, Crocuses, Hepaticas, and Snowdrops. The Arbutus, too, is duly searched, and the early Violet, Daisy, and Dandelion, and, in short, all the humbler plants, far and near, that open their blossoms early. We had no moors nor bee pastures in our neighbourhood extensive enough to make it worth while to move the hives to the feeding grounds, as the bee-keepers of Northumberland and other moorland counties do, but we had a varied succession of good productive pasturage within a mile—and bees will travel for honey three or four miles. Two miles from our house there was a large avenue of Lime trees, in which the bees did an active business, accompanied by a perpetual buzzing, in the season. Nearer at hand, and later in the year, a neighbouring game preserve used to provide a field of Buckwheat for his pheasants, and this was glorious pasture. Buckwheat is a plant of the honey-bearing sort, which keeps blossoming and seeding during several weeks, and, in spite of the old doggerel, "But a swarm in July is not worth a fly," such a swarm will sometimes gather 20 lb. of honey from a field of Buckwheat in a very short time. The business of filling a hive is soon done. Heather, for example, blossoms early in August, and continues in blossom about three weeks, and I have known the bees fill their hives in that short space of time.

Sometimes it is the only chance they enjoy during the summer; but they do not neglect it, and the hives which were light on August 1 are heavy and well stored on September 1. A good avenue of Limes, blossoming in good weather, will do for the early swarms what Heath and Buckwheat will do for the later ones. Cottage bee-keepers have no perception, as a rule, of the difference in the flavour and perfume of different kinds of honey. They take all their honey at Michaelmas with the aid of sulphur matches, whose fumes add to the flavour without improving it. A small farmer, the other day, wishing to turn a penny in these bad times, brought some honey to a friend's door. He had thrown the combs pell-mell into an earthen vessel, where they lay in a state of uninviting "smash." Through sheer stupidity and carelessness he had depreciated the value of the honey cent. per cent. This is the class of men who produce both in Ireland and England the worst butter in the world. Honey in the comb is not only more inviting in appearance than run honey, but it is superior to it, possessing a flavour and aroma which exposure to the air destroys. A bee-keeper of refined taste will observe that the character of the bee pasturage affects the flavour of his produce every week through the gathering season. If Lime trees are numerous he will find his supers in a propitious season suddenly filled with nectar of the most delicate and delicious kind. He need not climb the hills to learn when the wild Thyme blossoms—he will find the Heather blooming on his breakfast-table; and a strong flow of honey into his hives of coarse flavour and plebeian smack, will advise him that the field of Buckwheat is in season. Bees pay very dearly for their wax. It is said that the materials of 25 lb. of honey are required to elaborate a pound of wax. Our American cousins have invented a method of extracting the honey without injuring the comb, so that the latter may be used again. Unfilled comb should not be removed from a hive.

Who would be a drone to be turned out of the hive in autumn and miserably murdered? The only privileges of the male bees are leisure, which is carried to excess, and the chance of meeting the queen in mid-air and receiving an embrace which invariably proves fatal. A queen bee leaves the hive twice only—once when she leads forth the swarm, and once in spring when she meets her consort in the air. As this is not an assignation, but an adventitious meeting, and all-important, Nature provides a thousand drones to every colony of bees, and day by day they go forth for the chance of meeting their queen, whom to meet is death. Curious arrangement! which has this advantage, that incontinence in a bee-hive is unknown. *H. E.*

Garden Operations.

FLOWER GARDEN.

By reason of falling leaves and the litter resulting from such a constant succession of gales as have been prevalent of late, the maintenance of neatness has been, and still is, a very difficult matter; but as at the present time there is so little of attraction in the way of flowers, &c., this difficulty should be resolutely met, in order that thorough neatness may in some measure make amends for the general dulness in the garden that is inevitable at the present season. To my mind there is as much real pleasure—considering the time of year—to be extracted from smooth, hard, dry and clean walks, a well swept and rolled lawn, and neatly trimmed verges as; comparatively speaking, there is at the height of the flowering season. Others, no doubt, have experienced a similar pleasure, and have also, like myself, found it an incentive to any amount of exertion in the attainment of the desired end. Those who have not yet made the experiment have a treat in store, and the sooner they start in search of it the more likely are they to fully enjoy it. When once neatness has been attained and the leaves stacked, there will be but few operations demanding immediate attention, but in prospect of the busier time that is rapidly approaching, any work that can now be done will be so much labour and anxiety saved when that time arrives. All alterations of walks and roads, clearing and opening of drains, turf laying, and tree and shrub planting, should be got out of hand as soon as weather and means admit. We are now busy with such work, and when frost stops the way then we go to hedge clipping, grubbing up root stems, gravel digging, turning over soil and manure-heaps, burning up all prunings and other vegetable refuse that cannot conveniently be got rid of in any other way, the ashes from such a general "smother" being invaluable,

when mixed with soot, as a manurial dressing for turf—proving how true it is that in "Nature's economy" nothing is wasted. Trench and manure vacant beds and borders, and if required, relay or repair the Box or other edgings that surround them.

The beds that are planted with spring flowering plants will, when a thaw takes place after each sharp frost, need to have the plants pressed into the soil; to prevent such upheaving, there is nothing better than surfacing the beds with cocoa-fibre refuse, and even apart from this advantage of protection, it is well worth while to use it to give tone to the beds. The rockwork and fernery should now be tidied up for the winter, and it may be worth while partially to protect any pet plants that are weakly, either with cinder-ashes or fibre; the dead fronds of Ferns, being the natural protectors, should not be removed till spring-time. Some of the tuft-growing Sedums should always be planted amongst deciduous Ferns, their value coming into due prominence now that the Fern fronds have died away. In bad weather when work in the open air is impossible, the houses containing bedding plants should be overhauled, to pick off all decaying foliage, and give more space to those that are overcrowded—a sturdy growth being of first importance to the production of healthy cuttings. When the propagating season arrives still water sparingly, and keep the temperature as low as is compatible with the health of the plants. The more tender section, such as *Alternanthera* and *Coleus*, to keep them successfully, will need all the heat that a pinery or plant stove affords. Offsets and leaves of the slower growing varieties of *Echeverias*, *Cotyledons*, and *Sempervivums*, may be propagated at any time, and seeds of the same, if sown now, will make nice plants for next summer's bedding. The following kinds we raise from seeds annually, and find this the best way of procuring a stock quickly. *Sempervivum Donkelaari*, *S. canariense*, *S. tabulaforme*, *Echeveria glauca metallica* and *E. metallica*. *Klenias* and *Pachyphytons* are most quickly increased by cuttings, which may be taken off at any time during the winter. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

The fine weather which ushered in the month has unhappily been succeeded by violent storms of sleet and rain, which have so saturated the earth that all planting operations have been brought to a standstill for the present. We are now visited with severe frost, which could hardly have made its appearance at a more unfavourable season, or under circumstances which are more likely to upset the most carefully devised programme for carrying out improvements. The suddenness of the change should be a lesson to planters that every precaution should be taken to protect the roots of trees that have recently been removed by covering the surface of the ground with dry litter to a depth of from 2 to 3 inches thick. This protection, if applied in time, will have a very beneficial effect upon the trees by excluding frosts and searching winds, thereby insuring a greater uniformity of earth temperature, and healthier conditions for the roots to lay hold of the soil afresh.

I have previously adverted to the most important seasonable operations in the way of forming fresh plantations of the different kinds of hardy fruits, and to the renovation of old ones, with a view to the improvement of the quantity and quality of the crops. I have, however, made one exception in the case of the Raspberry, than which there is no small fruit more appreciated for cooking purposes or in greater request during the summer and autumn months. The Raspberry, although it will succeed in a way anywhere requires high cultivation to bring it to perfection. The positions for Raspberry plantations are not always happily chosen. It luxuriates in a cool, rather damp situation, where there is not actual stagnant moisture. It also likes a deep rich soil and partial shade.

Having selected a suitable situation for making a new plantation, the ground should be trenched two spades in depth, and a layer of well-rotted manure put between each layer of soil. Good strong canes, with abundance of fibrous roots only, should be chosen, and it is the safest way to make a new plantation—or at least a part of one—a year previous to destroying the old one, in order to make sure of a supply of fruit. This latter suggestion applies with equal force whether large or small quantities are grown. The plants should be planted at 6 feet between the rows, and 5 to 6 feet from plant to plant, and they may be tied upright to stakes or trained to wires, or they may form arches in case it is so desired. I prefer the system of training to wires, because of the facilities it offers for ripening as well as gathering the fruits. The trellis for tying the canes to is formed by driving strong, square, upright posts into the ground at equal distances apart, and fastening the wires to these posts by means of eyes or loops.

Many people consider the arched system of training pretty, as no doubt it is, especially in a small garden; the arches are of course formed by bending the plants

towards each other until they meet and a connection is effected, which produces the desired shape.

The best varieties for summer fruiting are *Fastolf* and *Red Antwerp*, and the best autumn-bearing kind is *Belle de Fontenay*. The latter variety should be grown extensively for autumn fruiting; it bears upon the wood of the current year, and deserves to be more widely known than it is, not only because of its excellence, but also because it prolongs the season of so useful a fruit. *W. Hinds, Canford.*

FRUIT HOUSES.

VINES.—Where late autumn vineries are required for plants through the winter, the bunches, if any remain upon the Vines, may be cut and taken to the Grape-room; but before this is done the latter should be cleansed, limewashed, warmed, and ventilated in order to draw out damp and sweeten the atmosphere, as cleanliness in this department is quite as important as it is in the houses in which the Grapes are grown. If bottles are used they should be filled with sweet soft water a few days before they are wanted, otherwise fire-heat will have to be used to dispel damp after the Grapes are introduced, and an excess of dry fire-heat is quite as unfavourable to long keeping as an excess of moisture. Assuming that the wood is free from leaves each fruit-bearing shoot should be cut to the pruning bud, all beyond the bunch being left intact to prevent loss of moisture from the berries when the atmosphere is unusually dry. Although I have before stated, I may again repeat, that the room in which Grapes keep best is one with thick, dry walls, impervious to sudden external changes, with perfect ventilation and sufficient heating power to keep the atmosphere dry and buoyant, and to prevent the temperature from descending below 45° in severe weather. Immediately after the Grapes are cut and before the winter occupants are taken in all work in connection with the roots should receive attention, if pruning is deferred; but after such a fine autumn it is more than probable that the wood will be quite ripe, when time will be economised by getting the Vines pruned and the house ready for starting when the proper time arrives. Fortunately the planting of soft-wooded plants is on the wane, and we hope the day is not far distant when the Vine will have its complete season of rest, with full exposure to the atmosphere of a well ventilated empty house instead of being made to play second to a parcel of bedding plants. Get succession-houses pruned and cleansed ready for starting in December. Examine the inside borders and give them repeated waterings preparatory to the application of the top-dressing of turf and crushed bones. Select well-ripened prunings from these mid-season houses for making future stock, either as grafts or plants from eyes, and lay them in in the open air. When the buds in the early house begin to swell young rods should be examined, and if terminals show signs of taking the lead bend them down to a horizontal position and syringe the dormant parts three or four times a day until they begin to move. Turn the fermenting material at short intervals, and add fresh leaves from the reserve ground, to prevent the heat from declining below 75°. Give a little air every day, run up to 70° under gleams of sunshine, and let the night heat range about 58° for the present. When all the buds show signs of breaking remove the fern or litter from external borders and cover up with dry warm leaves to the depth of 18 inches. Make them very firm, and place old lights or shutters over all, with a sharp pitch to the front for throwing off snow and rain. Disbud pot Vines, and increase the temperature to 70° or 75° by day when fine, but do not allow it to exceed 60° at night when mild and a few degrees lower when very severe. *W. Coleman, Eastnor.*

CUCUMBERS.

See that the plants are kept free from the attacks of spider and fly, and that they suffer not for want of, or from too much, water at the roots. During the present severe weather air must be applied discriminately so as not to admit of chilling draughts to the house, which would have a paralyzing effect on the plants. Anything likely to cause a check to the organic system of the plants must be strictly guarded against, forasmuch as at no time of the year, perhaps, would it prove so disastrous as during the next three months, when we have to bear up against a minimum of light and solar heat, with a maximum of darkness and artificial warmth. Under these circumstances the exercise of a little timely forethought in the carrying out of the minor cultural details—for it is attention to these that conduces to great results—is absolutely necessary, if the object in view is to insure success. To achieve this there should be no hap-hazard treatment, but those in charge should be made to thoroughly understand the why and wherefore of their departmental duties. Let the usual tying and thinning of the shoots be attended to when necessary, which will not be often now, excepting with vigorous growing plants, and see that all superfluous fruits are removed forthwith as soon as the necessary number for sustaining the supply have

set; remove all male blossoms and any injured leaves. Maintain a sweet growing atmosphere in the house and allow no opaque matter on the glass to obscure the light from passing to the interior of the house. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

STOVES.—In cases where stove climbers are planted out, or are in too large pots or boxes to be conveniently removed to a cooler temperature, the only way to insure thorough rest is to keep them perfectly dry at the roots. This applies more particularly to such as are of a deciduous nature. As regards the evergreen section, a middle course must be pursued, as were water entirely withheld from them the leaves and young shoots would flag to such an extent as to seriously affect the health of the plants. Although the thinning and regulating of these is generally left till the turn of the year, light is just now of such importance to plants growing beneath, that it is advisable to remove all superfluous branches at once. There are so many stove subjects flowering at this season that do so much better and last so much longer in an intermediate temperature, that it is quite worth while, where it can be done, to devote a separate compartment to them. This will not only be a great advantage and benefit so far as they are concerned, but the others can then be treated more in accordance with their several requirements. Among the most showy that will stand in a degree of heat ranging from 55° to 65° may be mentioned the *Epiphyllums*, than which nothing can be more beautiful or serviceable in a decorative point of view, as they can be grown in so many forms and shapes—as standards and pyramids, for instance, or in baskets or pots suspended from the rafters, in which latter position they are exceedingly effective. Then again there are the *Poinsettias* with their brilliant crimson bracts that fade and die in a greenhouse, but which are just at home in a temperature like that named above, where, if kept slightly dry at the roots, they will remain in perfection for a considerable period. The *Sericographis*, too, likes the same treatment, and under it will continue flowering till quite late in the spring, as will also the *Bouvardias*, at which one may cut and come again, and the same with *Centropogon* *Lucyanus*, another of the very best things that can be had for winter blooming. *Euphorbia jacinthiflora* deserves special mention, but to have the blossoms of this colour well the plants must be so placed as to have their heads well up to the glass.

CONSERVATORIES.—To have these structures thoroughly enjoyable at this season, and to render the air suitable for the miscellaneous collection of plants now in use for their embellishment, it will be necessary to keep up a steady temperature of about 50°, in which degree of heat *Salvias*, *Schizostylis*, *Tree Carnations*, *Cyclamens*, *Cinerarias*, *Primulas*, *Eupatoriums*, *Libonias*, *Richardias*, *Bouvardias*, and a host of other things will expand their blooms and continue on without damping or spotting. These evils, however, are often brought about by allowing the atmosphere to become stagnant and surcharged with moisture taken up from the water draining through from the pots, which should be guarded against by giving no more than is absolutely necessary for the purpose required, or by at once mopping or drying it up. A "crack" left on at the ventilators is also a great help, as then the air is constantly changed and kept in motion, but when the weather is frosty and clear, or the wind cold and cutting, the ventilators must be closed, or the creepers near will be injured by the draught acting so directly upon them.

FORCING-HOUSES.—These will now be in full work, but the slower things are brought on, the better and more satisfactory will they be. It is a good plan, where many plants are required, to use all the cold pits as feed places, as under their shelter *Rhododendrons*, *Kalmias*, *Deutzias*, *Lilacs*, *Solomon's Seal*, *Spiraeas*, *Lily of the Valley*, *Dielytras*, and other hardy subjects may be plunged in beds of fresh raked leaves, which, gently fermenting, set the roots at work, and when plants so treated are subject to top-heat they respond directly, and are not long in expanding their buds. In cases where they cannot be got under cover the pots should be well protected in some warm sheltered corner, by working amongst them plenty of dry straw, leaves, or bracken; and the same with *Roses*, for to allow any of them to stand abroad and get the soil frozen retards them very considerably.

GREENHOUSES.—The most useful and showy plants in these up to a late period have been the tuberous-rooted *Begonias*, which now that they are going to rest deserve every care to protect and keep them, for although they may be got readily from seed sown after the turn of the year, any so raised must of necessity be small and late compared with those a year or more old. These will be found to winter well in cold pits, cellars, or sheds, or laid on their sides under stages, if out of the way of drip; but wherever placed, they should not be disturbed from their pots, but left imbedded in the soil as they are. *J. Sheppard.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Nov. 29	Sale of Bulbs and Plants, at Stevens' Rooms.
TUESDAY, Nov. 30	Sale of Bulbs and other Roots, at the Auction Mart, by Protheroe & Morris.
WEDNESDAY, Dec. 1	Sale of Nursery Stock, at Inverleith, Edinburgh, by Mr. David Mitchell.
THURSDAY, Dec. 2	Sale of Lilies, &c., at Stevens' Rooms.
FRIDAY, Dec. 3	Sale of Roses, Fruit Trees, Bulbs, &c., at Stevens' Rooms.
SATURDAY, Dec. 4	Sale of Imported and Established Orchids, at Stevens' Rooms.
	Sale of Insects, at Stevens' Rooms.
	Sale of Plants and Bulbs, at Stevens' Rooms.

WHILE the expectation of the general reader—whose tastes and appetencies, by the way, it would be difficult to define—is aroused by the announcement of a new novel by Lord BEACONSFIELD, and of a new volume of poems by the Poet Laureate, the attention of the naturalist is no less secured by the publication of a new volume from the pen of Mr. DARWIN.* We note the simultaneous publication of these works as a singular fact without wishing to inflict on the reader any comparison between such different products of mental activity, although those who are fond of speculation might indulge themselves in seeking out points of resemblance or contrast between them, and might discuss at any length the relative value of these productions to the human race, and the probable duration of their influence.

Mr. DARWIN's present work, like others of his more recent publications, is devoted to the record of an elaborate series of observations and experiments, and to a brief statement of inferences to be drawn from them. Like all his works this, his latest, is marked by infinite patience in research, exhaustive accumulation of detail, clear statement of facts, legitimate inferences from them, and candid impartiality.

The general fact that plants possessed powers of movement has, of course, long been known. Mr. DARWIN himself has previously contributed in an eminent degree to our knowledge of the movements of climbing plants, and of those which take place in the flower in connection with the processes of fertilisation. Scattered observations, or more or less complete studies of certain phenomena—as, for instance, the motion seen in the so-called sensitive plants—have been made by many, but never before has such an exhaustive treatise on the movements which go on in growing plants, been given to the world—never one based on so much patient personal research. Taken in conjunction with his work on the movements and habits of climbing plants, we have now a complete representation of existing knowledge on the subject so far as regards the general subject—we introduce the qualification because the movements of the protoplasm and of the juices within the constituent cells of the plants are in the present volume only incidentally alluded to.

Although most persons accustomed to use their eyes are familiar with the sweeping motion of tendrils, the closing of leaves in sleep, or as a result of irritation, as in the Sensitive Plant, it will, we imagine, come as a surprise to many to find how universal is this property of motion in plants, and how organs and parts are shown by Mr. DARWIN to possess it in a marked degree, even in cases where it has hitherto not been obvious to the superficial observer. As these movements are intimately connected with the growth of the organs, with the influence of light and other conditions, their existence, now they are pointed out, will not occasion much surprise. What surprise will be experienced will probably result from the circumstance that such phenomena have not before attracted our attention. Mr. DARWIN's object has been, as he tells us, to "describe and connect together several large classes of movements common to all plants." Most of these movements are comprised under what has been called "revolving

nutations," as, for instance, where the growing tip of a climbing plant revolves, and, of course, in so doing bends successively to all points of the compass. For this movement Mr. DARWIN adopts the general descriptive epithet of "circumnutation." This movement depends essentially on a rush of fluid, causing turgescence of the cells, now on one side, now on another side of a growing organ, and to the disproportionate growth of the constituent cells on that same side—the convex one. This gyratory mode of growth is now shown by Mr. DARWIN to exist in all parts of growing plants—in the seedling plant, in the young radicle, in the caulicle, in the cotyledons, in the plumule, in the stem, the branches, the leaves, the flowers. Experiments in support of this statement are detailed with a profusion of illustration that enforces assent.

Perhaps the most wonderful part of Mr.

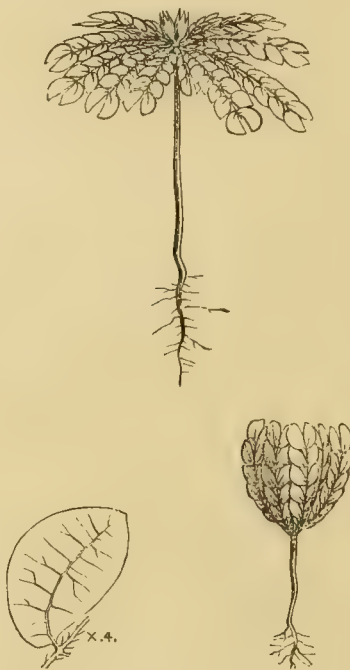


FIG. 130.—OXALIS, AWAKE AND ASLEEP.

DARWIN's work is that relating to the gyratory movement of the root-fibrils, and to the sensitiveness to touch of their tips, in virtue of which the upper part of the fibrils is bent away from any obstacle. The movement in the case of the root as it protrudes from the seed is immediately modified by the attraction of gravity, and it continues to be so. As a consequence of these interactions, the root-fibres are enabled to penetrate the soil, to overcome and pass by obstacles, following with unerring skill the line of least resistance. The whole details relating to root growth will be novel to most of our readers, and they will prove to be of very great interest to practical men interested in root growth. At another time we hope to give the substance of them in these columns; for the present we must confine ourselves to the mere mention of them. If the tip of a root, we are told, be lightly pressed, or burnt, or cut, an influence is transmitted to the upper adjoining part, causing it to bend away from the affected side, and, what is more surprising, the tip is able to distinguish between two objects, as to their degree of resistance, by which it may be pressed on either side. If, however, the radicle be pressed above the tip, no influence is transmitted to any distant part, but the root bends abruptly towards the object. If the

air is moister on one side than another the tip of the root is influenced, and transmits the influence to the upper adjoining part, which bends towards the source of moisture, and so on with reference to light and gravity; the final purpose of all these separate or combined actions being the advantage of the root-fibre and the adaptation of the tip of the root-fibre so as to enable it to make the best of the situation in which it may be placed. The sensitiveness to contact is different at the apex and at the part immediately above the apex of the root-fibrils, and these facts, in association with the other causes before mentioned, lead, as we have said, the root into the channels most advantageous for the plant under the circumstances.

"A radicle," says Mr. DARWIN, "may be compared with a burrowing animal, such as a mole, which wishes to penetrate perpendicularly down into the ground. By continually moving his head, or circumnating, he will feel any stone or any other obstacle, as well as any difference in the hardness of the soil, and he will turn from that side; if the earth is damper on one side than on the other side he will turn thither as a better hunting-ground. Nevertheless, after each interruption, guided by the sense of gravity, he will be able to recover his downward course and to burrow to a greater depth."

The movements executed by the growing ends of branches and of leaves are also carefully investigated, including those movements generally included under the "sleep of plants," the use of which seems to be to protect them from the ill effects of radiation. In the *Oxalis*, of which we give an illustration (fig. 130), for which we were indebted to the late Dr. WELWITSCH, it may be that the uplifting and infolding of the leaves protects the young buds in the centre from the chilling effects of nocturnal radiation. The "sleep-movements" of a similar nature in the seed-leaves or cotyledons are much less familiar, and Mr. DARWIN has accordingly studied them in no less than 153 genera.

Under the heading "sleep of leaves" Mr. DARWIN alludes to the movement in the leaves of Conifers, by virtue of which the glaucous undersurface, say of the leaves of *Abies Nordmanniana*, becomes exposed to the light. In so doing he quotes from M. CHATIN, who alleges that the movement takes place specially at night, which is just contrary to our experience, and as the point is one of some interest we allude to it here, and refer to some observations made at p. 663, vol. xii. The term "sleep" is, of course, a misnomer, and that it is even less of a resting period than has been hitherto supposed is shown by what Mr. DARWIN tells us of the movement of the leaves supposed to be asleep during the night. Night as well as day the growing leaves, though apparently still, are, at intervals, more or less moving throughout the whole twenty-four hours. The stolons, or runners, move or circumnate in a conspicuous manner, with the object of passing between or over obstacles. The movements are modified by innate causes, such as differing degrees of growth on one side as contrasted with the other, and which are independent of external agencies, such as heat or light. To this class belong the movements of climbing plants. The coiling of the flower-spur of the *Angræcum* (figured at p. 693) round an adjacent spur, is due probably to this power of circumnutation, aided by the sensitiveness to contact which has been observed in tendrils, and which, as we are now told, occurs in root-fibres also. They are also modified by external causes—as in the case of the so-called sleep of plants before referred to, where they are dependent on alternations of darkness and light, or, as in the case of the opening and closing of flowers, on fluctuations of temperature.

Thus cursorily must we for the moment notice

* *The Power of Movement in Plants.* By Charles Darwin, LL.D., F.R.S., assisted by Francis Darwin. Murray.



FIG. 131.—*ANGRÆCUM KOTSCHYI*. (SEE P. 694.)

this remarkable book. As a contribution to science it is most valuable—as a storehouse of facts for the student of Natural Theology it will be found replete, and as offering hints to the practical cultivator most suggestive.

— *ANGELICUM KOTSCHYI*.—This remarkable native of Tropical Africa was described by Professor REICHENBACH in our issue for October 9, p. 456, and was exhibited for the first time in this country by the Messrs. VEITCH at the meeting of the Floral Committee on the following Tuesday, when it attracted a very considerable amount of attention by reason of its spirally twisted spurs, whose inter-twinnings are well shown in the woodcut (fig. 131). We refer our readers to the description given at p. 456, merely adding in this place that the colour of the flowers is creamy white.

— *HEROES "EN DESHABILLE."*—When last we saw our heroes they were admired by all admirers, glowing in floral beauty, and winning the contest, as some of them had done for several years past, for the glory of their owner and the honour of the Royal Nursery, Slough. How blushing maidens went into ecstasies over the superb form of Charles Lawson, and admiring gentlemen expatiated upon the beauties of Céline Forestier—how hard matter-of-fact practical experts surveyed with critical eye every point or fault, and compared these with the giant warriors from Cheshunt—and how sometimes the fight was with the Turnerites and sometimes with the Paulites—our pages for several years past will tell. At last came the time when no foe appeared, no opponent ventured into the floral arena, or took up the challenge so boldly thrown down, and now our heroes retire—champions of the Rose-ring, full of years and of honours. But *sic transit gloria florum*, we see our heroes again, *en deshabille* now, in a corner of the Royal Nursery, not forgotten, but almost unnoticed. Much as skeletons of CÆSAR, HANNIBAL, and CYRUS would be regarded in the Baker Street Walhalla of notoriety, so are these Rose heroes of a hundred fights—without flowers and almost leafless, all the staves and props of their fighting days exposed to view, looking mere wrecks of the once glorious creatures they were. How great is the contrast! Let no reader, however, imagine that, though at present in no condition to fight the battles of their honoured master, they have no fight left in them. In skilful hands they will next spring again bloom as grandly as ever—but where? It is whispered that perhaps some of them may cross the Atlantic, to astonish the dwellers in the New World. If such be their destiny, may they in that far-off sphere of life long flourish, and find there new generations of enthusiastic, and perhaps more grateful admirers, than we have been.

— *IMPORTED LILIES FROM JAPAN.*—It was predicted some time since that large importations of Lilies would come from Japan, owing to the favourable character of the season, and that the bulbs would be large and fine. Many cases are now coming to hand. Those who trade with Japan find it a remunerative venture to import cases of Lilies and sell them by public auction. These cases contain from 150 to 300 bulbs, each sort kept by themselves, the bulbs packed in clay peculiar to Japan. The cases bear the Japanese name of the Lilies, and an importer of a number of cases receives a set of plates, and we recognise in these the common white, orange, and Tiger Lilies, *L. longiflorum*, &c. If sold under their Japanese names, buyers may be led to think they have something new and unique, when in reality they are some common variety. The low prices at which the cases of bulbs are offered by the importers is an additional proof of the large importations which are taking place.

— *RHODODENDRON CHAMPIONÆ.*—This beautiful Rhododendron, mentioned by Mr. FORD at p. 630, has just been sent from Hong Kong by that gentleman to the Royal Gardens, Kew. As one of the plants sent seems in good condition, we may reasonably look forward to seeing ere long this rare and interesting species growing freely and blooming in its new home. We believe that this is the first time it has been introduced to European gardens. It was first discovered by Captain and Mrs. CHAMPION, growing abundantly among rocks in a ravine at Fort Victoria, Hong Kong, in April, 1849.

— *POTATOS AT BIRMINGHAM.*—What is probably the last of the season's exhibitions of Potatoes for prizes takes place to-day at Bingley Hall, Birmingham, where there is always a large and very interesting competition, shared in by growers from diverse parts of the kingdom. Although the subscription of 20s., and entrance fees in each class of 2s. 6d., renders competition somewhat expensive, yet so admirable are the arrangements that no exhibitor need attend in person, and in any case none are permitted to stage their tubers, as this important matter is quite in the hands of the excellent steward of the Potato department, Mr. E. W. BADGER, who, with a body of assistants, puts up all the collections, and does it with impartiality and judgment. Southerners would perhaps be amused to observe that at Bingley Hall, as soon as the judging is over, the Potatoes are at once protected, not from the public gaze, but from the public hands, by stout wire netting. It must not, however, be hastily concluded that the public of the Midlands is afflicted with a *penchant* for other people's goods; it is rather to protect the tubers from that incessant and, so far, very critical handling to which they would be subjected were they left unprotected. To poke the fingers deeply into the ribs of a fat bullock, or to probe the stern of a prize pig, gives to the operator an air of professional ability that goes a long way in a mixed audience. This sort of thing carried to excess with Potatoes would soon result in a considerable mix, and be awkward for the exhibitors; therefore the command to "handle not" is not only given, it is very practically enforced. Prizes are yet offered for Ashleaf Kidneys, but it must be admitted that these are at this time of the year somewhat out of season. The Champion is specially encouraged by a distinct class, and this noble tuber will appear in all his native ugliness, the which will be made all the more apparent by the quality and beauty shown in other classes by other varieties.

— *HYMENOCALLIS MACROSTEPHANIA.*—In the T range at Kew this beautiful bulbous plant is now in flower. Its pure white, sweetly scented, handsome flowers render it one of the most valuable of all the *Pancratia* for decorative purposes. According to the letterpress accompanying the figure in the last volume of the *Botanical Magazine* the native country of this charming ornamental warm-house plant is unknown. At Syon House Mr. WOODBRIDGE grows it well, and finds it most useful for cutting.

— *QUEENSLAND TIMBER.*—We have received from Mr. WALTER HILL, Colonial Botanist, and Director of the Botanic Garden, Brisbane, a copy of a pamphlet containing descriptive notes of a collection of Queensland timbers collected and arranged by him, and exhibited at the Melbourne International Exhibition. Two hundred and twenty-nine species, belonging to forty-two natural orders, are enumerated; and of these the *Myrtaceæ* and *Leguminosæ* contribute the greatest number of species. Mr. HILL remarks that "the several collections of Queensland timbers which have been exhibited in the London, Paris, Philadelphia, and Vienna Exhibitions have attracted much attention on account of their variety and value for commercial purposes. The knowledge that they are adapted for all the uses to which timber is applied, and that special qualities are possessed by some of the trees represented in the collection, is rapidly extending, with it, is trusted, beneficial results to the colony."

— *CERATOPETALUM GUMMIFERUM.*—As an easily-grown, neat-habited, free flowering cool-house ornamental plant, the Light Wood, Officer-plant, or Christmas (for it is locally known by each of these names), of New South Wales, deserves mention. It has opposite, stalked, ternate leaves and panicles of whitish flowers. It is a member of a genus of *Saxifragaceæ* which is confined to the Australian continent, and contains but one other species besides that now under notice. The name of Christmas has been given to it on account of its being used in Australia to decorate the churches at that season. Specimens in flower may now be seen in the Temperate-house at Kew.

— *MRS. G. RUNDLE CHRYSANTHEMUM.*—Wherever six specimen Chrysanthemums are shown there will be found three "Rundles;" that is, Mrs. George, in her accustomed purity, her sport-sister, Mrs. Dixon, and her brother George Glenny. Had these

sports but given divergence in shape as well as in colour this might have been endurable, but to see three plants out of six in which trivialities of hue present the only divergency is rather hard, especially when it is repeated in even smaller classes. At Slough, however, Mrs. Rundle has given this year a sport that differs, not in hue of colour, but materially in form, for the blooms of this sport are semi-reflexed, the petals curving outwards, and then recurving upwards, with perfect regularity. As this is found on each of the blooms on the one plant, there is hope that it may be a permanent character. A rather curious feature is seen in a bloom of Mrs. Rundle upon another plant. One-half of the flower is golden-yellow, the colour of George Glenny, the other half pure white, but the petals of the yellow sport are but one-half the size of those that are white. What could, in the diversion to the deeper hue, have tended to this result? On the other hand, the blooms on a plant of George Glenny standing next are as fine as on the parent plant. The tendency of the Chrysanthemum to sport is a subject well worthy the attention of plant physiologists. Princess Teck Chrysanthemum is another kind that is eccentric in its tendencies. What cynical old bachelor was it that gave these kinds feminine names? At Slough Mr. TURNER has a huge lot of this kind grown specially for late blooming. On many hundreds of plants lifted and planted in houses as thickly as possible not a bloom is yet expanded; but there will be thousands of perfect form at Christmas, when these will be most valuable for church decoration. Yet a considerable number of plants of this kind put into a gentle warmth have come pink. Perhaps this is due to the excitement given. The hue of colour is intermediate between the tinted white of Princess Teck proper and Hero of Stoke Newington, said to be one of the Princess's progeny.

— *CORÆA PENDULIFLORA.*—More than twelve years ago this plant was introduced to Kew, where it flowered in the Palm-house, and was figured in the *Botanical Magazine*. Soon after that the Kew plant died, and until very lately it seems to have been totally lost to the country. Two or three recently raised plants are now, however, growing freely at Kew, and showing a large number of flower-buds, which will soon expand. *C. penduliflora*, as far as flowers are concerned, is wonderfully distinct from the common *Coræa scandens*, the chief difference existing in the very long, pendulous, strap-shaped, wavy corolla-lobes, and the much exerted stamens, which project horizontally between the corolla-lobes, forming five rays, much as in *Gloriosa*—an arrangement which Sir JOSEPH HOOKER thinks is doubtless intended to secure cross-impregnation by removing the anthers to the furthest distance from the stigma. A native of the mountains of Caraccas at an elevation of 6000 feet; it has also been found in Eastern Peru by SPRUCE.

— *PERENNIAL ASTERS.*—During the past summer a large collection of perennial Asters, including some fifty varieties, was grown at the Chiswick Gardens by Mr. BARRON. They had been gathered from various sources, and were of an interesting character. Some were large-flowered, others intermediate, and some quite small, but all were wonderfully free, and quite interesting. Among such a large group, showing necessarily much similarity of colour, it was a little invidious to make a selection, but the following were decidedly worthy of cultivation:—*A. Novæ-Angliæ*, pale magenta, with orange centre—very free, and of a pretty colour, contrasting well with the blue varieties; *A. Empress*, rich lavender dashed with the palest bright blue, and golden centre—very free and pretty, and bright in appearance; and *A. cyaneus*, delicate lavender with yellow centre. These three were truly large-flowered varieties. The intermediate and small-flowered varieties were:—*A. Ravennæ*, very pale lavender, with golden centre, not so large in size or broad in the petals as the former varieties—very pretty; *A. bicolor*, white tinted with pink, the young flowers pinkish-rose of a very pale shade—starry flowers, but very pretty; *A. Novæ-Angliæ* var., very pleasing shade of delicate lavender, with golden centre—very free and pretty, a little deeper in colour than *A. Ravennæ*; *A. sagittatifolius*, small, but flowering very freely in large spikes—colour very pale pinkish lavender, with a reddish-brown centre; and *A. dumosus*, in the same way, but smaller still, the flowers having rather broader petals—very pretty indeed. Many would, no doubt, pass

these flowers by as unworthy of notice, yet they are of considerable value in the garden in late summer and early autumn, blooming with great freedom, and continuously. They possess a greater value for cutting from than might be generally supposed. They are very accommodating also, growing very freely in a good holding loam, and so hardly in character that the hardest winter cannot harm them. There is now a large group of Asters, and it is quite certain they are not so much appreciated as they deserve to be. In many cottage gardens *A. Amellus* and other forms are objects of great beauty in late summer.

— *ACACIA FARNESIANA*.—At Kew this *Acacia* is now flowering nicely, and as a greenhouse or conservatory plant is certainly worth growing, not only for the beauty of its feathery bipinnate leaves and long-stalked globular clusters of orange-yellow flowers, but for the pleasing odour of these latter. In some parts of the South of Europe, and particularly at Cannes, where it seems to thrive thoroughly, "*Cassie*" is largely cultivated for perfumery purposes. From the last edition of *PIESSE'S Art of Perfumery* we learn that the plants are raised from seeds sown in beds, from whence the doubtful plants are removed. In the third year they are generally from 2 to 3 feet high, and are then planted out in fields, each requiring about 12 feet square. Before planting the ground should be well manured and trenched from 4 to 6 feet deep. In two or three years more the plants commence to flower; they ultimately reach a height of 10 or 12 feet, with stems about the thickness of a man's wrist. The annual value of the flowers from an established plantation is estimated at from £30 to £40 per acre.

— *CRINUM BALFOURII*, in the T range at Kew, has lately been in flower. It is a beautiful dwarf plant with a flattened scape, about 18 inches high, bearing an umbel of nearly a score deliciously-scented pure white blossoms. It is quite new to science, and is a native of the island of Socotra, from whence it was introduced to Kew by Dr. J. B. BALFOUR. A figure of it is being prepared for the *Botanical Magazine*.

— *THYRSACANTHUS BRACTEOLATUS*.—More than thirty years have elapsed since seeds of this plant were sent to Kew from Jamaica by PURDIE, and now the species is rarely met with, although, in common with many other more than half-forgotten Acanthads, it is certainly worth growing as a decorative stove plant. It has opposite, nearly sessile, lanceolate leaves, and thyrsoid panicles of scarlet flowers. Nice bushy specimens are now in bloom in the T range at Kew.

— *SCIENCE*.—The last sentences of Sir JAMES PAGET's address to the British Medical Association are general in their application, and so valuable that we may, without injury to their meaning, detach them from their context, and reproduce them in this place:—"I hold it to be very desirable that every one of us should, all his life long, study some science in a scientific manner. There seems to be no equally good method for maintaining the temper and the habits which, by making us always good students, will make us as good practitioners as we can be. There is no method so good for maintaining a constant habit of inquiry, with accuracy and perseverance in research, the power of weighing evidence, of calmly judging, and of accurately speaking; none better for cultivating the love of truth, the contempt for fallacies, whether others or our own, the gentleness and courtesy which are appropriate to the consciousness of the imperfection of our knowledge. You may say that we can study science in the practice of our profession. So we may: at least, some of those among us may, who, before getting into practice, spent many years in scientific pursuits, and acquired habits which it is very hard to lose; but even for these, the study of science in their practice is too much like that which, I suppose, an astronomer may pursue in some stormy night on a railway journey. For really scientific study we need repeated observations in unchanged conditions, the right to watch deliberately the course of natural events, sometimes to change that course when and how we please, to set down our descriptions of the objects of our study, even while we watch them, sometimes to have them at home and readily at hand for revision and refreshment of memory. These and many other con-

ditions for scientific study cannot be had in our practice, in which our first and never-ceasing duty must be to do, as soon as we can, all the good we can, though in doing it we may lose or spoil all the best opportunities of acquiring fresh knowledge. If, then, I am thus far right, that we all are always bound to study a science in a scientific manner, and that it is very hard to do this in our practice, let me again commend to you this elemental pathology. In any fragment of it, studied in those fragments of time which we are all apt, too apt, to waste, you may find ample opportunities for observation and experiment—for recording, collecting, and comparing facts; for generalising, for imagining and testing; thus you may gain the happiness and reputation of discovery; and, without ever leaving the paths of duty, you may refresh and strengthen your minds in the study of stores of beauty, wonder, and utility, such as, in all ages, have attracted the wisest and the best of men." These words were addressed to practising physicians and surgeons, but they are quite as applicable to practical gardeners.

— *ORCHIDS IN FLOWER*.—The following Orchids were in flower on the 22d inst. at the Pine-apple Nurseries:—

<i>Aerides odoratum</i>	<i>Odontoglossum</i>	<i>Dawsonia</i>
<i>Anacochilus Lowii</i>	num	
" <i>Petola</i>	" <i>epidendroides</i>	
<i>Catasetum tabulare brachyglossum</i>	" <i>Koezii</i>	
<i>Cattleya intermedia</i>	" <i>album</i>	
<i>Cymbidium Lowianum</i>	" <i>roseum superbum</i>	
" <i>giganteum</i> , "fine variety"	" <i>Rosii majus</i>	
<i>Cypripedium Haynaldianum</i>	" <i>triumphans</i>	
" <i>in-igne</i>	" <i>Uro-Skinneri</i>	
" <i>punctatum violaceum</i>	<i>Oncidium abortivum</i>	
<i>Epidendrum ciliare</i>	" <i>aureum</i>	
" <i>equitans</i>	" <i>caesium</i>	
" <i>tridactylon</i>	" <i>cheiroporum</i>	
<i>Eria barbata</i>	" <i>cuticulatum</i>	
<i>Gomezia recurva</i>	" <i>flexuosum</i>	
<i>Goodyera japonica</i>	" <i>nova sp.</i> , Paraguay	
<i>Laelia autumnale</i>	" <i>practutum</i>	
" <i>purpurea</i>	" <i>brunneum</i>	
<i>Liparis pendula</i>	" <i>tigrinum</i>	
<i>Masdevallia amabilis</i>	" <i>unicorne</i>	
" <i>lineata</i>	" <i>varicosum</i>	
" <i>Davisi</i>	" <i>Rogersii</i>	
" <i>igne</i>	" <i>unguiculatum</i>	
" <i>Veitchianum</i>	<i>Pholidota imbricata</i>	
<i>Maxillaria grandiflora</i>	<i>Plumna nobilis</i>	
" <i>picta</i>	<i>Pleione lagenaria</i>	
<i>Mesospindium vulcanicum</i>	" <i>Wallichiana</i>	
<i>Miltonia spectabilis radicans</i>	<i>Pleurothallis velutipes</i>	
<i>Odontoglossum Cervantesii</i>	<i>Restrepia antennifera</i>	
" <i>crispum Alexandræ</i>	<i>Sophrontia cernua</i>	
" <i>Blunthi</i>	" <i>coccinea</i>	
	" <i>grandiflora</i>	
	<i>Zygopetalum Mackayi</i>	

— *SEVERE FROSTS IN THE SOUTH OF SCOTLAND*.—A correspondent writes from Clovenfords, November 22, to the *Scotsman*:—"This district is again visited, as it was last year three weeks later, by exceptionally severe frost. On the 3d of this month we had 18°, on the morning of last Saturday we had 26°, and yesterday—Sunday morning—at 6 o'clock the thermometer stood at 4° below zero, or 36° of frost. The glass stands 3 feet from the grass, facing north. At 9 o'clock yesterday, with the sun shining, the glass stood 1° below zero—a circumstance I never observed before. Last year, on December 3, we had 36° of frost, and on the 4th 42°. This was exceeded farther down the Tweed, as at Kelso and up the valley of the Teviot. On that occasion a sort of cold wave ran along the valley of the Tweed and all its tributaries, more destructive to vegetable life than anything of this sort in the memory of man. Trees and shrubs that must have stood 200 years were killed. It passed through part of Northumberland into Durham, where, as at such places as Lambton Castle, it killed thousands of valuable shrubs and trees. The North and West of Scotland escaped with little damage, and so did England, south of York, but France and Belgium suffered dreadfully—even Pear and Apple trees were killed. I am sure many of your readers will be interested to learn whether the present severe frost is also confined to special sections of the country. I have never experienced such severe frost in November, and I question if any of your readers have, in this country at any rate. Six inches of snow being on the ground will save the Turnips and other low-growing plants, though sheep will find it hard work to get food on the hills."

— *SALVIA HOVEYI*.—We have to thank Mr. CANNELL for handsome flowering specimens of this new *Salvia*, which, according to Mr. C. M. HOVEY, is a sport originating in his establishment from *Salvia splendens*. There is evidence of this in that it has flowers of about the same size and form, and coloured

calyces of a similar character; while it is also a plant of about the same degree of vigour in regard to its growth, forming branching bushy specimens of free habit, furnished with stalked ovate, acuminate, evenly serrated leaves, somewhat rugose on the surface, and covered on both surfaces, as well as on the petiole, with very short hairs, which render them slightly rough to the touch. The corollas are also slightly hairy, and nearly 2 inches long, the upper lip twice as long as the concave 3-lobed lower one, the colour being a deep puce purple. The calyx also is hairy, and of a blackish purple. The inflorescences form an elongated spike, very much as in *S. splendens*; and altogether, though a little heavy in colouring, it will serve as a most effective contrast to the glaring hue of *S. splendens* Brantii.

— *HORTICULTURAL CLUB*.—The usual monthly dinner took place at the Club House, Arundel Street, Strand, on Tuesday the 16th instant. There was a large attendance of members. The following have recently been elected members:—THOMAS B. HEYWOOD, Esq., Reigate; J. ADAMS, Esq., Tavistock Square; C. F. HOARE, Esq., Hilden Beckenham, and E. W. BADGER, Esq., Birmingham.

— *PUBLICATIONS RECEIVED*.—*Duty, with Illustrations of Courage, Patience, and Endurance*. By Dr. Smiles (Murray).—*The Land Question, Ireland: Confiscation or Contract?* (Ridgway).—*Notes on the Ornithology of the British Polar Expedition, 1875-6; and on the Botany of the British Polar Expedition, 1875-6*. By H. Chichester Hart, B.A., Naturalist of H.M.S. *Discovery*.—*Letts' Popular Atlas*, Part 9.—*First Annual Report upon Useful and Noxious Plants*. By Prof. T. J. Burrill, Botanist to the Illinois State Board of Agriculture.—*Til-Bits for the Table*; recipes collected during thirty years by a lady (Edmonston & Co.).—*All the Year Round*, part 144 (26, Wellington Street).

— *THE WEATHER*.—General remarks on the weather during the week ending November 22, issued by the Meteorological Office, London:—The weather has been rather cloudy, very cold, and unsettled in all parts of the kingdom; much snow has fallen in all the more northern districts, and sharp thunderstorms occurred at Dublin on the 18th and 19th. The temperature has been much below the mean in all districts, the deficit ranging from 8° to 11° in nearly all places. At the commencement of the period the thermometer was comparatively high, and a reading of 57° was registered at Cambridge; but it soon fell rapidly, and during the latter part of the week was exceedingly low. The minima for the period occurred at most stations on the 22d, when the temperature fell to 12° at Glenalmond, 13° at Leicester, and to 22° or below in all places except the extreme south-west of our islands. The rainfall was rather more than the mean in the southern parts of England and Scotland, and the south of Ireland, but less in all other districts. Bright sunshine shows an increase in all districts, the percentage of total possible duration ranging from 50 in "England, S.W." and 49 in "Scotland, E.," to 22 in "England, N.E." and 29 in "Scotland, W." The wind has been very changeable, and occasionally very strong. On the 16th it blew a gale on all our coasts—from west in the south, from south in the east, from east in the north, and from north in the west. During the 17th, 18th, and 19th its direction varied between east and north or north-west, and, though moderate generally, increased to a gale in the south-west on the 18th, and in the south-east on the 19th. On the following day moderate breezes from north-east prevailed over Ireland and England, and from west in Scotland, and during the remainder of the period the wind was very variable over the greater part of England, but strong southerly or south-easterly breezes prevailed at the western and north-western stations, and reached the force of a gale in several places.

— *GARDENING APPOINTMENTS*.—Mr. C. HENLOCK, late of the Royal Horticultural Society's Gardens, Chiswick, has been appointed Gardener to W. ABBOTT, Esq., The Abbey, Kensington.—Mr. T. SIMPKIN, Foreman to Mr. LARKIN, at Auckland Castle, Bishop Auckland, has been appointed Gardener to ISAAC POAD, Esq., Fulford Grange, York.—Mr. G. WALL, Foreman to Mr. SMYTHE, at Basing Park, Alton, has been engaged as Gardener to Mr. DRAKE, Breakspeare, Uxbridge.

MOUNT ANVILLE PARK.

THIS place, the seat of Henry Roe, Esq., is situated about 4 miles from Dublin, and easily accessible from that city by either road or rail. No visitor can but be pleased at the satisfactory way in which plants of all kinds are grown here. The plant stove, which includes in the same range an exotic fernery, contains a row along the centre of the house of specimen Crotons, all in splendid health and very well coloured considering the shading used during the summer months. The varieties we noticed were *Croton interruptus*, *C. irregularis*, *C. undulatus*, *C. variegatus*, *C. pictus*, and *C. Weismanni*. The next subjects that drew our attention were finely grown specimen *Dracenas*, ranging from 2 to 5 feet in height, in every case covered with fine glossy foliage from top to bottom. The varieties included most of the kinds in cultivation, the most noticeable of which were *Dracena Shepherdii*, *D. Youngii*, *D. Mooreana*, *D. Taylori*, and *D. Rex*. The next house is the centre of the range, and is mostly devoted to plants in flower. At the time of our visit *Ixoras* were flowering in great perfection, and the varieties grown are *Ixora Fraseri*, *I. amabilis*, *I. Dixiana*, and *I. Prince of Orange*. Of the above-mentioned *I. Fraseri* is most numerous, being a free growing as well as a free flowering variety, easily distinguished from most of the others by the size of its foliage and its large flower trusses. In this house also we noticed a splendid plant of *Anthurium regale*; also *Crotons Veitchii* and *irregularis*, with the largest plant of *Medinilla magnifica* we have yet met with, and which, when seen in flower, must be a sight never to be forgotten. We must not omit to notice before leaving this house a large well-grown specimen plant of *Rondeletia speciosa* now in flower, which, if staged at any exhibition along with the plants we have already seen, and more particularly those we have taken special notice of, would not fail, we are sure, to take away with them great honours. What particularly surprises us is that, with such a collection, plants from this place are not shown. The only conclusion we can come to is, that the owner cares more for his favourites, and is unwilling to expose them to the vicissitudes common to transmission from one place to another. Be that as it may, they are all admirable examples of high-class plant culture.

In the exotic fernery the same healthful condition of affairs is also apparent. The plants first to catch the eye are two grand ones of *Adiantum farleyense*, each 3 feet across, grown in 10-inch pots, and of such health as is not often to be met with in this variety. Quite equal to the above, and grown in the same size of pot, is a grand specimen of *Adiantum gracillimum*, still throwing up young fronds, the fresh green of which, intermingled with the darker shade of the earlier growth, gives the plant a fine appearance. Here also is a monster plant of *Davallia Mooreana*, which we find on measuring to be 24 feet in circumference, grown in a 22-inch pan, also throwing up fine strong fronds. There are also two very fine plants of *Blechnum brasiliense*, and on the centre stage, making a good centrepiece indeed, is as fine a plant of *Cibotium princeps* [*Cyathea insignis*] as is to be found anywhere. Others equally deserving of notice could be mentioned, but we are told by our excellent guide, Mr. Fisher, who is at the head of the establishment, that we have yet a great deal to see, so we must push on—but not, now that we have got time to admire it, without saying a few words on what we think the greatest feature of this range, that is the back wall, which as we stand at one end and look along it presents to the eye one unbroken bank of green and variegated foliage. Here standing out in bold relief from a groundwork of *Selaginella*, are *Begonias* of many varieties, *Fittonias*, the free-growing *Artillery plant* (*Pilea muscosa*), and many others that space will not admit of us to note, but all of which show how well Mr. Fisher has selected the subjects for this kind of work.

We now pass to the cool fernery, which stands at the back, and in the shade of a clump of tall-grown Laurels. To attempt to describe this house with the limited space at our disposal would only be doing it an injustice; suffice it to say that of all the houses of the kind we have had the pleasure to look upon this is the finest: its arches and bridges in rockwork—its lake, rivulet, waterfall, and fountain—these together completing a picture that one would never tire to look at. Here there are countless numbers of beautiful Ferns, one of which in itself is worth coming miles to see—the well-known *Dicksonia antarctica*, which on measuring we found to be 23 feet across, with every

frond as fresh and green as possible. Out of this house we pass into the Palm-house, adjoining which are the conservatories. In the first-named we find planted out in the centre a grand plant of *Latania borbonica*, surrounded by lesser ones of many varieties, all in excellent condition. In the conservatories we find covering the whole of the back wall and part of the roof two splendid plants of *Lapageria* (alba and rosea). They are grown in a narrow border, planted out, and look by the growth they are making and the quality of flower produced, as if they thoroughly enjoyed their quarters. Here also we found well-grown specimens of *Trachelospermum jasminoides*, *Azaleas* in numbers, and all in a clean, healthy condition, set with buds, which will in the almost flowerless season of early spring make the stages here look gay indeed.

Passing from the propagating-house, which is filled with fine healthy stuff in every stage of growth, we come to the Orchid-house, the inmates of which look as if special care were given them. *Vandas* especially were in grand form—*V. insignis*, *V. suavis*, and *suavis Veitchii*, were at least 5 feet in height; also a large plant of *Angraecum eburneum*, throwing up strong flower-spikes, which will in a short time make a fine show, assisted as it will be by several others now showing flower, such as *Lælia anceps*, *Oncidium Wentworthianum*, *Saccolabium giganteum*, *Dendrobium chrysanthum*, &c. Again we must move forward, to find ourselves in a house filled entirely with *Gardenias*, which must during the winter yield an enormous number of flowers for decorative purposes. They are in peat, grown in pots from 6 to 12 inches according to the age and size of the plants; here also in the same range we find *Cucumbers* fruiting profusely, others again coming on to keep up the supply in winter. The next house is a large span-roofed one, filled almost entirely with *Eucharis amazonica* in splendid condition; in this house also is a fine plant of *Anguloa Clowesii*, which last year threw up upwards of thirty-five flower-spikes, some of them with two flowers on each; here also were two fine pans of *Coeloglyne cristata* showing an immense number of flower-spikes.

The fruit-houses are also very extensive, and yield after after year large crops of fruit, and to judge from the appearance of the Vine canes must be of superior quality both in bunch and berry.

And here ends what has been to us three hours of real enjoyment combined with instruction, made doubly so by the willingness and ability of Mr. Fisher to enlighten us on any subject we were in doubt about. We must congratulate him on the very successful way in which he handles the large establishment under his charge. *Visitor.*

Home Correspondence.

Maule's Orchid Pot.—Some time ago I had a long chat with a friend who has seen these pots, when he spoke in their favour, and since then I have thought much of what he said as to their advantages, especially that of keeping insects away, and in assisting to develop vigorous growth. But now I see them I have my doubts as to their utility. In the first place such insects as ants and woodlice, cockroaches, &c., mostly live under the stages, in crevices, and the like, and can run up these pots and into the plants as usual. The same with the slugs, and the water being left in the pots would get stagnant and unfit for the plants to grow in, and from my experience I have not found that the roots of Orchids are benefited by growing into the water. Then the blocks being constantly in the water would soon rot, and so cause labour in reblocking, with the disadvantage of having to re-establish the plants. Again, plants grown in this way must be inconvenient to remove for exhibition and room decoration. I fail to see that there would be much saving of labour by this plan, as the plants would require cleaning, which is a great matter with Orchids, and though the end of the block is in the water yet the part exposed will require moistening, and conferva will increase with moss freely. Perhaps Mr. Maule will give us more information, of which I am sure your readers would be glad. *J. Croucher, Sudbury House, Hammersmith.*

Why Measure Pots One Inch Below the Rim?—I am led to ask this question from reading your remarks on p. 662, headed "Exhibition Pots for Pelargoniums," where you state that the Floral Committee have decided that the diameter of the pot shall betaken 1 inch below the rim. I again ask, Why? It must be very inconvenient to measure a pot there, it cannot be done with an ordinary rule, therefore why not measure at the top inside? It would be as fair to one exhibitor as another, and surely it would be much easier for the judge to place a rule across the top of the pot than have to dig and fumble about in

the soil to get an inch below the rim. In my last list of pots I give the diameter at the top inside. *J. Matthews, Royal Pottery, Weston-super-Mare.* [The inch below the rim is part of the "Chiswick standard," which is adopted as a whole. It is so fixed, we imagine, because it indicates about the upper limit of the soil in a pot used for a specimen plant. *Eds.*]

Plants in Flower at Messrs. Veitch's.—Among the most attractive of Orchids flowering at the present time in these nurseries are two seedling hybrid *Cattleyas*, which hold a prominent place: one is *C. Marstoniana* ×, and the other *C. fausta crispa* ×, both good and distinct. *C. labiata* and *C. Dominiana* ×, are also flowering, and several fine pots were one mass of the spotted flowers of *Pleione maculata*, and exceedingly pretty. *Vanda cœrulea* was also flowering: this colour is probably one of the rarest among Orchids, and one of the most attractive; *Lælia anceps* is flowering in quantity, and forms a most useful Orchid for autumn; *Odontoglossum Roelzii album*, with its pure white rose-scented flowers, is also most acceptable at this season. *Cypripedium concolor* is a rarely flowered species, the colour of which is a sulphur-straw with violet-purple spots; *C. vexillarium* ×, a garden hybrid, is also flowering; and last among noteworthy Orchids, but certainly not least, was an exceedingly fine form of *Sophranites grandiflora*—the finest variety I have yet seen. The *Nepenthes*-house is now a most attractive feature in the nurseries, there being several hundred pitchers of all sizes and in various stages of development to be seen; one of the most distinct of new kinds is *N. bicalcaratum*, with its two characteristic spurs pointing adversely from the upper portion of the pitchers, which are of large dimensions. *Crotons* of the best kinds are very striking. *Camellias* in the long corridor at the Brompton end of the nurseries are looking most healthy, and have an abundance of flower-buds; the small beds on either side of the long walk running through these nurseries are ingeniously filled with various coloured Ivies, *Euonymus* of sorts, silver and gold, *Retinosporas* in variety, *Skimmia japonica*, and various other plants, whose foliage will tend to brighten the long dark days of winter. *J.*

Fasciation in the Spruce Fir.—Herewith I send you a photograph of a piece of a small Spruce which had died and was felled. This piece was very near the top, which extended to about 3 feet above the short block represented in the photograph, and above the small branches depicted. The top, as often happens, was stunted, and instead of rising up straight was diverted into several branches, as seen in fig. 132. My attention to this was first drawn to the great resemblance shown to a pair of antlers, which will be apparent if the photo is held up diagonally. The extreme flatness and similarity to horns in some of the branches is most curious. *J. A. C., Northfield, Annan.*

The Elm.—I do not think that the late leafage of the Elms referred to by "J. C. A." is to be attributed to the chalk upon which they are growing in that district, for both here and in other places, where the subsoil is a stiff retentive clay, I have often noticed and remarked that the Elm is invariably the last to become divested of its foliage, and which retains its summer garb till quite late in the autumn when most other trees have become naked and bare; after which it presents that beautiful golden hue referred to, thus becoming a most beautiful and conspicuous object in the landscape. *E. Morgan, The Butts, Harrow-on-the-Hill.*

The Recent International Potato Exhibition.—In a circular issued with his Potato Catalogue, Mr. William Ker of Dumfries states, in reference to the awards at the above show—"In the class for twenty-four varieties the allocating of the first prize gave great dissatisfaction. Mr. Ker's lot were considered decidedly the best, but were disqualified on account of there being two dishes very much alike, while in reality they were quite distinct." Now Mr. Ker's collection was not disqualified, and no one knows this better than himself. One of the judges stated to him in the presence of Mr. McKinlay that the collection was considered by them decidedly inferior to the six collections awarded prizes in the class; and the question of disqualification was never raised. It is not a little remarkable that a paragraph appeared in the *Bury Free Press* a few weeks ago, stating that the first prize in the leading class was awarded to Mr. Ellington, of Bury St. Edmunds, who was awarded and received the second prize only. *One who knows.*

The Liquidambar.—I was glad to notice that "H. C." had a good word for the beauty and usefulness of these trees. Considering their extreme beauty it is astonishing that they are so seldom and so sparingly planted. One reason for this is doubtless their late colouring. In many localities they hardly colour till the end of October, and then the first frost brings them down, but this depends a good deal on

soil and locality. On a warm or light soil, the Liquidambar colours earlier, and the colour is also a much deeper crimson. The leaves have long been favourites here for furnishing dessert and other purposes, and the trees are considered handsomest in their transition state. We lost our best in the winter of 1859-60, and I find those that grow the slowest are always the highest coloured. The finest specimen I ever saw, alike for size and colour, used to stand on or near to the carriage front at Holland House, Kensington. The tree is beautiful either of itself or in such pretty combination as "H. C." alludes to on p. 632. No garden should be without several trees of the Liquidambar styraciflua. The L. imberbe is not so hardy, nor nearly so tall, as the more common one. There also seems to be a larger-leaved variety of the common Liquidambar, as it is sometimes called. *D. T. Fish.*

The Poisonous Effect of Acorns.—I noticed a paragraph in the *Gardeners' Chronicle* of November 6, headed as above, in which poisonous properties are attributed to Acorns, but from what I have seen and heard of their effects on cattle, I am of opinion that the injury resulting from their use is caused by the powerfully astringent matter they contain, which draws up the intestines to such a degree as to bring on inflammation and death. These evils seldom or never

centre; it fringes all the windows in the oriel with a most charming effect. As it does not require to be nailed to the wall, but holds on by means of little feet, it is an admirable shrub to be planted against a house. The late severe winters have not in the least affected it. *Alex. Nesbitt, Oulands, Uckfield.*

Odontoglossum Rossii.—We have a quantity of *Odontoglossum Rossii* flowering freely, among them are very fine varieties, almost as good as *O. crispum*. The sepals of some are barred almost purple, some brown, and some green, with many intermediate shades; but the point I wished to bring forward is that these plants, which are grown on blocks, are found to flower and grow most vigorously where they are exposed to a constant drought. Those more secluded are not so strong, and the flowers are smaller and less both in size and quantity. *J. Croucher.*

Birds and the Grapes.—The severe weather we are having just now has driven Robin Redbreast, Jenny Wren, and Mr. Tomtit into our greenhouses and vinery. It is wonderful how they find their way in, but they are in no hurry to get out while the frost and snow lasts, and a pretty mess they will soon make if one happens to have a few nice Grapes left. There will soon be a lot of holes drilled in all the topmost berries, but, instead of instituting a mad hunt after

they appear to be in this plant on the upper." I know not what interpretation others may put on the above quotations, but mine is that they conjointly convey the belief of "M. T. M." that *P. ajanensis* differs from all other Spruces [No.] in that its leaves are glaucous and have the stomata ranged on the upper surface. It seems to me that the character specially applied by "M. T. M." to *P. ajanensis* is a generic not a specific one. The leaves of *P. ajanensis* may be a little more glaucous on their upper face than those of other species, but it is only in degree. My own notes, made years ago, on all the known species of Spruce, bear me out in stating that the most glaucous or the whitish surface of the leaves of all the species is the botanical upper surface, or the one next to the axis; that this invariably is the case, no matter how much or little the pedicels or cushions of bark on which the leaves are placed may be twisted. It is also incorrect to describe the leaves of any species of Spruce as having stomata on one surface and not on the other. It is not uncommon to find even on *P. ajanensis* leaves with stomata on both surfaces. I repeat that the real or organical upper surface of the leaves of all Spruces is their most glaucous surface, in other words, more stomata may be counted on their upper than on their lower surface, and that their lower surface is generally—and thus seemingly abnormally—turned to the light, i.e., to the direct rays of the sun. Just the opposite of this is true of Silver Firs: their most glaucous surface is their botanical under or outer surface, and the leaves are usually so twisted on their own axis as to expose their real upper surface, naturally, to the light. *Geo. Syme, Castleton Gardens, Kingston, Jamaica, Oct. 23.*

The Weather in Scotland.—The undermentioned temperatures have been registered here during the month ending Nov. 22:—Our first sharp nip of winter weather commenced on Oct. 20, and has continued without much intermission until the present date, and seems likely to do so for some time, as it is freezing very keen as I write. Oct. 20, 12° of frost; 21st, 5°; 22d, 13°; 23d, 6½°; 24th, 9°; 25th, 1°; 27th, 3°; 29th, 4½°; 30th, 6°; Nov. 1, 7°; 2d, 12°; 3d, 13°; 4th, 5°; 5th, 1½°; 8th, 3°; 15th, 11°; 16th, 10°; 17th, 1°; 18th, 8°; 19th, 8°; 20th, 11½°; 21st, 29°; 22d, 24°. Our thermometer stands 3 feet above the ground, and is exposed on all sides, and the readings have been taken at 7.30 A.M. *P. Ireland, The Nurseries, Kelso, N.B.*

Late Swallows.—I saw a swallow here on Sunday, November 14; the bird was flying after insects as fast as in June, and was strong on the wing, not in the least tired, and appeared as if it could travel hundreds of miles. It could not, in my opinion, have been in the North during the severe cold a couple of weeks previously. I have seen them here before in November, but never so late. *F. G. S. Rawson, Ryburn Valley, Yorkshire.*

The swallows were late this year in leaving this part of Sussex, 6 miles inland from Eastbourne. I observed the latest bird on November 1. Swifts are always numerous here, hawking and screeching round the tower of our church, where they roost, and taking their noisy flight across the main street of our little town, over the chimney tops and away on short excursions into the country, to return with headlong speed, and wheel round the old tower again. They leave us in August, and if I live I will fix the date next year. Gilbert White says the swifts usually withdraw from Selborne during the first week in August. He noted their appearance as late as August 22 as a rare instance. Among numerous notes on swallows and house martins, he says of the latter that a correspondent saw one flying in and out of its nest in the borough on October 23. He had himself seen five swallows on October 29 at Oxford, where the swallow is said to remain later than elsewhere. Swallows and martins quit together, and after the general departure, when the birds hatched under the eaves of our houses or in our chimneys are quite at home circling around the ruins of Thebes and about the walls of Jerusalem, a few solitary birds may reappear for a day as late as November 12, when Mr. D. Melville saw one at Dunrobin Castle—a careless bird doomed to destruction through remaining behind its fellows. Swallows congregate chiefly in trees before their departure, and martins on the roofs of buildings, on walls, &c. *W.*

—On Sunday, the 14th inst., in walking along the main road from Margate to Westgate I was surprised to see two swallows busily hawking to and fro on the road. The day was mild, with occasional heavy showers of rain and a high wind from the south-west, from which, however, they were sheltered by a wall on each side of the road. They were flying very low down towards the ground, but seemed as busy and active as if it had been the middle of July instead of the middle of November. Before next morning the wind had changed to the north-west, and the temperature fallen 10° to 15°, but as they must have experienced a considerably colder temperature during the last four weeks than any we



FIG. 132.—FASCIATED SPRUCE FIR. (SEE P. 696.)

occur to cattle that are active and take plenty of exercise, as deer and pigs when at large, but cows and sheep often suffer, the latter especially, as has been the case this year with us, when after heavy winds they filled themselves to repletion. The matter no doubt would have been worse had they been allowed to remain where so many Oaks are growing, but they were driven to fresh pasturage for a time till the Acorns were gathered up for storing, to be scattered for them again in the winter. It is a well known fact that pigs will live and do well entirely on Acorns if they run and collect their own, but if fed freely on them in styes where they are under confinement they soon go amiss unless they have some laxative, like grains and bran, to keep the system more regular. The safest way, however, is to give only a few handfuls per head a day, and those to growing stock, as when pigs are fattening Acorns are supposed to have a tendency to harden the meat. *J. S.* [The safest and best plan is to "kiln" the acorns before giving them to animals as food.]

Ampelopsis Veitchii Fruiting.—I have abundance of fruit on the higher shoots of a plant of *Ampelopsis Veitchii*, which covers two storeys of an oriel on the south side of this house. This was planted in the autumn of 1871, and is now at least 35 feet high; the stem measures 9 inches in circumference at the ground, and the branches and shoots extend laterally about 18 feet on each side from the

them, as I am sorry to say I have seen done, and destroying them, we can protect the fruit by cutting a few circular pieces of the strongest brown paper, which, when cut half way across and slipped over the crown of the bunch, with the cut ends pinned together, will prevent either bird, mouse, or rat, or drip from doing any harm. This is no new thing, but it is surprising what a lot of old things are either not known or forgotten. *Joseph Murdoch, Leek Wootton.*

Picea ajanensis.—Under this heading, on pp. 427-8, your correspondent, "M. T. M.," gives an instructive article, proving that what appears to be the upper surface of the leaves of this particular species of Spruce is really and organically their under or outer surface. I should not now trouble to say more on this subject but for an impression which I have that in the treatment of it "M. T. M." has made out this species to be signally different from all the other members of the genus in the character above named. He writes:—"We are so accustomed to see the lower surface of the leaf glaucous and the upper surface green, that it is difficult at first to realise that in this Spruce the case is reversed." And again:—"The confusion, then, has arisen from the fact that in *P. ajanensis*, contrary to what is generally (but not universally) the case, the glaucous surface is the true upper surface, and that the green surface with the palisade cells is truly lowermost. The resin canals are, as they always are, on the lower surface, though

have had this week, I shall be curious to see whether they turn out again on a mild day. *Robt. Grant, Fernleigh Villa, Westgate-on-Sea.*

As may be supposed, migration is a somewhat gradual process. I have seen swallows arrive at Nice early in March, and appear at Florence about the end of that month; in England, as we all know, they rarely appear before April 10 or 14. A large proportion departs about the end of September, and almost all that are left have disappeared by about Oct. 10, but I have repeatedly seen stragglers in Sussex, at Hastings, at Forest Row, and near Uckfield, at various dates down to Nov. 10 or 12. Their movements are, no doubt, influenced a good deal by the state of the weather; if it is rough and cold they will often linger until a change for the better has occurred. I remember several years ago that the beginning of October was singularly cold, with high north-east winds. About the 12th this harsh weather gave way to singularly fine still sunny days. The swallows stayed through the bad weather, and disappeared with the first of the fine days. *Alex. Nesbitt, Oldlands, Uckfield.*

Insects.—This year has been peculiarly favourable to insects, at least to Hymenoptera and Diptera, which have been extraordinarily abundant. As late as the 2d or 3d inst. I saw honey-bees at work on the blossoms of the Arbutus, drone-flies, dragon-flies, and the Red Admirable and Brimstone butterflies. *Alex. Nesbitt, Oldlands, Uckfield.*

Plants in Flower at Mr. Bull's.—Two remarkably fine plants of *Vanda cœrulea* are now flowering at Mr. Bull's establishment. They have each two large spikes of bloom, and carried a few days ago a total of fifty-one fully-developed flowers, with many more to open. When these have expanded, their charming blooms will present a very gay appearance. *Lælia autumnalis atrovirens* has also a fine spike of its richly-coloured blooms; fine blooms were also to be seen upon the plants of *Lycaste Skinneri rubella*. The new Aroid, *Anthurium Andreanum*, is a most striking plant even in foliage, and has still a small flower upon it. A goodly batch of *Dracena Goldiana* are looking well, and growing under a bell-glass and thriving well is *Goodyera japonica*, of erect habit, and consequently one of the most distinct of its genus. The New Holland Pitcher, *Cephalotus follicularis*, succeeds remarkably well under similar treatment, as also does *Sarracenia psittacina*, a highly interesting species, the pitchers of which are decumbent, the curved heads with the membranous projection below the aperture having a curious resemblance to the head and breast of a parrot, which probably suggested its specific name. *Z.*

The Douglas Fir.—Permit me to add my testimony to that of Mr. Sheppard and Mr. McCorquodale—the latter, however, a host in himself—to the great value of this tree for cover and for timber. Here and in other places where I have seen it grown it quite runs away from the common, or, indeed, any other Spruce. I have also seen several samples of the timber, and it is far superior to, as it is far cleaner and heavier than, that of any of the Spruces. Its cleanness and comparative freedom from knots will also render it valuable. It is also perfectly hardy when not over-nursed with other trees. It thrives best planted in somewhat exposed positions. We have some fine specimens fully exposed to the west winds. The only drawback they sustain in such sites is that they will hardly do for flagstaves, ships' masts, or arrows for the Titans, as their tops get bent out of shape by the fierceness of the gales. Possibly I may send you a sketch of one of the tops of the Douglas Pines so thrown out of symmetry. The tree does not suffer here from spring frosts, and notwithstanding they are fully exposed to all the severities from zero upwards, not one of them has ever had a branch disfigured nor a leader lost in consequence. The degree of greenness observed by Mr. Sheppard is not wholly a matter of soil, but of variety. There were several varieties of Douglas Fir in cultivation, one very much finer than all the others, and the present is the best. Still the colour of these and all Spruces is much modified by soil and climate and hardly have their roots plunged into stagnant water than the tops catch their fellows, and then farewell to health, free growth, beauty, of the Douglas or any other Fir tree. Some of ours are on thin clay, resting on chalk, and some on mixed soils, and they are mostly separated, but all are almost equally green, robust, and healthy. Game preservers should plant this Fir largely in their covers, for there are none better for pheasants to roost in. There would be no difficulty in packing pheasants by fifties in some of our trees, and hiding there so well that the most skilful practitioner could not espy a feather. *D. T. Fish.*

The Celery Fly.—This troublesome pest attacked our earliest batch about the middle of June last very badly, so I went to see if it had attacked the successional batches. I found it on all more or less,

and gave immediate orders to have all sprinkled with the rose watering-pot and well smothered while wet with soot; the effect was not quite instantaneous, but in less than a fortnight I don't think we had it in the garden. Another thing I found as the result of using the soot was that the Celery made a fine clean growth, but I would not advise any one to use it too abundantly or it will force the Celery too much and make it run or pipe, especially the earliest rows. Celery growing here is not limited to six or a dozen long or short rows—we plant as much ground as we can spare, having a great demand for it, not only as a vegetable or salad but as a preventive to rheumatism [*J. C. Raffill, The Gardens, Tredegar Park, Newport, Mon.*].

I have at different times lately carefully looked through our Celery, and cannot find the least trace of the fly, nor is it to be seen in the neighbourhood. *H. Fisher, The Gardens, Flixton Hall, Bungay.*

Tomato Disease.—During the past summer I grew very many Tomatos in a great variety of ways, both against walls, in open sunny east aspect borders, staked, &c., and in very large pots in a greenhouse trained up to trelliswork, &c. Upon none of these did I see any signs of the disease except upon such as were planted out into a somewhat new and small Vine border. The Tomatos were planted out there rather late, as very large plants, and they fruited very heavily, but were somewhat late in forming their masses of green fruit. Observing that the disease was attacking them I had the stem cut off with the fruit attached, but removing the leaves, and the whole were placed on a front shelf of the greenhouse, in which grew a sturdy and very prolific batch in pots. Now be it observed that in the leaves, with here and there a blister upon the stems, was the only disease observable at the time of housing them; also, that in process of taking them inside the boy tore some of the fruits off the branches. And here is a singular fact. The fruits which were severed from the branches ripened off quite free from disease, whilst on the contrary all such as were upon the disease-stricken branches became so diseased as to be absolutely useless. Does not this show how virulent is this disease when once the haulm is attacked in the case of Tomatos as in the Potato? But beyond this, though the pot-grown plants had carried successional crops of fruit most healthily and well up to this time, the diseased branches had not been in the house a fortnight before every portion was attacked with extreme virulence, so much so as to hasten their removal, owing to their unsightliness and extremely objectionable odour. *William Earley.*

Last year our Tomatos under a south wall were extensively attacked by a fungus which we considered identical with *Peronospora* of diseased Potatos, while some few plants grown in pots in the greenhouse were attacked in like manner. In both the house and outdoor examples of disease, the leaves curled up with the attack, and were soon in an abject state of decay. This season we have not had a single case of the disease, but both last year and this we found it almost impossible to ripen this fruit in our garden, and hence we have been greatly pleased with our potted Tomatos in the greenhouse. The plants got on early are gradually shifted into larger pots, and as they flower attention is paid to stopping. The result with us has been some splendid examples and large crops of this favourite fruit or vegetable of finer flavour than is usual with garden specimens. *J. B., Bradford Abbas.*

"Enquirer" asks if disease has ever been seen in the Tomato under glass, and as we grow them both early and late, I may say that I have never seen it appear in houses where the temperature was kept high. Grown in a cool house without artificial heat the fruit got affected very much like a diseased Potato tuber, but the plants were in no way affected so far as I could observe. Some of the fruits were cut in a green state and hung up in a vinery, where they remained for about two months, and the disease was not apparently arrested in the least, for it developed itself in the ripening much the same when cut as on the plants. *W. McElvie, Braxmouth Park, Dunbar, N.B.*

Fruit Growing on Chalky Soils.—The successful cultivation of fruit trees on soils in which there is a preponderance of chalk, no matter what the climate may be, is attended by great difficulties, and is far from being an easy task; in fact, I may go still further, and say that to attempt to grow them under the ordinary system, *i.e.*, natural conditions, or, in other words, in the soil which is natural to the situation and without artificial means, is something like love's labour lost, or, as I once heard a person say, "It's labour in vain, and you might just as well try to wash a black man white." These remarks, however, I wish it to be understood, are applicable only to soils of the very worst description—where chalk is found in abundance near the surface, and where there is a subsoil of several feet of chalk marl. Those who have had experience on soils of this nature must be well acquainted with the appearance young trees

present the second or third year after being planted; in nine cases out of ten the leaves assume that yellow sickly appearance which is a sure sign of something going wrong. For once you allow the roots to penetrate into the subsoil, and suffer them to remain there; success is impossible. Notwithstanding that all this may seem very discouraging to those who have to contend with such soils, I have not the slightest wish that these remarks should have a deterrent effect; on the contrary, I desire, if possible, to stimulate those who have hitherto failed to further action, and at the same time would remind them that the greater the difficulties over which they achieve success the more credit they will deserve. In theory as well as in practice it is said where there is an evil there is also a remedy; in this case there are two, which for convenience I will designate as best and second best. The best, as a matter of course, is the most costly in the first instance, but in the end I venture to say will be found the cheapest, and is this:—For all wall fruit take out the soil 3 feet deep and 4 feet wide, concrete and drain the bottom, build a 4½-inch wall along the front; afterwards procure the best soil obtainable in the locality, say the top spit from an old pasture, mix the same with the surface soil taken out of the border, in the proportion of two loads of the former to one of the latter, and add a slight sprinkling of well decomposed manure—you have then a safe foundation, and may expect to succeed where originally you had failed. No doubt there are many who on reading this will be tempted to say, "Ah, it's all very well to preach and write about concreting borders and so forth, it's too expensive." Well, certainly it is expensive if carried out on a large scale, but try it on a small one first; 40 or 50 yards as an experiment will be quite sufficient to convince any one as to the soundness of the principle, and as regards the outlay I unhesitatingly say that whatever expense may be incurred will in the long run be more than counterbalanced by strong healthy trees and good crops of fruit. This brings me to the second remedy, which may be stated in a very few words, *viz.*, lift the trees periodically, to prevent the roots from finding their way into the subsoil. I may also add that old trees had better be left alone, otherwise the result may prove disastrous, therefore commence with young ones, and lift every second or third year, and as the best time for the operation is now at hand the work ought not to be further delayed. *J. Horsefield, Heytesbury.*

Pinus insignis, and other Trees.—Cold and wet as the summer of 1879 was, and bad as the succeeding winter has been for most kinds of vegetation, it is gratifying to find that *Pinus insignis* has stood so well. Considering the immature state the young shoots must have been in this is somewhat surprising, as in most districts it is considered one of the most tender of the hardy Conifers. At Orwell Park, however, this does not appear to be the case, for there young trees are to be seen in all their splendour, looking as green and healthy as if the biting frosts and cutting blasts had passed them by, in their onward haste for victims. That the twogim destroyers had been stalking there as elsewhere, one could see evidences in plenty, and most notably among the Arbutus, grand bushes of which have been smitten to such an extent as to have so injured the tops that they will have to be cut down in order to get them to start again from the base and form highly ornamental screens to shut out dead walls and buildings. Mr. Wallis, knowing how impatient these shrubs are of losing their heads at one fell swoop, has thinned out all the dead and other branches that have been hardest hit, so as to admit light and air to the stems, the wisdom of doing which can be seen by the way in which they are breaking, whereas if no leaves had been left to draw the sap and encourage root action, the chances are that the whole of the plants would have perished. As regards the *Pinus insignis*, no doubt their escape in a great measure is owing to the lightness and dryness of the soil in which they are planted, it being a light grey sandy loam, and of such a loose nature that the trees can have no difficulty in driving their roots far and wide in search of the moisture and food they require. Besides being favoured in the way mentioned, they are also shut in on all sides by lofty Elms or Firs of various descriptions, which shelter them to a great extent, and as they enjoy the full force of the sun in the position they occupy, what growth they make is short and firm, and therefore in a better condition than it otherwise would be for withstanding the winter. Many of the *Araucaria imbricata* planted near them present a sorry figure, thus showing that, however suitable the light, dry soil may be for the *Pinus insignis*, it is not to their liking; but in pleasing contrast to these the plants of *Cupressus Lambertiana* are rearing their heads rapidly, and making specimens remarkable for their symmetrical beauty. The habit of these trees is generally loose, and the tendency of the branches to spread and take a lead of their own; but these are handsome pyramids, to bring which about Mr. Wallis prunes them in at starting, and it is seldom they are found to run riot after. Decadars,

that were thought so much of at one time, and so largely planted everywhere, are quite valueless for exposed situations, as, see them wherever one may, they are always cut about by the wind in the spring, and look shabby for the rest of the year. In contrast to this the Lebanon Cedar braves the gales, as does also the Cedrus atlantica, which makes a magnificent tree, and is quite unrivalled for beauty. What interested me as much or more than anything in looking over the Conifere at Orwell Park was the striking difference that presented itself among the large number of Cupressus Lawsoniana Colonel Tomline has his plantations, where, although growing under exactly the same conditions side by side, there are hardly two alike. This diversity of character is very pronounced in some, which are not only different in colour, but are gracefully pendulous, and have remarkably handsome Fern-like branches, the tips of which, were it not for the objectionable scent the Cupressus Lawsoniana has, would be valuable for working up in bouquets. The whole of the plants referred to are in loose boggy-looking earth at the foot of a hill, where they get plenty of moisture, and the lovely shades of green of their foliage and the rude health they are in shows how much they appreciate the situation, and what ornaments they will be when they become more fully developed. In contrast to these again the Cupressus Lawsoniana viridis is very distinct, it having departed quite from the normal type in being erect and close, after the manner of an Irish Yew, to which it is far preferable for the ornamentation of terraces, for which its habit renders it well adapted, and its sombre appearance makes it equally desirable for planting in cemeteries and churchyards. Mr. Wallis strikes this and the others, as well as Cupressus, Thuipis, and all suchlike, freely from cuttings, which he puts in under handlights on shady borders early in the autumn, when few of them fail. I must not omit to notice a Poplar standing at the head of the pond, as being the finest I ever saw, it having a stem quite 6 feet through, and for twenty feet of its length as clean and straight as a rod. The common Hollies, too, are a sight worth going some way to see, as there is quite a grove of them, the plants being of large size, and most luxuriant in foliage. J. Sheppard.

Architectural Gardening at Bystock.—Passing through Devonshire and Cornwall one is at all times tempted to pay a visit, if only hurriedly, to the many pretty little watering-places which intersect the coast of what, without exaggeration, may, I think, be considered the most beautiful counties of England. Kent (and, I suppose, not without some high claim to that appellation) is generally termed the garden of England, but give me the undulating scenery of Devonshire in preference to any south of the Clyde. It was my good fortune, while in Devonshire this year, to pay a visit to the small yet old town of Exmouth, which of itself would well repay a visit. It was not, however, the town this time that brought my steps coastwards. I had been promised a treat in the way of some grand architectural gardening, and I must confess I came away delighted with my day's excursion. Bystock House (for this was my goal) is some three miles from Exmouth, and is at present the seat of J. P. Bryce, Esq., but was formerly owned by the late Edward Divett, Esq., who for many years sat in Parliament as member for Exeter. The Rev. W. Webb, in his *Memoirs of Exmouth*, says:—"It was originally the property of St. Catherine's Priory, at Polioce, near Exeter. Tradition says that it was taken away from the vicars of Budleigh (of which parish it was once a part), in punishment of one of them neglecting his duty to the sick in the time of the plague, and assigned to the Vicar of Colyton Raleigh, who had afforded to the residents his zealous and gratuitous ministrations." It is situated on a lofty eminence overlooking a vast extent of rich Devonshire scenery, including a view of Haldon, which to lovers of Nature would of itself repay the three miles' irksome toil through a true Devonshire lane, and up a real Devonshire hill. The present wealthy owner has given his pleasure-grounds over to the hands of Mr. Robert T. Veitch, of the Exotic Nurseries, Exeter, to remodel and extend, and whose architectural foreman, Mr. F. W. Meyer, made a magnificent rockery and waterfalls, pierced, as it were, with a mysterious cavern, which he has taken every care to render as perfect as possible, and which to the uninitiated must appear rather as a work of Nature than of Art. The access to the cavern is through a rough and jagged opening in the rock, which forms the base of a large cliff, and which to all appearance may have been caused by the perpetual and violent action of water from the remotest geological period. Inside we have the counterpart of the stalactites as seen hanging from the roof of Nature's caverns, and formed by the water percolating through the limestones, charged with calcareous matter, with stalagmites rising from below destined at some future age to meet and amalgamate—

"Drip, drip, drip, dripping
A crystalline drop, each pendicle lifting,

Slowly descends and slowly uprears,
Stalagmite rising, stalactite dipping,
The tenth-of-an-inch in a thousand years."

Even the twinkling of the bright glassy particles in the stalactite substance is here imitated and perfected. Small hollows of water, as if formed by Nature out of the rocks, are placed here and there to produce those most curious optical effects on the introduction of a light by the reflection therein of the roof, with all its curious and fantastical formations. A sight of this at night, illuminated with a red light, is a scene not easily effaced from the memory. The stalactites are not only of the ordinary shape, but varied. In one corner we have the Goose and Giant's Club of Cheddar; and in another a kind of sheet, like loosely-folded drapery, also of Cheddar, and which is known there as the Curtain. This, as may be imagined, was of no easy construction, and was the result of a carefully manipulated contrivance. Of scarcely less importance are the rocks and waterfalls outside, forming as they do one grand background to the pleasure-grounds fronting the mansion. The cascades, or waterfalls, of which there are three, are supplied from artificial reservoirs, forming an ornamental lake, in which is formed an island with summer-house, after the style of a hollow trunk of an old decayed Oak. A sort of Swiss chalet is also to be built on the side of the lake, to form a boat-house. The rocks, which are adjusted in perfect imitation of Nature, are fittingly adorned with choice Rhododendrons and other shrubs; whilst, intermixed with these, may be found many choice varieties of our British Ferns. Alpine and herbaceous plants have also not been omitted. Of those doing best I noted the pretty little dwarf-growing *Campanula turbinata*, *Aubrietia purpurea*, *Gentiana acaulis*, with a great variety of Sedums and Saxifrages. *Veronica repens* and *candida* were quite at home, as was also that curious little plant, the Edelweiss. These, and many other interesting plants, are to be seen in chinks and corners specially adapted to their several wants, growing to all appearance as if placed there by Nature. Mr. Veitch is certainly to be complimented on the great success of his undertaking, which is undoubtedly due to the skill of his assistant, Mr. Meyer. W. M.

Improved Hand-hoe.—In the form of a modification of the ordinary hand-hoe, a novelty in garden



FIG. 133.—NEW HAND-HOE.

tools has been patented in the United Kingdom for an inventor in the United States. As will be seen from the sketch annexed the implement has a short handle carrying a bent blade, both edges of which are sharpened. The special feature of the blade is, that the main portion of it is offset from the axis of the handle, and further that the end is turned up, as shown in the sketch (fig. 133). By use of the double-edged blade the hoe is adapted to a variety of purposes, such as cutting away grass or manipulating the soil about plants. The inventor also claims that it may be employed with advantage in raking dirt and soil towards the roots of plants, the offsetting blade and upturned end being specially designed to co-operate for that purpose. In cutting, smoothing, and packing earth, when setting or transplanting, the new hoe may be easily used without the necessity of soiling the nuckles of the operator. (1708. A. M. Clark, for R. L. Turner, of Hartland, U.S.A., April 20.)

Root-Pruning Fruit Trees.—After all that has been said and written of late years on this subject, and from the advantages that have followed root-pruning, which may be seen in any locality throughout the kingdom, it seems strange that any one, however limited his experience or opportunities for observation, should show that he is so little acquainted with the subject as "A. D." does in his communications regarding root-pruning. His argument that because the market gardeners do not root-prune their Apple trees the practice must be wrong is no evidence at all, and only shows that "A. D." has yet to learn with what description of trees and under what circumstances root-pruning is advantageous. This is further confirmed by his advocating the little trees on Doucin and Quince stocks in preference to larger examples root-pruned. The facts of the case are simply these: root-pruned trees and trees unroot-pruned are each right in their proper place, and only wrong where one is employed when the other would

better fulfil the object required. The market gardener's aim is to get full-sized trees with just such other crops amongst and under them as will thrive: for this reason, ninety-nine out of every hundred trees grown by the market gardeners are standards, the roots of which those who practise root-pruning would never, under such circumstances, think of touching. In private gardens, such as are nine-tenths, large and small, throughout the kingdom, the circumstances are altogether different: in the majority of these vegetable and fruit cultivation are by necessity combined; here full-sized trees would not only prevent the possibility of growing the vegetables as they ought to be grown, but they would look unsightly and out of character. Fruit trees confined to medium size, like the pyramid or bush-shaped examples resulting from root-pruning, supply a want not filled by either the big unrestricted trees or the little ones on Quince and Doucin stocks which "A. D." advocates. Not only are the trees confined to a moderate size by root-pruning, such as generally met with on the sides of the walks in a well-managed garden, the best for yielding the most fruit that can be obtained under the circumstances, but they are desirable for their appearance either in flower or fruit relieving the level surface which vegetable quarters alone present. This one idea—inability to see that what is the best practice under one set of conditions is just the reverse under others—causes no end of useless discussion upon almost every subject that turns up relating to gardening matters, the worst effect of which is that the many who read to learn are bewildered between the opposite opinions expressed. "A. D." is quite sentimental about planting fruit trees for coming generations, which is a very proper thing to do, but would he act up to the principle he advocates? Suppose he had a new garden wherein were a number of young trees, would he let them go on for a quarter of a century or more growing away until age had reduced their natural disposition from making wood to fruit bearing? or would he at the end of eight or ten years check their growth and induce the formation of bearing buds and fruit by root-pruning, and in this way get some of the fruit himself, instead of leaving it all for his heirs? Which, I should like to ask him, would be the most sensible course? And this is no imaginary case, but just what is occurring in places innumerable continually. As every one who has had anything to do with hardy fruit cannot fail to know, shoot-pruning vigorous young trees only aggravates the evil, whilst root-pruning corrects over-luxuriance and brings them into bearing. T. Baines.

—It may be *apropos* just now to instance a case which fully demonstrates the good results that may be produced by the timely and judicious use of the spade, five-tined fork, and pruning-knife. Late in the autumn of 1879 we pruned—root-pruned—two somewhat vigorously-growing young Pear trees (Marie Louise and Glou Morceau) which this year bore a thoroughly good crop of fine, large fruit, perfectly free from blemish of any kind. From the former we picked a bushful, and nearly as many from the latter, of extra fine fruits, unusually large for the varieties. Now for the proof of these fine crops having been the direct result of root-pruning, and which, I think, will be conclusive testimony in its favour. From two trees of nearly about the same size and varieties as the preceding trees, the aspect and other circumstances (excepting that they were not root-pruned) being identical, we only picked about three dozen fruits, and these very inferior in every respect to those above referred to. Now if I ever had any doubts respecting the beneficial efficacy of root-pruning, the unmistakable evidence in its favour, as already adduced, and the perusal of Mr. Fish's admirable and elaborate papers upon the subject, would be sufficient to dispel them from my mind for ever. Those who hold that root-pruning trees is an unnatural operation are mistaken. They might as well say that it was unnatural for a physician to administer a draught of medicine to a sick man; for let us assume that so long as the health of the latter is satisfactory the doctor will withhold his healing draughts. And so with the fruit cultivator. So long as his trees yield satisfactory results he will, we may be sure, abstain from root-pruning. But on the contrary, should some of the cultivator's trees not prove so fruitful as they might reasonably be expected to do, what more natural than that he should, under these circumstances, and like a skilful and anxious physician, seek the cause of the evil thereof, and having discovered its seat decide upon the best and most expeditious means of removing it? With a view to ascertaining the real state of his patient's complaint the skilful medical man would ascertain the action of the heart, the state of the liver, &c. And so also would the intelligent fruit cultivator be anxious to know (his trees not being satisfactory) in what state (a downward state I fear) the roots—the heart—of his unfruitful trees were. That liberal and frequent manual surface-dressings with a judicious application of the knife to the branches are productive of almost permanent fertility few will doubt. Of course soil,

situation, and other surrounding circumstances play an important part in the fertility of hard fruit trees, and *vice versa*. H. W. Ward.

— There can, I think, be no question but that the most satisfactory of all pruning is that which is carried out in summer, as it always leads to the best results by concentrating the energies of the plants around the spurs and causing the formation of fruit buds. It is, however, out of season to write of this now, as what we have to do is to make good any defect as far as we can in our management, then by going over the trees and thinning them out so as to remove any superfluous wood or shoots left to grow where there is not room for them to be laid in or turned to account. With standards or pyramids of Apples and Pears I like to have them gone over directly the fruit is gathered, as then a man with an eye to the work can see at once where and what to cut and take in at a glance the vacant spaces that require filling to make up a handsome symmetrical tree. The necessary tools to be armed with are a very small narrow saw having the teeth rather wide set to clear itself, and a good sharp knife to finish off after it, and to take out any branches the wrist of the operator and knife are strong enough for. To write thus may appear barbarous to some who advocate allowing Apples and Pears to grow like Oaks, and yet there are numerous orchards, indeed I might say the greater portion, from which faggots may be taken with advantage to the trees, as the generality are so crowded as to shut out air and light, the absence of which must of necessity prevent them bearing except at the extreme points, or if they should yield any fruit lower down it is always small and of inferior quality. To rectify this state of things the first proceeding of the pruner should be to direct his attention to the branches that require removal, which, it may be roughly stated, are all those that cross each other, and crowd up the middle instead of leading straight out in a regular manner at proper distances to furnish and make a fine head. To get the wounds made in cutting these away to heal quickly, it is necessary to face them off with a knife, which, leaving the wood smooth, prevents decay, and allows the bark to grow over much sooner than it otherwise would. Beyond the cutting out of any spray or young shoots emanating from the main stems no further pruning is required in the case of orchard trees, but with those grown as bushes where they have to be confined to a certain limited size, spurring must be resorted to, and as a preliminary to this it is often requisite to root-prune. This should be done whenever the trees show signs of excessive exuberance, and refuse to form a sufficiency of flower-buds, which the check will soon compel them to do, when it will be found that having once borne a crop, through being brought under proper control, they will be little or no trouble after. Root-pruning, however, should not be understood to mean the hacking at those vital organs as is sometimes done with a spade in the most rough-and-ready fashion, whereby they get sadly mutilated, instead of which the operation should be carried out carefully and scientifically by the aid of a sharp knife, making the cut clean and always, if possible, close up to where there is a branching rootlet, which, if left intact, helps materially in getting others to start at or near the end where the severance has been made, and thus prevents that part dying back. Pears on the Quince seldom or never require root-pruning, the restrictive nature of the stock being quite sufficient to stop the formation of gross shoots; but as the Quince is naturally a shallow-rooted plant, it must, to succeed well, have a situation where there is plenty of moisture in the soil, as otherwise the Pears will crack, and instead of being rich, buttery, and luscious, they will be hard, gritty, and worthless. To counteract these evils, the way we manage here is to mulch the ground heavily amongst the trees with long stable-dung, and once or twice in the summer to give a good soaking with sewage, which helps the fruit to swell fast and renders it of much better quality. The next point of importance to thinning the branches of Apples and Pears is that of thinning the spurs, especially such as are grown on walls, as trees so trained lose half the shelter if they project far out, and fruit is never fine and well coloured if not fully exposed. Espaliers, too, from the frequent stopping of the shoots, soon assume the character of hedges if not seen after and thinned out annually by pruning away the longest, which should always be cut back to a bud, and by following them up in the same manner year after year, there is no difficulty in having the branches studded with blossom-buds close home where they can get protection, and thus stand a chance of escaping the frost. Apricots, Plums and Cherries bear cutting at in the same way, and are much benefited thereby, as instead of having gnarled spurs that sap cannot find free passage through, the buds come fat and plump, and the fruit is always well fed. What militates so much against the health of trees, and more particularly such as are grown as standards, bushes or pyramids, is the moss and lichen that fixes itself on the bark, which is as paralysing and hurtful to the well-being of the plants so affected

as skin disease or other like parasitical affection is to ourselves. Scale, too, and American blight are equally, if not even more, pernicious than moss or lichen, and must be got rid of if trees are expected to do, for if left to increase and spread they will soon seal their fate. The best remedy that I am acquainted with for these insects is paraffin, which, diluted in the proportion of a quarter of a pint to 4 gallons of water, and syringed on, or brushed in and over the stems where they are, will soon make them leave their hold, as will also hot lime used in the same way, and this is always fatal to moss and lichen, and when it comes off in the spring leaves the trees quite clean and polished looking. The thing is to get it perfectly fresh from the kiln, and to slake it with some boiling water after having put it in a large tub or other vessel, where more water can be added if required to bring it up to the consistency of thin whitewash, which, when strained through a fine sieve to take out the lumps, may easily be squirted over the trees by means of the garden engine or a syringe. The best time to apply it is after a heavy dew or foggy night when the bark is damp, as then it covers and sticks well if the day sets in dry, and once fixed rain has little or no effect on it, and it only leaves its hold when pushed off by the swelling and the change that takes place in the spring. Not only will lime applied as above stated cleanse trees of all parasites, but it will preserve the buds from the ravages of birds, and where these are at all troublesome no better or cheaper safeguard against their attacks can be had. Having touched cursorily on pruning, thinning, and freeing trees of vegetable and insect enemies, it may be as well to make a few remarks on transplanting, which every one is, or ought to be now thinking about, as the time has arrived when there should be no longer delay, for every week lost now will tell adversely by-and-bye on the starting and strength of the plants. If these have to be got from nurseries at a distance, it will be found a great gain to have all in readiness for their arrival that they may be popped in at once before there is any drying or shrivelling of roots or rind, which if allowed to take place causes such a shrink as they seldom recover from after. To give young trees proper encouragement it is necessary to have at least a barrow-load of nice fresh turfy loam for each, which should be chopped up fine and cast immediately over the roots, but on no account must manure or leaf-mould be used with it, as the one only produces gross sappy growth by over-stimulation, and the other frequently engenders fungus, which is most baneful to plants. Manure, however, will do no harm used as a mulching, indeed it does much good applied in that way, as it keeps out frost and prevents evaporation and is of material help in assisting the roots to get fresh hold of the soil. There is one important matter I would mention in the planting and treatment of young trees, and that is not to cut them back, but leave the shoots full length unless the points happen to be unripe or injured, in which case those parts should be removed, but to behead them, as some do, is barbarous practice and is quite useless as well. J. S.

Reports of Societies.

Royal Southampton Horticultural. Nov. 16 and 17.—The winter exhibition of this Society was held at the Victoria Skating Rink, Portland Terrace, a place every way adapted to such a purpose, being well lighted and spacious, and on this occasion filled to repletion with exhibits of more than ordinary merit, as might have been anticipated, seeing that the prizes offered for plants, cut flowers, fruits, and vegetables, amounted in the aggregate to £200. Almost every class in the schedule was well contested, obviously, therefore, space will not admit of particularisation, but only of mentioning the most conspicuous exhibits and the principal awards. As a matter of course, Chrysanthemums formed the bulk of the show, and without exception every exhibitor in the Chrysanthemum classes showed well, and when it is said that these extended to sixteen classes it will be seen that the show was a large one, and rendered remarkable by the successful *début* of a grower who has been trained at—according to some—the high seat of learning in Chrysanthemum lore, viz., Liverpool; certainly flowers so superb have never before been shown at Southampton as were exhibited on this occasion by Mr. Molyneux, gr. to W. H. Myers, Esq., Swanmore Park, Bishop's Waltham—the premier awards going to him for twenty-four cut blooms, consisting of sixteen incurved and eight Japanese; for twelve cut blooms, incurved; also for twelve cut blooms, Japanese; and for twenty-four cut blooms, in twelve varieties, any section. In addition to these he showed eighty varieties, not for competition, every flower being good, but the following particularly so:—*Exc.* Dainio, Elaine, Fulgore, Madame Lemoine, Miss Mary Morgan, Bouquet Faint, Prince Alfred, Fair Maid of Guernsey, Red Dragon, Criterion, Mr. George Rundle, Ethel, King of Crimson, and Peter the Great. In the same class Mr. Wills, gr. to Mrs. Pearce, The Firs, Bassett, divided the secondary honours with Mr. Allen, gr. to J. Bailey, Esq., Elm Field Hill, both exhibitors following closely on the heels of their successful rival with flowers as perfect, as regards form and finish, but a trifle smaller in size. The other prize winners in these classes were Mr. Moorman, gr. to Miss

Christy, Coombe Bank, Kingston-on-Thames; Mr. Stillaway, gr. to Earl Cairns, Lindsfarne, Bournemouth; and Mr. Pope, gr. to G. Atherley, Esq., Northbrook House, Bishop's Waltham.

In the nurserymen's class for twenty-four cut blooms, not less than twelve kinds, Messrs. J. C. & H. Ransom, Hill Lane, had the 1st award, with flowers of excellent substance, but somewhat under-sized. Other nurserymen had entered in this class, but failed to put in an appearance—a most reprehensible procedure, that cannot be too severely condemned, upsetting as it does all previous arrangements as to space, &c.

Perhaps the most telling features of the show were the groups of plants, arranged in a space 12 feet by 7 feet, consisting of Chrysanthemums intermixed with other plants—stove plants, with the exception of Palms, Ferns, and Grasses, not to be used. Mr. Wills was an easy 1st in this class, the arrangement being good, and the plants generally manifesting high culture; Mr. Hinds, gr. to Lord Wimborne, Canford Manor, and Mr. Ameys, gr. to Mrs. Elliot Yorke, Netley Fort, were 2d and 3d respectively, with arrangements of more than average merit. In the class for the best collection of Chrysanthemums grown in pots, arranged in a space 8 feet by 5, quality and general effect to be the leading feature, there were six competitors, Mr. Allen taking the lead, being closely followed by Mr. Wills, Mr. Ameys, and Mr. Osborne, gr. to H. J. Buchan, Esq., Wilton House. Some of the finer varieties in these collections were Mrs. Dixon, Virgin Queen, Golden Empress, Snowball, Princess of Wales, White Globe, Golden Christine, Jardin des Plantes, Golden Empress of India, Queen of the Isles, Fingal, Alfred Salter, and Dr. Sharp. The class for twelve plants, single stems, distinct varieties, was also very well filled; Mr. Allen again taking the lead with well grown plants clothed throughout with massive foliage, his best kinds being *Hero* of Stoke Newington, Fingal, Pink Christine, Snowball, and Queen of the Isles; Mr. Ameys was a good 2d, his best kinds being *White Venus*, *Gloria Mundi*, Mrs. Halliburton, and *Meg Merrieles*. Mr. Thomas, gr. to Dr. Scott, Shirley Lodge, was 3d, his best flowers being *Fulton*, *Elaine*, *Fulgore*, and *Meg Merrieles*. In the nurseryman's class for twelve plants, Messrs. J. C. & H. Ransom were again the only exhibitors; but in the groups of plants, 12 feet by 7, open to nurseryman only, they were better represented: Messrs. Oakley and Walsing, St. Mary's Road Nurseries, being 1st, having good plants tastefully arranged, Messrs. Ransom being 2d, and Mr. E. Hellice, The Nurseries, Winchester, 3d. In the miscellaneous plant classes the place of honour must undoubtedly be given to Mr. Osborne for a collection of Orchids, some thirty plants, all of them witnessing to the fact that their custodian was the possessor of cultural knowledge of a high order. There were several exhibitors in the class for six berried plants, all showing *Solanum Capsicastrum*. The classes for *Poinsettias*, *Primulas*, and *Cyclamens* were poorly represented, and call for no special remark. Amongst the exhibits "not for competition" the *Primulas* and *Epiphyllums* from Mr. Kingsbury, nurseryman, Bevois Valley, were worthy of special mention, and so were the *Primulas* from Mr. W. Blackmore, Florist, Winchester.

The prizes offered for fruit were not worthy of the Southampton Society; hence, it cannot be wondered that this department of the exhibition was poor, at least in comparison with the others. The only Grapes in the show worthy of the name, were three dishes of *Alicante*, and a single bunch each of *Barbarossa* and *Madrasfield* Court, the exhibitors being Mr. Molyneux, Mr. Stillaway, and Mr. Osborne. Apples and Pears were better represented. In the 1st prize lot in the class for four dishes of Apples and four ditto of Pears, six fruits of each, there were some really splendid specimens, these being shown by Mr. Sanders, gr. to J. East, Esq., Longstock House, Stockbridge. Mr. Allen and Mr. Ameys also showed creditably in this class. Classes were also provided for three dishes of dessert Apples, and the same of kitchen varieties, the latter being especially well filled, there being a dozen or more competitors, every one showing really fine fruit, the awards going to Mr. Hall, gr. to Captain Davison, South Stoneham House; Mr. Ameys, Mr. Wills, and Mr. Sanders. The finer varieties were *Warner's King*, *Mère de Ménage*, *Blenheim Pippin*, *Alfriston*, and *Lord Suffield*; and amongst the dessert kinds the most notable were *King of the Pippins*, *Cox's Orange Pippin*, and *Ribston Pippin*.

The vegetables made a most interesting show, there being no fewer than fourteen competitors in the class for eight varieties, and these were for the most part so evenly balanced in merit that the judges must have found their task no sinecure. The prizes went to Mr. Allen, Mr. Molyneux, Mr. Sanders, and Mr. Ameys, in the order named. For years the excellence of the vegetables has been a prime feature at the Southampton show, but, as indicating the influence the Society has exerted, it may be mentioned that during the first two or three years of its existence the vegetables, though good, were never put up in any sort of order, and for the most part were unwashed. Now they are arranged on the tables to perfection and are scrupulously clean; indeed the advance has been so great that the 1st prize lot of a few years ago would scarcely now be tolerated in the exhibition.

More than 5000 persons visited the show on the two days it remained open, so that it may be hoped it proved as great a success financially as it really was in meritorious production.

Ealing, Acton, and Hanwell Horticultural. Nov. 17.—The remarkable popularity enjoyed by the Chrysanthemum as a late autumn flower amongst suburban residents, is well evidenced in the case of the exhibition of this beautiful flower held in the Drill Hall, Ealing, on the 17th, in connection with the above-named

society. But some three or four years since a school-room held all the exhibits of the Ealing Chrysanthemum Society, but when this body passed the show into the hands of the elder society, the show at once sprang into renewed life as a large and elegant autumn exhibition. The value of a large square hall for the purposes of such a show is well seen in the admirable effect got by grouping and arrangement; and certainly all that could be done was accomplished to convert the usually dingy hall for the time into a bower of elegance and beauty. Upon the large platform at the far end of the hall, Mr. McPhun, gr. to Mr. Thomas Nye, of Ealing, staged a very fine and effective collection of Palms, Ferns, and other foliage plants well lit up with flowering plants. This group was awarded 1st prize in the miscellaneous class. Fronting these were numbers of good Chinese Primulas, and again in front were some fifty dishes of Apples and Pears kindly sent by Mr. Jas. Hudson, of Gunnersbury House Gardens. Mr. J. Weedon, Florist, of Ealing, had a very nice group of plants of the usual decorative kinds; and Mr. Fountain, gr. to Miss Wood, Hanger Hill, put up a capital collection of Ferns and Lycopods. These collections were placed equal 2d in the miscellaneous class, and Mr. Elliott, gr. to Mr. Joseph Moore, was put 3d for a pretty group. Of collections sent not for competition, the most attractive, perhaps, was a fine group of Mr. H. B. Smith's beautiful Cyclamens, exhibiting very superior culture. Messrs. Charles Lee & Sons sent from their Ealing Nursery a large group of Chrysanthemums in pots that presented a most attractive feature. Messrs. Fromow & Sons, of Turnham Green, also sent a fine collection of similar plants. Mr. Huntley, gr. to Mr. C. N. Peal, of Ealing, made up a handsome group of conservatory plants, and Mr. R. Dean had a collection of some thirty dishes of handsome Potatoes. As the competition for Chrysanthemum plants was limited to the locality, there were none of the show giants staged, but plenty of good naturally grown plants, stiff training being almost confined to the Pompon kinds. In the one open class for twenty-four blooms the prizes went to Mr. Thomas Nye, Mr. R. Nye, of Guildford; and Mr. Moorman, of Coombe Bank, Kingston, in the order named. The flowers were all good, and merited the admiration so freely bestowed. Close by staged, but not for competition, was a grand lot of blooms sent by Mr. F. Capps, of Ealing, whose gr., Mr. Harman, has thus shown that if free to do so he can make his mark as a grower of the Chrysanthemum. In other plant classes there were Cyclamens; Solanums, the best of which, finely berried, came from Mr. Hepper, The Elms, Acton; and Chinese Primroses, of which many good and varied collections were staged. Fruit was very good, Apples and Pears being specially fine. In the class for three kinds of kitchen Apples Mr. Hudson was 1st with Alfriston, Wellington, and Blenheim Pippin. With the three dishes of dessert Apples, Mr. Fountain was 1st with Margil, King of the Pippins, and Ribston Pippin. The prizes offered by Mr. P. McKinlay for four dishes of Potatoes brought a large competition, Mr. Hudson being placed 1st with Radstock Beauty, Vicar of Laleham, International, and Magnum Bonum. In other classes for cottagers, and also for vegetables generally, the exhibits were remarkably good. In the open class for six kinds Mr. Hepper was 1st with Brussels Sprouts, Tomatoes, Potatoes, Onions, Celery, and Cauliflowers; Mr. Hudson was 2d. The day was fine, and the attendance of visitors throughout large.

Kingston and Surbiton Chrysanthemum :

Nov. 18.—What a contrast did the weather outside on the 18th at Kingston present to the very beautiful display inside the large Drill Hall, where the Chrysanthemum Show was ready for the judges. Although but in its fourth year the Society has, thanks to its excellent committee, chiefly of working gardeners, with Mr. T. Jackson, jun., as its hon. secretary, succeeded in producing one of the finest displays of this popular autumn flower; to be found in the kingdom. There were other things to be seen however besides Chrysanthemums, for ranged round the sides of the hall were well placed groups of decorative plants, the place of honour in front of the orchestra being taken by a fine collection of plants from Messrs. Jackson's nursery. In the groups for competition the 1st prize was taken by Mr. J. King, gr. to R. Few, Esq., of Esher, who had Palms, Ferns, Crotons, and, with other flowering plants, some remarkably good *Eucharis amazonica* in bloom. Mr. Abbot, gr. to C. J. Freake, Esq., of Bank Grove, Kingston, was 2d with plants showing high culture but wanting more flower; and Mr. Croxford, gr. to Mrs. Dunnage, of Surbiton, was put 3d. There were six 50 feet groups of Chrysanthemums, in pots, the best, staged by Mr. C. Bond, Oxford House Gardens, Ham, being without exception as fine as could possibly be put together. Good as were the rest, this one in high quality and abundance of flowers, in variety of colour, and in general effect was very well ahead, the plants being all naturally and well grown. Mr. J. Bass, gr. to Mrs. Price, of Park Side, Ewell, had a very meritorious lot of plants carrying big heads of bloom that were very effective; and Mr. J. Orley, gr. to G. F. Beville, Esq., of Surbiton, was 3d, with an excellent lot of plants. Two other prizes were awarded in this class. There were three collections of six trained plants of large-flowered kinds. The finest lot, shown by Mr. G. King, consisted of grand plants, 6 feet over, covered with flowers. As far as high-class culture and training could be shown it was displayed here, as it was also in the finely grown plants in the 2d prize group, the which were, however, but 4 feet across, but were perfection for foliage and flowers. This lot was shown by Mr. E. Beckett, gr. to J. B. Currie, Esq., of Esher. In addition to the customary three "Rundles" in each collection, Mr. King had *La Nympha*, a beautiful specimen, covered with flowers; *Prince of Wales*, and *Hero of Stoke New-*

ington; whilst Mr. Beckett had a superb *Julie Lagravère*, *Prince of Wales*, and *Prince Alfred*. In single specimens Mr. King was 1st, with a huge *Mrs. Dixon*; and Mr. Beckett 2d, with *Prince of Wales*. In the class for three large-flowered standards Mr. Beckett was 1st, with *Mrs. Rundle*, *George Glenny*, and *Prince of Wales*, Mr. R. Watson being 2d, with all the three "Rundles." The grand cut blooms shown demand more notice than the Pompon classes, and therefore we must omit reference to those now. The *Champion Vase* class is a great feature at Kingston, and produces a fine competition, some eight collections of forty-eight blooms, one half incurved and one half Japanese, being staged. Here a grower so far removed as is Mr. Tunnington, of Calderstone Gardens, Liverpool, came to the front with magnificent incurved flowers, so fine, indeed, as to be a good way ahead of all others, and with Japanese that though fresh and good were not so fine as others staged. The grand forms of the incurved blooms, however, proved irresistible, and Mr. Tunnington becomes for the ensuing year the holder of the fine *Champion Vase*. Mr. G. Harding, of Putney, the holder of the vase for the past year, had blooms fairly even throughout; whilst Mr. C. Gibson, gr. to J. Wormald, Esq., Morden Park, Mitcham, who was placed 3d, had by far the finest lot of Japanese blooms, and were perhaps as good as any twenty-four of the same section staged—the incurved kinds, however, failed to carry weight. For twenty-four incurved kinds Mr. Tunnington was again 1st with duplicate blooms of those in his other collection. We noticed in both a very taking dark flower named *Inner Temple*, said to have been raised by the late Mr. Dale. It should make a valuable addition to all show collections. Also very fine were *Golden Empress*, *Queen of England*, *John Salter*, *Nil Desperandum*, *Prince of Wales*, *Beauty*, *Sir Stafford Carey*, *Empress of India*, &c. Mr. Beckett was 2d, with good flowers, and Mr. A. Berry, Roehampton House Gardens, 3d. The class for twenty-four Japanese brought a superb lot of blooms, and excited surprise and admiration. Here Mr. Beckett was 1st, with wonderful flowers, massive, fresh and finely coloured. In this lot, very attractive, were *Soleil Levant*, *Triomphe du Nord*, *Peter the Great*, *Baron de Prailly*, *Harlequin*, *Triumph*, &c. Mr. J. Lyne, of Wimbeldon, who was 2d, also had grand flowers. In addition to the chief classes mentioned there was a large competition in those for smaller numbers of flowers, as also in the reflexed, *Anemone* and *Pompon* kinds. These latter, shown in elevated bunches, make a charming class, and thinned clusters or single blooms on a stem met with scant favour with the judges. Table plants, run along the centre of the cut flower tables; also berried plants, *Cyclamens*, *Chinese Primroses*, &c., were all excellent classes—the plants for table decoration being perhaps as good as would be shown anywhere. Amongst the berried plants some of *Capsicum* *Prince of Wales* were very effective. There were good collections of fruits, Mr. V. Bates, of Poulett Lodge, Twickenham, taking 1st prize in the class for six kinds with a good Pine, black and white Grapes, Pears, Apples and Walnuts. Mr. R. Watson, of Surbiton, was 2d, having good Grapes, Apples and Pears. The best four dishes of Apples were Wellington, Lord Gwydyr, Ribston Pippin and Blenheim Pippin. The Messrs. Jackson & Sons sent, not for competition, a fine collection of Apples, Pears and Grapes, and *Golden Drop* Plums.

Bristol Chrysanthemum and Fruit Show :

Nov. 17 and 18.—The city of Bristol has long been identified with the superior cultivation of the Chrysanthemum, and well did it sustain its reputation by the magnificent display of trained plants and cut flowers which were set up by local exhibitors at the late exhibition held in the Victoria Rooms at Clifton. These rooms are in all respects well adapted for holding an exhibition of the kind, not only because of their spacious proportions, but also because the locality is one of the most fashionable resorts for visitors in the suburbs of the city. The day was beautifully fine, and judging from the influx of visitors which poured into the show from the time the exhibition was opened, it must have been a financial success.

The show of fruit, though it was said to have fallen behind in quantity, was of the first order in quality, many of the exhibits in the classes for Grapes being almost faultless in formation of bunch, berry, colour, and I think, from appearance (though I did not taste), I may add flavour. Reviewing the position that Chrysanthemum growers in the neighbourhood of Bristol are entitled to as cultivators, it is no empty compliment to say that their productions are, from a practical point of view, no better than would be expected from a body of cultivators so unanimous, enthusiastic, and intelligent, and having so genial a leader as Mr. Webley, the hon. secretary of the Society. Coming to what is always looked forward to with the greatest interest at Chrysanthemum shows, viz., the cut blooms in the open classes, it is seldom one has the opportunity of witnessing a finer stand of twenty-four cut blooms than that exhibited by Messrs. Garaway of the Durdham Down Nurseries, which carried off the chief prize and the silver medal of the Royal Horticultural Society. The Messrs. Garaway were also successful in several other classes, including the special class for cut blooms of the Japanese and large *Anemone* varieties, in all of which they were considerably in advance of their rivals as to size of bloom, form, depth, breadth and substance of petal, and the freshness of their respective exhibits. The 2d and 3d prize takers, Mr. J. Bayliss, Winterbourne, and Mr. Philip Southby, Berks, also exhibited capital stands, the contest being a keen one, their respective positions being indicated by the order in which their names are given. In the amateurs' class for twelve cut blooms, Mr. T. Hobbs and Mr. Joseph Waite were the success-

ful competitors; as were Mr. John Bayliss and Mr. H. Morgan in the class for six.

The trained plants were an especial feature in another department of the show, Mr. John Bradner, a local grower of high repute, being quite invincible in nearly every class in which he exhibited. His six plants of the large flowered varieties included a fine specimen of *Prince of Wales* and *Jardin des Plantes*, and the finest sample of *Barbara* I have ever seen as a dwarf-trained plant. The plants were unique in elegance, perfect in symmetry, having foliage and flowers correspondingly good. But in awarding this meed of praise, so deservedly won, it must not be supposed that the exhibits of Mr. W. Butler and Mr. H. Cruger Miles, who were placed 2d and 3d respectively, were of an inferior description. On the contrary, their plants were well and skillfully grown, but the varieties did not appear to be so judiciously chosen, and this alone would be fatal to an exhibitor's chance of success where a single point is sufficient to turn the scale either one way or the other. The standard trained Chrysanthemums were so equal in point of merit, that it was with some difficulty the judges could decide in making their award, but eventually the prize fell to Mr. H. Smith, gr. to A. Shipley, Esq., whose perfection of blooms carried the day. The ornamental foliage plants and specimen stove and greenhouse plants, formed an attractive and striking feature upon the central table in the principal room of the exhibition, having the display of Grapes and hardy fruits arranged on either side. The plants were well grown, and there were several conspicuous examples of exceeding high culture in the colour and symmetry of the Crotons and the healthy development of choice Palms: chief honours in these classes falling to Mr. J. Derham, Mr. H. C. Miles, and Mr. C. Morgan.

In the open class for a group of plants arranged on a space 10 feet by 4 feet, the prizes fell to Mr. H. C. Miles and Mr. C. Morgan. Mr. Miles had a very choice group, very handsomely and effectively arranged, among which I noticed a fine sample of the beautiful *Vanda coerulea*, *Cattleya maxima*, *Oncidium varicosum*, *Cypripedium Sedeni*, *C. Maulei*, *Sarracenia Drummondii*, *Correa cardinalis*, *Centradenia grandiflora*, well grown Tree Carnations, in scarlet and white, and other flowering plants. In the class for six stove or greenhouse Ferns, Mr. W. Bannister, gr. to H. V. Ames, Esq., had the 1st prize for a splendidly grown collection, including fine specimens of *Adiantum tenerum* and *A. farleyense*. H. C. Miles, Esq. (W. Perry, gr.), had the 2d prize for a group nearly equal to the 1st, among which were good samples of *Nephrolepis davallioides* *furcans*, *Adiantum Williamsii*, and *A. tenerum*. The local nurserymen, always kind upon such occasions, contributed largely to the success of the exhibition by furnishing collections of the different kinds of plants for which their nurseries are famous. Messrs. Parker & Sons, St. Michael's Nurseries, sent a fine collection of Conifers, Messrs. Garaway a collection of foliage plants, and Mr. Thomas Bush, of the Cotham Nurseries, contributed a bank of handsome foliage plants, which were greatly admired by the visitors to the show.

Of miscellaneous exhibits the show of Primulas was very fine; berried plants, *Bouvardias*, and other plants suitable for table decoration were fairly good; while the display of autumn foliage and berries arranged in baskets was very chaste indeed. The bouquets were the weak point of the exhibition. The flowers were good, but they were packed so closely together as to render them highly inartistic objects indeed. The stands for table decoration were, however, very beautiful, having all appearance of stiffness in the arrangement of the flowers judiciously neutralised by a mixture of feathery grasses and Ferns, which bore a striking contrast to the dumpy-built bouquets.

The show of Grapes—although there was a falling off in the number of exhibits from that of former years—was upon the whole good in quality. The Muscats from the gardens of G. Miller, Esq., Brentry (J. Gibson, gr.), were perfect in finish, every berry being coloured to a bright amber. R. Wait, Esq. (G. Shelton, gr.), was successful in the class for black Grapes with admirable samples of *Alicante*, and Mr. W. Bannister, gr. to H. V. Ames, Esq., was to the front (his usual place, I believe) with *Black Hamburgs*, which were good for the time of year. The same exhibitor carried off the 1st prize for a collection of fruit, and was also a successful competitor in several of the classes for Pears and Apples, of which there was a capital show, considering the disastrous effect the past two seasons has had upon the crops of hardy fruits. Other successful exhibitors in the hardy fruit classes were Mr. H. Derham, Mr. J. Pease, and Mr. A. Hall. Vegetables were not numerous but good. In conclusion I may add, that the general arrangement of the exhibition is so good that neither judge nor exhibitor need go astray under the direction of Mr. Webley, who is so thoroughly proficient in his work. *Visitor.*

Aylesbury Chrysanthemum : Nov. 18.—The

second annual show of this recently established but thriving Society was held in the Corn Exchange, when the genuine success achieved last year at the initial exhibition was far exceeded, the spacious hall being completely filled with an extensive and most beautiful display of the interesting autumn flower whose cultivation the Society is designed specially to promote and improve. Everywhere the eye was charmed with lovely banks of flowers of pure white, of tender crimson, of regal purple, or of vari-coloured hues, as also of a large number of diverse shapes, nearly every variety being, I believe, represented in some class or other in the exhibition. Mr. Maggs' (gardener to C. H. Tindal, Esq.) plants and flowers deserve great credit for the way in which they were grown in their natural habit. Mr. Robins, gr. to E. D. Lee, Esq., ex-

hibited some very nice plants and cut blooms. Messrs. Lane, of Berkhamstead, had a very fine collection of plants and fruit, not for competition. Mr. E. Hill, gr. to Sir N. de Rothschild, President of the Society, staged a very fine dish of Beurre d'El Pears, not for competition. The plants principally shown were Mrs. Rundle, Mrs. Dixon, Mdle. Marthe, Cedo Nulli, St. Michael, Golden Empress, Mr. G. Glenny, Princess of Wales, Empress of India, White and Golden Beverley, very fine, &c. The amateurs' classes were well represented; as also were the cottagers'.

Eccles and Pendleton Chrysanthemum Show: Nov. 20.—The Eccles and Pendleton Floral and Horticultural Society have, for the last two years, met with no success, owing to the weather being wet and stormy on each of their summer show days, and finding themselves in difficulties, the committee, with a view to retrieve their disaster, appealed to some of the gentlemen and former subscribers of the district to make a special effort to get up a Chrysanthemum exhibition in the Pendleton Town Hall, which was held on the 20th inst., and which, although the weather was very sharp and frosty, proved to be a most excellent exhibition. The fine plants shown in the groups were arranged on either side of the room, and at the bottom end, and a table ran down the centre which displayed some thirty-six sets of table decorations by twelve competitors. The show, as a whole, would not have disgraced Manchester. Many of the Chrysanthemum blooms measured 5 or 6, and some 7 inches across, and the foliage was clean and healthy. One exhibitor's plants were models of neatness, having but one stick to each plant, and that in the centre, each branch being held in position by a neat invisible wire hooked to the branch and centre stick—these showing a marked contrast to the others with many sticks and scores of ties. In the Chrysanthemum classes the successful exhibitors were Mr. Hayes, gr. to Mrs. Tootal, Weaste Lane; Mr. William Elkin, gr. to Thomas Agnew, Esq., Eccles; Mr. W. Ellis, gr. to William Agnew, Esq., M.P., Pendleton; Mr. Frank Glover, gr. to Woodhead, Esq., Old Trafford; and Mr. J. Smith, gr. to T. H. Birley, Esq., Summerville. Mr. W. Ellis was also 1st for three table plants, for six Roman Hyacinths, and for three Adiantums; and Mr. Edward Elkin, gr. to T. H. Birley, Esq., Harthill, had the best group of plants arranged for effect; Mr. Hesketh, gr. to A. Birley, Esq., Pendlebury, being 2d in this class. Of cut blooms of Chrysanthemums the best came from Mr. J. Fitton, gr. to J. Rice, Esq., Broughton Lodge. There was a sharp contest in the class for dinner-table decorations, three tables being laid, each for eight persons, in a highly creditable manner. The prize, an illustrated Bible, was won by Mr. W. Elkin, with a light and tasteful arrangement of high-class flowers and fruit; and the other competitors, Mr. W. Ellis and Mr. Watson, butler to T. H. Birley, Esq., were highly commended. (From a Correspondent.)

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, NOV. 24, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC DEVIATIONS FROM GLAISHER'S TABLE 6th EDITION.		WIND.		RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.	
Nov. 18.	29.83	-.08	39.0	27.5	11.5	33.0	-.8	30.9	80	N.E.	In.
19.	30.38	-.33	42.0	33.0	9.0	37.3	-.5	32.3	82	N.W.	0.45
20.	30.09	+.30	39.5	29.0	10.5	34.0	-.7	28.5	79	N.E.	0.00
21.	30.11	+.42	42.2	28.7	8.5	32.5	-.2	27.9	83	N.E.	0.03
22.	29.77	+.08	38.5	25.0	13.5	29.4	-.12	23.2	70	W.S.W.	0.00
23.	29.73	+.05	45.0	30.8	15.2	36.8	-.4	31.2	81	S.W.	0.03
24.	29.69	-.00	52.5	41.5	11.0	47.6	+.6	40.3	87	S.W.	0.05
Mean	29.66	-.04	41.5	30.6	10.9	35.8	-.5	30.8	82	Variable	0.75

Nov. 18.—A dull, raw, cold day. Little sleet at 2 P.M.; rain afterwards, heavy at night. A wretched day. Windy.
— 19.—Dull till 11 A.M., fine afterwards. Very cold. Frequent rain till 6 A.M., and a shower at 6 P.M.
— 20.—A fine bright, cold day. Few flakes of snow at 11 A.M. Cloudless at night.
— 21.—A very fine, bright day. Very cold. Hoar frost. Little snow in early morning.
— 22.—A fine, bright day. Raw cold. Wintery. Overcast at night. Fog and hoar frost in morning.
— 23.—Generally fine, though frequently dull and cloudy. Thin rain from 5 to 7 P.M. Milder, but still cold.
— 24.—Generally fine, though cloudy. Little rain in morning, and again at night. Very mild. Strong wind.

LONDON: Barometer.—During the week ending Saturday, November 20, in the neighbourhood of

London the readings of the barometer at the level of the sea decreased from 29.70 inches at the beginning of the week to 29.19 inches by the evening of the 14th, increased to 29.74 inches by the morning of the 15th, decreased to 28.73 inches by the afternoon of the 16th, increased to 29.27 inches by the evening of the 17th, decreased to 28.74 inches by the night of the 18th, and rapidly increased to 30.42 inches by the end of the week. The mean reading for the week at sea level was 29.40 inches, being 0.70 inch below that of the preceding week, and 0.51 inch below the average. The main daily readings were all greatly in defect of their averages, except on the 20th; those for the 16th, 17th, and 18th being 1.06 inch, 0.72 inch, and 0.89 inch respectively below.

Temperature.—The highest temperatures of the air observed by day varied from 56° on the 14th to 27½° on the 18th; the mean value for the week was 45½°. The lowest temperatures of the air observed by night varied from 27½° on the 18th to 53° on the 14th; the mean value for the week was 36°. The mean daily range of temperature in the week was 9½°, the greatest range in the day being 13½° on the 16th, and the least, 3°, on the 14th.

The mean daily temperature of the air and the departures from their respective averages were as follows:—14th, 54° 3', +11° 8'; 15th, 41°, -1° 3'; 16th, 45° +2° 8'; 17th, 38° 2', -3° 8'; 18th, 33°, -8° 9'; 19th, 37° 3', -4° 5'; 20th, 34°, -7° 7'. The mean temperature of the air for the week was 40° 4', being 1° 7' below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 93° on the 16th, 79° on the 17th, and 74½° on the 20th; on the 18th the readings did not rise above 45°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 18½° on the 18th, and 19½° on the 20th, on the 14th the lowest reading was 51°; the mean of the seven lowest readings was 31°.

Wind.—The direction of the wind was S.W. and N.E., and its strength strong, especially on the 14th and 16th. The weather during the week was generally dull, but occasionally fine, wet, and stormy. A gale of wind on the 16th. A little snow fell on the 20th.

Rain.—Rain fell on four days during the week. The amount collected was 1.41 inch.

ENGLAND: Temperature.—During the week ending Saturday, November 20, the highest temperatures of the air observed by day were above 59° at Cambridge, Birmingham and Nottingham, and below 56° at Brighton, Bristol, and Liverpool; the mean value from all stations was 57½°. The lowest temperatures of the air observed by night were below 26½° at Bristol, Leicester, Wolverhampton, Liverpool, and Hull, and above 30° at Plymouth, Brighton, Norwich, and Leeds; the general mean from all places was 28°. The extreme range of temperature was more than 31° at Cambridge and Wolverhampton; and less than 27° at Brighton and Sunderland; the mean range of temperature in the week from all stations was 29½°.

The mean of the seven high day temperatures was above 49° at Truro and Plymouth, and below 44° at Bristol, Liverpool, and Sunderland; the mean value from all places was 46½°. The mean of the seven low night temperatures was below 32° at Bristol, Wolverhampton and Liverpool, and above 39° at Truro and Plymouth; the mean from all stations was 35½°. The mean daily range of temperature in the week was more than 13° at both Wolverhampton and Hull, and less than 9° at Brighton, Bradford, and Sunderland; the mean daily range of temperature from all places was 11°.

The mean temperature of the air for the week from all stations was 40½°, being the same as the value for the corresponding week in 1879. The mean temperature was above 42° at Truro, Plymouth, and Norwich, and below 38° at both Bristol and Liverpool.

Rain.—Rain fell on every day in the week at Hull and Sunderland, and on five or six days at most other places. The heaviest falls were at Brighton, 2.67 inches; Sunderland, 1.74 inch; Truro, 1.53 inch; Liverpool, 1.49 inch; and Blackheath (London), 1.41 inch; and the least falls were at Leicester, 1.03 inch; Norwich, 1.06 inch; Plymouth, 1.08 inch; and Bradford, 1.09 inch: the average fall over the country was 1.40 inch.

The weather during the week was dull and squally with frequent rain. Hail and snow fell at several places.

SCOTLAND: Temperature.—During the week ending Saturday, November 20, the highest temperatures of the air observed by day varied from 48½° at Greenock to 41° at Edinburgh; the mean value from all places was 48°. The lowest temperatures of the air observed by night varied from 8½° at Glasgow and 17° at Perth to 23° at Greenock; the mean from all stations was 18½°. The mean range of temperature in the week from all stations was 29½°.

The mean temperature of the air for the week from all stations was 32½°, being 12½° below that of the corresponding week in 1879, and 8° lower than that of England. The mean temperature was above 33° at Aberdeen, Greenock, and Leith, and below 30° at Glasgow.

Rain.—The heaviest falls of rain were at Paisley (1.52 inch), Edinburgh (1.34 inch), and Perth (1.28 inch), and the least fall was at Greenock (0.57 inch); the average fall over the country was 1.10 inch.

The weather during the week was exceptionally cold and severe.

DUBLIN.—The highest temperature of the air was 57½°, the lowest 21½°, the extreme range 35½°, the mean 36°, and the fall of rain 2.43 inches.

JAMES GLAISHER, F.R.S.

Variorum.

AN EXCURSION TO THE AMBRO MOUNTAINS, NORTH MADAGASCAR.—From time to time we have announced the arrival at Kew of collections of dried plants from Madagascar. At a recent meeting of the Linnean Society Mr. Baker described some of the new plants collected in Madagascar by Mr. Langley Kitching. The most interesting of these plants is an elegant new genus (Kitchingia) of Crassulaceae, allied to Bryophyllum. Already six species of this genus have been found in the various collections recently received at Kew from Madagascar. They have showy, cylindrical or campanulate, red or purple flowers. Among other novelties are three species of Salvia, two of Clematis, a Rhododendron, a curious Aponogeton resembling a Fucus, a shrubby, woolly-leaved Cotyledon, a Lagerströmia, a Kigelia, and a very distinct Euphorbia with a short, stout stem, bearing a rosette of Primrose-like leaves at the top. In a recent number of the *Zeitschrift der Gesellschaft für Erdkunde* Mr. J. M. Hildebrandt gives an account of a trip to the Ambro Mountains. It may be mentioned in passing that Mr. Langley Kitching collected from the eastern coast to the capital, and in Betsileo country, in Central Madagascar. The Ambro Mountains are by far the highest that skirt the north-east coast. Seen from the sea they appear as a massive ridge with three crests. A beautiful, softly undulating, gradually rising, grass-clad country, dotted with wooded peaks, lies between the Mangrove thickets and the mountains. This part of Madagascar is of volcanic origin, and the mountains are much rent and caverned. The inhabitants possess large herds of cattle, and cultivate Rice, Maize, Batatas, Gourds, &c. Formerly the country was well wooded, and timber formed a lucrative article of export; but the axe and fire have cleared most of it for Rice growing. Mr. Hildebrandt started from the French colony in the Island of Nosy-bé, calling at Nosy-fali and Nosy-mitsio on his way to the mainland. The last named island has become dry and barren, in consequence of being disforested, and Rice can no longer be grown. Several islands that formerly supported a number of inhabitants have been abandoned for the same reason. Landing was made in a bay south of Cape St. Sebastian, where Hildebrandt was very well received; but he had great difficulty in procuring carriers, although provided with a guide who was instructed to convey the orders of King Tsimiharo, that the traveller was to be provided with everything free. The result was that Hildebrandt had to pay in the form of "presents" about ten times the value of necessary provisions, &c. After some delay a few carriers were pressed into service, and the journey commenced. At first the way was over stony grasslands, where Hyphene coriacea was almost the only tree. One of the most conspicuous plants was an Asclepiad with beautiful violet-coloured flowers. A great part of the unwooded country is covered with tall grasses, to the exclusion of nearly all other herbaceous vegetation. Taken altogether Hildebrandt was disappointed with this journey, as it yielded him few novelties. In fact he found that the flora is almost identical with that of Nosy-bé. He penetrated about 40 miles inland, and the greatest altitude reached was about 1650 feet. The virgin forests were so exceedingly dense that one could not see the trees! However, one interesting discovery was made—*Adansonia madagascariensis* (the Madagascar Baobab) was found. Previously the tree was only known from a fruit and a broken flower, collected by Alfred Grandidia, and preserved in the Paris herbarium. Hildebrandt could only secure two flowers, which

he describes as very large and of a fiery red. The long calyx-lobes are rolled up like a watch-spring when the flowers are expanded. With regard to the caoutchouc of Madagascar, we are informed that the natives collect it from various climbers in a most wasteful manner, and recklessly destroy the forests, so that the supply must soon be exhausted. The ebony wood of this region is furnished by three different kinds of tree, none of which was in flower at the time of Hildebrandt's visit.

TRADE IN FRUITS AND VEGETABLES IN FRANCE.—In a recent number of the *Journal* of the Central Horticultural Society of France, M. Joly gives some interesting statistics relating to the importation of fruits and vegetables into France in the years 1877, 1878, and 1879, as well as to the quantities exported in the same years. The number of kilogrammes of Oranges and Lemons imported amounted in round numbers to 37,000,000 in 1877, 34,000,000 in 1878, and 37,000,000 in 1879, Spain furnishing by far the largest amount. Of other fresh fruits the importations were 5,000,000 kilogrammes in 1877, 7,000,000 in 1878, and 15,000,000 in 1879. Italy and Belgium supplied the largest proportion, but it will surprise many to learn that there is a considerable exportation of this class of fruit from England, amounting to 362,000 kilogrammes in 1877, to 107,000 in 1878, and to 42,000 in 1879; the latter figure affording one more proof of the wretched season of 1879 so far as regards this country; but in Italy things must have been much better, for no less than 4,000,000 kilogrammes were exported thence into France—double the amount of the preceding year. As to the exportations from France, the quantities of Oranges and similar fruit amounted in 1877 to nearly 4,000,000 kilogrammes, in 1878 to nearly 3,000,000, and in 1879 to 2,500,000 kilogrammes. Of other fruits the total amounts exported from France to England were, in 1877, upwards of 19,000,000 kilogrammes, in 1878 upwards of 24,000,000, but in 1879 only 13,000,000 kilogrammes. Of Potatoes the quantities exported from France into England were, in 1877, upwards of 103,000,000 quintals, in 1878 more than 107,000,000 kilogrammes, and in 1879, 84,000,000 quintals; so that French cultivators had cause to complain of 1879 as well as ourselves.

Enquiries.

He that questioneth much shall learn much.—BACON.

BOTANICAL EXCHANGE CLUB.—Under this title you notice in last week's publication an exchange club for dried plants: is there an exchange club for living plants? Many persons have rare or curious plants which they would be glad to give for others. Such a club would be a great benefit to many, especially to such as go in for specialties. *P.* [The plan has been tried on one or two occasions in these columns, but it has not been well supported. We are quite willing to insert offers of exchange for plants not to be obtained in the ordinary way of trade. *EDS.*]

FOWLS FOR A GARDEN.—*Moortland Willie* is desirous of keeping poultry near a garden, and would be glad if some of our friends would tell him which breed is the least destructive.

Answers to Correspondents.

ARACARIA SEEDS. *S. H. J.* Try Howcroft & Watkins, Covent Garden; or Vilmoren, Paris.

BOOKS. *S.*, *Dourneville*. The *Culture of Fruit Trees*, from the French of M. Du Breuil (Crosby Lockwood & Co.), will be the best to send out. The book you mention has been out of print many years.

ERRATUM.—At p. 162, for "Messrs. John Mills & Co.," read "The General Horticultural Company (John Wills), Limited."

GRAMMATOPHYLLUM. *Puzzled.* All you can do, we imagine, is to lay the stems on a well-drained surface in an Orchid-house with a brisk heat, taking care it does not get over-damp, until it puts out roots. If it gets at all dry, damp it moderately.

NAMES OF FRUITS. *Harry.* 1, rotten; 2 and 3, Hollandbury; 4, Round Winter Nonsuch; 5, *R. K.* 1, Ne plus Meuris; 2, Louise Bonne of Jersey; 4, Maréchal de la Cour; 9, Beurre Diel; 7, 8, and 12, Beurre Rance; 13 and 14, Glou Moreau; 15, Flemish Beauty.

NAMES OF PLANTS. *W. J. B.* 1, *Sparmannia africana*; 2, *Abutilon megapotamicum*.—*Old Subscriber.* 1, *Polystichum proliferum*; 2, *Lomaria discolor*; 3, *Davallia pyxidata*; 4, *Elaphoglossum scolopendrifolium*; 5, *Pteris flabellata*; 6, *Adiantum Capillus-Veneris*; 7, *Asplenium cicuratum*; 8, *Polystichum angulare proliferum*.—*P. M.* 1, next week; 2, *Vriesia speciosa*; 3, *Selaginella cuspidata*; 4, *S. viticulosa*.—*G. Ran-*

dall. It is impossible to be certain about the names of such scraps. Take some specimens with you to a good nursery, and get the names by comparison.

PICIA PINSAPO. *G. Randall.* Any nursery.

PLANTING CROCUSES AND SNOWDROPS IN A LAWN. *Constant Reader.* The best plan is to plant in clumps of from six to a dozen roots. Cut circular patches out of the turf, and place the bulbs about 3 inches below the surface. If the soil is poor, take some of it out, and replace with a good compost before planting; but you must press it firmly down afterwards, to prevent sinking.

SNAKE'S BEARD. *H. M. E.* *Ophiopogon japonicum.* It is quite hardy, and is used as an edging sometimes, especially on the Continent.

SCURRIE'S-FOOT FERN. *H. M. E.* We have heard this name applied to *Davallia bullata*; but it is not so commonly used as *Hare's-foot Fern* is for *D. canariensis*.

TABLE DECORATIONS. *J. C.* Miss Hassard's *Floral Decorations for the Drawing House*, published by Macmillan & Co. at the price of a few shillings, is the best.

CATALOGUES RECEIVED.—Cranston Nursery and Seed Company (King's Acre, near Hereford), an Abridged List of Forest Trees, Fruit Trees, Shrubs, &c.—James Dickson & Sons (Newton Nurseries, Chester), Forest and other Trees, Covert and Underwood Plants, Hardy Evergreens, &c.—M. Saunders & Sons (Friar's Walk Nurseries, Cork), General Catalogue of Hardy and Exotic Trees, Shrubs, and Plants.—John Waterer & Sons (Bagshot, Surrey), Rhododendrons and other Plants.—Kelway & Son (Langport), Thirtieth Annual Catalogue of Gladioli.—Haage & Schmidt (Erfurt), List of Novelties of their own raising and introduction for 1881.—Wood & Ingram (Huntingdon), Descriptive Catalogue of Nursery Stock.

COMMUNICATIONS RECEIVED.—*E. M.*—*J. C. & Co.*—*R. C.*—*W. S.*—*A. G.*—*R. F.*—*R. Lye.*—*A. W.*—*W. B. H.*—*T. D. H.*—*Thames (next week)*—*J. D. P. T.*—*H. A. B.*—*D. J. N.*—*J. R. J.*—*J. V. V.*—*Alph. de Candolle.*—*Ed. Pynaert.*—*Maj-Gen. Scott.*—*Col. Puckle.*—*J. H. E.*—*D. T. F.*—*J. C.*—*W. T.*—*H. H. D'O.*—*W. C.*—*L. V. N.*

Markets.

COVENT GARDEN, November 25.

Our market remains with scarcely any alteration. Home goods are short, with little inquiry. The first cargo of St. Michael's Pines is to hand, realising average prices. Kent Cobs are short, at previous quotations. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ¼-sieve	2 0 5 0	Lemons, per 100	6 0 10 0
Cobs, per lb.	1 0 1 10	Pears, per dozen	1 6 5 0
Grapes, per lb.	1 0 4 0	Pine-apples, per lb.	1 6 3 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. a.
Artichokes, Globe,	3 0 4 0	Horse Radish, p. bun.	4 0 —
per doz.	3 0 4 0	Lettuces, Cabbage,	—
Asparagus, Fr. bndl.	1 6 2 0	per doz.	0 6 1 6
Beans, French, p. lb.	0 9 —	Mint, green, bunch.	0 4 —
Beet, per doz.	1 6 2 6	Mushrooms, p. baskt.	1 6 2 0
Cabbages, per doz.	1 0 2 0	Onions, per bushel.	5 0 —
Carrots, per bunch.	0 4 0 6	— Spring, per bun.	0 6 —
Cauliflowers, Eng-	—	Parsley, per bunch.	0 4 —
lish, each	0 3 0 6	Radishes, per bun.	0 2 —
Celery, per bundle	1 6 2 0	Seakale, per basket	3 6 —
Chilis, per 100	3 0 —	Small salad, pun.	0 4 —
Cucumbers, per doz.	6 0 9 0	Spinach, per bushel	4 0 —
Endive, per doz.	1 0 1 6	Tomatoes, per lb.	0 9 1 0
Garlic, per lb.	1 0 —	Tunip, new, bunch.	0 4 —
Herbs, per bunch	0 2 0 4		

POTATO.—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 6d. to 4s. per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	6 0 12 0	Evergreens, in var.,	—
Bouvardias, per doz.	12 0 24 0	per dozen	4 0 18 0
Chrysanth., p. dozen	6 0 18 0	Ferns, in variety, doz.	4 0 18 0
Cyclamen, per doz.	12 0 18 0	Ficus elasticus, each	1 6 7 6
Cyperus, per dozen	6 0 12 0	Foliage Plants, vari-	—
Dracæna terminalis	30 0 60 0	ous, each	2 0 10 6
— viridis, per doz.	12 0 24 0	Fuchsias, per dozen	9 0 12 0
Epiphyllum, per	—	Hyacin., Rom., doz.	15 0 18 0
dozen	18 0 30 0	Myrtles, per doz.	6 0 12 0
Erica gracilis, dozen	9 0 18 0	Palms in var., each	2 6 21 0
— caltra, per doz.	8 0 16 0	Primula, single, per	—
— hyemalis	12 0 36 0	dozen	5 0 6 0
Euonymus, various,	—	Solanums, per dozen	6 0 18 0
per dozen	6 0 18 0	Tulips, 12 pots	12 6 —

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Marguerites, 12 blms.	0 4 0 9
Arum Lilies, 12 blms.	6 0 9 0	Mignonette, 12 blms.	4 0 9 0
Asters, 12 bunches	9 0 12 0	Narcissus, Paper-	—
Bouvardias, per bun.	12 0 12 0	White, 12 sprays.	3 0 4 0
Camellias, per dozen	3 0 6 0	Pelargoniums, 12	—
Carnations, 12 blms.	1 0 2 0	sprays	0 9 1 6
Chrysanth., 12 bun.	3 0 9 0	— zonal, 12 sprays	6 0 9 0
— 12 blooms	0 3 2 0	Primula, double, per	—
Cyclamen, 12 blms.	0 3 0 6	bunch	1 0 1 6
Epiphyllum, 12 blms.	1 0 1 6	— single, 12 sprs.	0 9 1 6
Eucharis, per doz.	4 0 9 0	Roses (indoor), doz.	2 0 6 0
Gardenias, 12 blms.	9 0 18 0	Stephanotis, 12 spr.	9 0 15 0
Heliotropes, 12 sp.	0 6 1 0	Tropæolum, 12 bun.	1 0 3 0
Hyacinth., Roman,	—	Tuberose, per dozen	1 6 3 0
12 sprays	2 0 3 6	Violets, 12 bunches.	1 6 2 6
Lapageria, white, 12	—	— Neapolitan, Fr.,	—
blooms	4 0 6 0	per bunch	3 6 5 0
— red, 12 blooms.	1 0 3 0	— Czar, Fr., bunch	2 0 3 0
Lilac, Fr., per bunch	8 0 10 0		

SEEDS.

LONDON. Nov. 24.—There is now more business doing in farm seeds. The samples of new Clover seed which come to hand from all parts prove so unsatisfactory in quality, that increasing attention is given to fine yearling parcels, and in these a fair trade has been passing at a slight advance. Moreover, the poor specimens of new red seed which have been received from America do not indicate a large crop. In consequence of these circumstances, the English and Continental markets exhibit a quietly hardening tendency. Choice Trefoils are wanting. Italian Rye-grass keeps firm. There is no quotable variation in either Buckwheat, Millet, Hemp, or Linseed. Canary seed, with a meagre inquiry, droops in value. Blue Peas and Haricot Beans realise late rates. For split Lentils the sale is slow. Mustard and Rape seed are in moderate request. American Linseed is now offering here: in view of the largely increasing growth of this article in the Western States its import into this country will in all probability soon assume large proportions. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

On Monday, at Mark Lane, trade in home-grown Wheat was decidedly firm, and prices advanced 1s. per quarter; foreign was in fair supply and steady demand at an improvement of 1s., and in some instances choice qualities 1s. 6d., per quarter more money. Indian Corn was well held at a trifling advance, Sounds Oats realised about 6d. per quarter more money, while medium and inferior sorts maintained their value. In Beans and Peas prices were fully maintained. Flour was very firm; the top price of town-made was raised 4s., or to 47s., and country sacks and American bags and barrels were also rather dearer.—On Wednesday there was a small supply of home-grown Wheat, which moved off slowly at about Monday's values. There was no change in foreign Wheat, but the market showed less firmness towards the last. Barley was dull, and inferior sorts somewhat irregular. Malt was unchanged in value. Oats were not in much demand. Maize was scarce and pretty well held in consequence. Beans and Peas were steady, while flour changed hands quietly at previous currencies. Average prices of corn for the week ending November 20.—Wheat, 44s. 1d.; Barley, 33s. 9d.; Oats, 20s. 4d. For the corresponding period last year:—Wheat, 47s. 10d.; Barley, 39s. 8d.; Oats, 21s. 6d.

CATTLE.

At Copenhagen Fields on Monday the demand for beasts showed an increase, and the weather being favourable, trade was more active. Last Thursday's advance in price was well maintained, and in a few instances exceeded. There was a good demand for sheep, and choice qualities, being scarce, made high prices. Good calves were also in demand at fully late rates. (Quotations:—Beasts, 4s. 6d. to 5s., and 5s. 4d. to 6s.; calves, 5s. to 6s. 2d.; sheep, 5s. 4d. to 5s. 10d., and 6s. 4d. to 7s.; pigs, 4s. 6d. to 5s. 8d.—On Thursday, with milder weather, the cattle trade ruled dull in tone. Supplies were quite up to the average for a Thursday, and both beasts and sheep sold steadily at weak prices. Calves and pigs were dull.

HAY.

Tuesday's Whitechapel Market report states that there was a large supply, and with a dull sale prices ruled somewhat in buyer's favour. Quotations:—Prime Clover, 100s. to 128s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 105s.; inferior, 30s. to 70s.; and straw, 30s. to 42s. per load.—On Thursday there was a large supply of fodder on sale, but trade was dull, and lower prices had to be accepted to effect sales of prime Clover, which gave way 4s. per load.—Cumberland Market quotations:—Superior meadow hay, 95s. to 105s.; inferior, 50s. to 78s.; superior Clover, 120s. to 130s.; inferior, 75s. to 105s.; and straw, 30s. to 42s. per load.

POTATOS.

The Borough and Spitalfields reports state that there was a large supply on sale, and the trade dull, at the following prices:—Scotch Regents, 100s. to 110s. per ton; ditto Champions, 80s. to 90s.; Essex Regents, 80s.; Victorias, 100s.; German Reds, 4s. to 5s. per bushel; Belgian Kidneys, 4s. per bag.—The imports into London last week were:—149 bags from Charente, 93,324 Hamburg, 24,262 Stettin, 4002 Bremen, 5685 Rotterdam, 684 Harlingen, 599 Bordeaux, 977 Boulogne, 82 St. Nazaire, 200 Rouen, 4344 Ghent, 4018 Antwerp, 106 Ostend, 2 bags Bruges, 80 tons Iriquois, and 106 tons St. Malo.

COALS.

The following are the prices current at market during the week:—Ravensworth West Hartley, 14s. 9d.; East Wylam, 16s. 6d.; Walls End—Hetton, 19s.; Hetton Lyons, 17s. 6d.; Lambton, 18s. 6d.; Wear, 17s. 6d.; Tunstall, 17s. 6d.; Hawthorns, 17s. 9d.; Original Hartlepool, 19s.; South Hetton, 19s.; Radford Navigation, 16s.

Government Stock.—On Monday Consols closed at 100 to 100½ for delivery, and 100½ to 100½ for the account. Tuesday's quotations were, for delivery, 100 to 100½, and for the account, 100½ to 100½. On Wednesday the closing figures were 100½ to 100½ for both delivery and account; and Thursday's final quotations were, for delivery, 100½ to 100½, and 100½ to 100½ for the account.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,

3d. per bushel; 100 for 20s.; truck (loose, 250 bushels),

70s.; 4-bushel bags, 4d. each.

LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack;

5 sacks, 25s.; 12 for 45s., or 36s. per ton.

BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for

40s., or 34s. per ton; sacks, 4d. each.

COARSE SILVER SAND, 15 9d. per bushel; 15s. half ton,

25s. per ton; in 1 cwt. bags, 4d. each.

YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF

MOULD, 1s. per bushel.

SPHAGNUM MOSS, 8s. 6d. per sack.

Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper,

Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

17¹/₂, Coal Yard, Drury Lane (late of Castle St., Long Acre), W. C.

PEAT, for Rhododendrons, &c., of excellent

quality, on rail, Kingwood Station, Hants, in trucks of

4 tons, 4s.; do. coarse and fine SAND, 25s. per truck; selected

PEAT and compost for choice plants. Fresh gathered SPHAG-

NUM, &c. Chief Office and Depot, Kingwood Station, Hants.

F. G. GATERELL, Manager.

PEAT, GOOD BROWN FIBROUS,

put on South-Eastern Railway at Dartford, 6s. 6d. per

yard, in Truckloads. Samples sent.

F. WHITE, Darenth, Dartford.

FIBRE REFUSE, for Gardens, Potting, &c.

4 bushels for 1s., bag included. Orders by post punctually

attended to.—G. HARDING, 23, Stepney Green, E.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best

quality for Orchids, Stove Plants, &c., 4s. 6s. per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas,

Heaths, American Plant Beds, 15s. per ton.

Delivered on rail at Blackwater, South-Eastern Railway, or

Farnborough, South-Western Railway, by the truckload.

Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.

Fresh SPHAGNUM, 10s. 6d. per bag.

WALKER AND CO., Farnborough Station, Hants.

SOLUBLE

FIR TREE OIL INSECTICIDE

THE CHEAPEST and BEST

of all INSECTICIDES. Sold by all Seedsmen and

Chemists. Bottles, 1s. 6d., 2s. 6d., and 4s. 6d.; Gallons, 12s. 6d.;

Casks, 11s. per gallon.

Manufactured by E. GRIFFITHS HUGHES, Operative

Chemist, Victoria Street, Manchester.

London: HOOPER AND CO., Covent Garden, W. C.

Dublin: TAIT AND CO., Seedsmen, Capel Street.

GISHURST COMPOUND.—

Used by many of the leading Gardeners since 1859,

against Red Spider, Mildew, Thrips, Greenfly, and other Blight,

in solutions of from 1 to 2 ounces to the gallon of soft water, and

of from 4 to 16 ounces as a winter dressing for Vines and Fruit

Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen in Boxes, 1s., 2s., and 10s. 6d.

Wholesale by PRICE'S PATENT CANDLE COMPANY

(Limited).

HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,

Carriage Paid to any Railway Station in England.

Price Lists on application.

ALFRED SYER, Glass, Lead, Zinc, Oil and Colour

Merchant, 6 and 8, Pentonville Road, London, N.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities of

BETHAM & SON,

9, LOWER THAMES STREET, LONDON, E. C.

B. & Son have always a large Stock in London of 20-in. by 12-in.,

20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

Established 160 years.

WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO.,

IMPORTERS and MANUFACTURERS, have a large quantity

of GLASS in various sizes and thicknesses:—

Inches. Inches.

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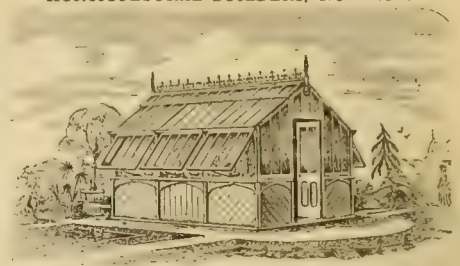
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Pocket-Handkerchiefs, hemmed for use, from

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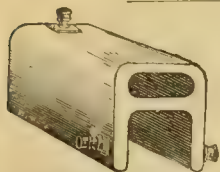
richly-fringed Shetland Shawls, in White only,

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IMPROVED
TERMINAL END
SADDLE & FLUE
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Unsurpassed for economy
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HEATING APPARATUS fixed complete.
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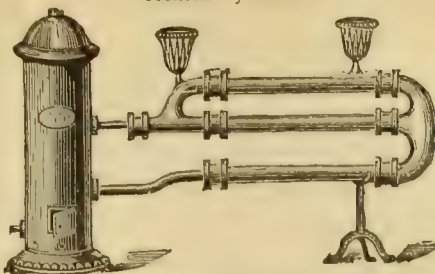
Healthy Heat twenty-four hours or longer for about 1d.,
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The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
4-inch Pipes, 1s. 8d. per yard. Other sizes equally low.
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HOT-WATER APPARATUS,
Heated by Gas.



Prices, complete with Boiler, from £3 7s. 6d.

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GREENHOUSES, &c.

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Price 14s.



Petroleum Greenhouse Stove.

26 in. high, portable, and requiring no flue;
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No Smoke, no Smell, no Injury to the most
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Packed in case, for sending by rail, 1s. extra.
Oil 1s. 2d. per Gallon, supplied by Deane & Co.
DEANE & Co. provide and fix Hot-water
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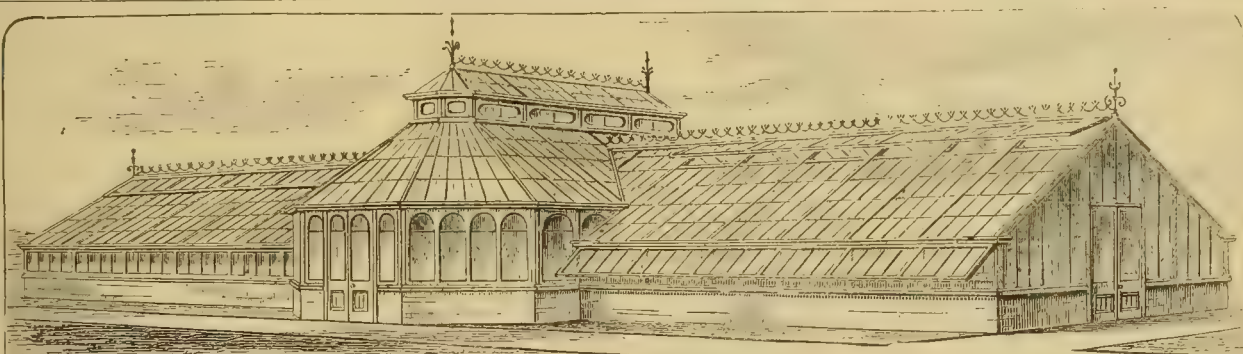
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Having extensive works, special machinery, and first-class workmen, who have been many
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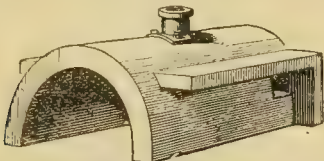
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PUBLISHING OFFICE AND OFFICE FOR ADVERTISEMENTS, 41, Wellington Street, Strand, London, W.C.

Silver Medal, 1874.

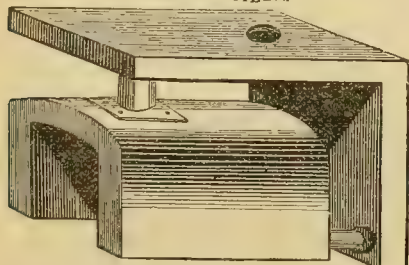
THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



"This boiler possesses the rare merit of sucking all the heat from the fire."—*Gardeners' Magazine*, p. 254.
 "I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 327.
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These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.	To heat of 4-in. Pipe.	Price.
High. Wide. Long.	Feet.	£ s. d.
20 in. 18 in. 18 in.	300	7 0 0
20 " 18 " 24 "	400	8 0 0
20 " 18 " 30 "	500	9 0 0
24 " 24 " 24 "	700	12 0 0
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Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Baltham Hill, S.W., May 29, 1873.

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS OF HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

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 When ordering Boilers please refer to the above advertisement.

THOS. W. ROBINSON,
DENNIS PARK IRONWORKS, STOURBRIDGE.

MANUFACTURER OF

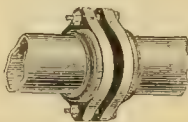
HOT-WATER PIPES,
IMPROVED "EXPANSION JOINT" PIPES,
BOILERS,SPROUTING, PUMPS, TANKS, WROUGHT-IRON TUBING,
And every description of Ironwork for Horticultural and Building Purposes.

SOCKET HOT-WATER PIPES.

	s. d.	s. d.	s. d.
Pipes (6 ft. long)—2-in., 3-in., 4-in., 5-in., 6-in. each.	1 8	2 9	3 6
Elbows (No. 12)—" " " " " " " "	1 1	1 8	2 0
Tees (No. 13)—" " " " " " " "	1 5	2 4	3 3
Syphons (No. 23)—" " " " " " " "	1 3	2 0	3 0

"Expansion Joint" Hot-water Pipes.

The "Expansion Joint." The Best and Quickest Made.



This joint, being easily removed, is specially adapted for Tenants.

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Pipes (6 ft. long)—2-in., 3-in., 4-in., 5-in., 6-in. each.	1 6	2 4	3 1
Elbows (No. 12)—" " " " " " " "	0 9	1 1	1 1
Tees (No. 13)—" " " " " " " "	1 0	1 4	1 6
Syphons (No. 16)—" " " " " " " "	1 1	1 6	1 8

Joint complete, with Rubbers and Pins, 2-in., 11d. each; 3-in., 1s. 3d.; 4-in., 1s. 6d.

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Terms—Cash against Invoice less 2½ per Cent. Discount.

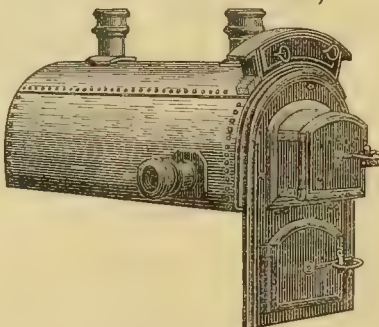
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ALL CASTINGS SUPPLIED OF FIRST QUALITY ONLY.

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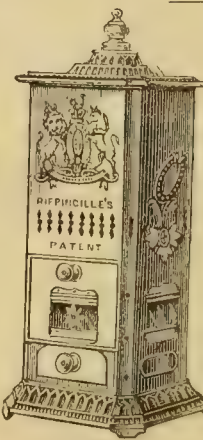
(ESTABLISHED 1800).

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GREENHOUSE STOVES

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The only perfect Oil Stoves made to burn absolutely without Smoke or Smell, Trouble or Dirt.

Unequalled for Warming Greenhouses, Vineries, Shops, Bedrooms, Halls, Damp Rooms, &c.

They are perfectly safe, require no pipes or fittings, will burn from twelve to twenty hours without attention, give off no injurious vapour, and are the best ever invented to

Save Plants from Frost, Keep out the Damp, &c.

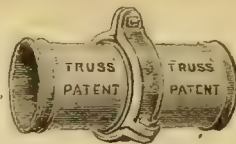
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THE ALBION LAMP COMPANY,
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 And say where you saw this Advertisement.

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also COILS, SINGLE, DOUBLE, TREBLE, or QUADRUPLE, with EXPANSIVE LEAKLESS JOINTS.



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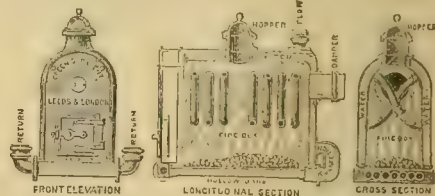
With Tubes or Shelves, and Hollow or Ordinary Cast-iron Grate Bars.

SADDLE BOILERS,

With WATERWAY BACKS and WELDED BOILERS, Specially adapted for Heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

They are the neatest, cheapest, most effective and durable of any extant.

The Tubular ones are remarkable for their great Heating Power, Slow Combustion, and the length of time the Fire will Burn without requiring attention.



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By appointment to H.M. the Queen and H.R.H. the Duke of Connaught.

ROSSER & RUSSELL, { HORTICULTURAL BUILDERS and WARMING WORKS: Queen's Wharf, Hammersmith ENGINEERS.

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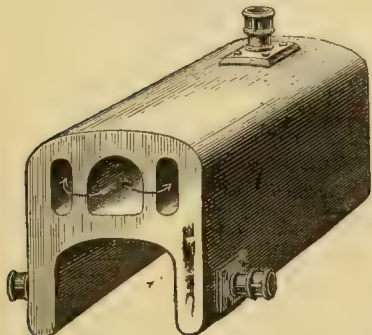
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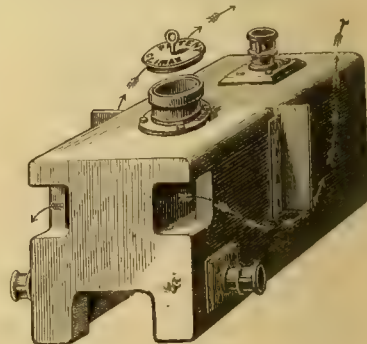
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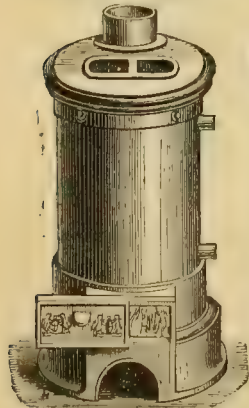
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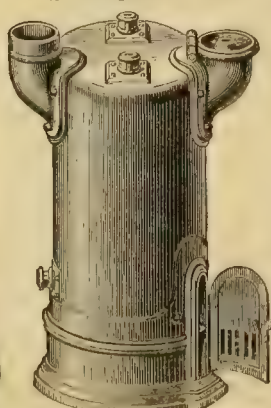
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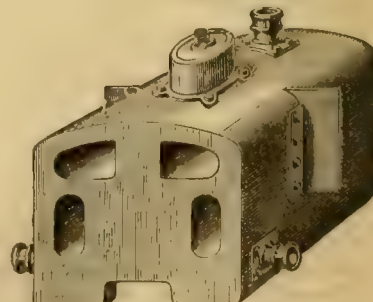


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Fruiting Trees of APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds. Priced LIST on application to J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

Easte's Kentish Invicta Pea.
WALLACE R. HARRISON has a few Quarters of the above to offer, in splendid condition. Lowest price per Bushel on application.
High Street, Maidstone.

MULBERRIES, in large or small quantities, Prices of **PONSFORD and SON, Nurserymen, Brixton, S.W.**

KENTISH FRUIT TREES.—Standard and Pyramid Apples, Pears, Plums, and Cherries, in 200 varieties, principally good profitable Market sorts, from 65s. per 100. Gooseberries and Currants very cheap. T. EVES, Gravesend Nurseries.—Established 1820.

RHUBARB FOR SALE.—Extra strong Roots, for Forcing and Planting. Price, per dozen, 100, or 1000, of S. BIDE, Alma Nursery, Farnham, Surrey.

TURF for SALE.—Four Acres of good Field Turf at Bromley, Kent. Apply **PONSFORD and SON, Nurserymen, Brixton, S.W.**

Notice to Senders.
CUT FLOWERS, CHOICE FRUITS, &c., are now in demand. Special terms to large Consigners. WISE and RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

WANTED, Transplanted SWEET BRIER, Transplanted DOG ROSE (Rosa canina), and 1-yr. CUTTINGS of ROSA MULTIFLORA DE LA GRIF-FERAIE. State particulars regarding size and price per 1000, or send samples to, **EWING and CO., Eaton, Norwich.**

WANTED, TWO Handsome Specimens PINUS EXCELSA, 12 to 14 feet high; must have been recently transplanted. **FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.**

WANTED, RASPBERRY BUSHES, with strong canes. Quote kinds and price to **FRANCIS & ARTHUR DICKSON & SONS, The Upton Nurseries, Chester.**

SUTTON'S FLOWER ROOTS.
HYACINTHS | GLADIOLUS
CROCUS | TULIPS
NARCISSUS | RANUNCULUS
ANEMONES | LILUMS.

For prices and full particulars see **SUTTON'S AUTUMN CATALOGUE.** Gratis and post-free on application. **SUTTON and SONS, The Queen's Seedsmen, Reading.**

CHRISTMAS TREES, good in colour and form. Buyers will do well to write for prices and particulars. Now being sent out as grand SPRUCE as can be grown, and cheap. 10,000 of all sizes up to 5 feet. **W. JACKSON and CO., Nurseries, Bedale, Yorks.**

CHRISTMAS TREES.—A quantity of well feathered SPRUCE for Sale cheap for cash. **J. GEO. HILL, The Royal Nurseries, Merriott, Somerset.**

CHRISTMAS TREES, fine single specimens, 2 to 5 feet; Standard and Dwarf ROSES; QUICK, from 10s.; LARCH, &c. **W. GROVE, Tupsley, Hereford.**

SPANISH CHESTNUT, ASH, LARCH, SCOTCH, BIRCH, ALDER, WILLOW and THORN QUICK, all stout, well-rooted, transplanted. A large quantity to be sold.—Mr. GEORGE CHORLEY, Coster's Nursery, Midhurst, Sussex.

EVERGREEN OAKS.—1000 for Sale, transplanted May, 1879, from 3 to 7 feet, bushy. Price on application to **J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.**

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. **HARDY AZALEAS,** a selection of the most beautiful kinds known, all well furnished with buds. Knap Hill Nursery, Woking, Surrey.

AZALEA INDICA.—Twelve New and Beautiful Azaleas, 21s.; large, full plants in 5-inch pots, about 1 foot over, crowded with buds (50 to 100 on each plant); finest known sorts, Double Whites, &c. Packages gratis for cash, with order. A few fine specimens, 10s. 6d. and 21s. each. **J. H. LBY, Royal Nursery, Croydon.**

Continental Seeds.
O. KNOFF and CO., Erfurt (Established 1831), offer their well known FLOWER SEEDS to the Trade. For CATALOGUES, &c., apply to **BECK and POLLITZER, 211, Upper Thames Street, E.C.**

Blooming Rhododendrons.
H. LANE and SON, Nurseries, Berkhamstead, Herts., can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Ponticums, very cheap.

To the Trade.
EUONYMUS—EUONYMUS—EUONYMUS.
J. NOBLE begs to offer the above, in various sizes, by the dozen, 100, or 1000. The Nurseries, Pond Lane, Lower Clapton, E.

LILY of the VALLEY.—For Sale, a quantity of clumps, at 21s. per 100. For making permanent beds, they are a chance seldom to be met with, it being the best Dutch variety.—W. F. BOFF, 203, Upper Street, Islington, N.

ROSES—ROSES.—A splendid lot of Dwarf Hybrid Perpetual ROSES, of nearly all the leading varieties, are offered at from 6s. to 12s. per dozen. **WILLIAM MEADMORE, Market Place, Romford, E.**

ROSES, the leading varieties, very strong and healthy, Dwarfs on Manetti, 10s. per dozen, 70s. per 100. Descriptive Priced Nursery CATALOGUE post-free on application. **GEO. J. WOOLLETT, Nurseries, Caterham, Surrey.**

To the Trade.
ROSES, 25,000 Dwarf, on Manetti, 35s. per 100, 41s. per 1000; 20,000 1-yr. cult. vated Seedling BRIERS, 20s. per 100. Extra strong SEAKALE, for Forcing, 80s. per 1000; strong SEAKALE, 60s. per 1000; Planting SEAKALE, 35s. per 1000. For cash with orders. **RICHARD LOCKE, Rose Farms, Redhill, Surrey.**

Roses, Fruit Trees, &c.
WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application. Ottershaw Nurseries, Chertsey.

CHRYSANTHEMUMS.—Best sorts for cut flowers, large root, out of 10 and 12-inch pots, 6s. per dozen. **FLEUR DE MARIE,** the white variety so much used for cut flowers at Christmas, out of 8 and 10-inch pots, 9s. per dozen.—W. F. BOFF, 203, Upper Street, Islington, N.

SEAKALE CROWNS, strong selected for Forcing, now ready. None superior now growing. Apply to **T. BROSNAN, Market Gardener, Norman Farm, Fulham, W.**

SEAKALE CROWNS and ASPARAGUS ROOTS for Sale. None superior now growing.—Apply to **WM. BALEY, Market Gardener, Milshott Farm, Fulham, S.W.**

SALES BY AUCTION.

7000 *Lilium auratum*, from Japan, in fine Condition. (Sale No. 5749.)

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **MONDAY**, December 6, at half-past 12 o'clock precisely, an importation of 7000 splendid Bulbs of *LILIAM AURATUM*, just arrived from Japan in the finest possible condition; a consignment of BULBS, including *Lilium*, *Savranium*, *Lilium*, and others; also choice LILIES; also fine plants of *ARAUCARIA EXCELSA*, and a consignment of PLANTS and BULBS from Germany; 130 strong clumps of *SPIRÆA PALMATA*, and a great variety of BULBS from Holland.

May be viewed the morning of Sale, and Catalogues had.

Hardy Plants and Bulbs. (Sale No. 5748.)

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **WEDNESDAY**, December 8, at half-past 12 o'clock precisely, First-class Standard and Dwarf ROSES from France; Pyramid FRUIT TREES, consisting of Apples, Pears, and Plums, of sorts; Gooseberry and Currant Bushes, Raspberry Canes, &c.; CARNATIONS, PICOTEES, PINKS, SPIRÆAS, HARDY HERBACEOUS BORDER PLANTS, LILiums, &c.; also a great variety of BULBS from Holland.

On view the morning of Sale, and Catalogues had.

Cool Odontoglots. (Sale No. 5749.)

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, December 9, at half-past 12 o'clock precisely, by order of Mr. P. Sander, 5, Albans, very fine importations of COOL ODONTOGLOTS, consisting of *Odontoglossum luteo-purpureum* and its varieties, *Odontoglossum novium majus*, triumphans, coronarium, Phalenopsis, Lindleyanum, compactum; also *CATTLEYA MENDELII* and *GIGAS*, *DENDROBIUM BIGIBBUM* and *SUPERBIENS*, and other ORCHIDS.

On view the morning of Sale, and Catalogues had.

Monday Next.

GREAT UNRESERVED SALE OF DUTCH BULBS, in Lots to suit all Buyers—900 Lots.

MESSRS. PROTHEROE AND MORRIS will **SELL** at the Mart, Tokenhouse Yard, near the Bank, E.C., on **MONDAY NEXT**, at half-past 11 o'clock precisely, 900 Lots of First-class HYACINTHS, TULIPS (including 20,000 Double Duc van Thols), CROCUS, NARCISSUS, LILiums, GLADIOLUS, LILY of the VALLEY, and various other BULBS.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Horsell Nursery, near Woking.

About 1 mile from Woking Station.

IMPORTANT UNRESERVED SALE of well-grown NURSERY STOCK, in capital condition for removal.

MESSRS. PROTHEROE AND MORRIS will **SELL** by **AUCTION**, on the Premises as above, on **TUESDAY**, December 14, at 12 o'clock punctually, 13,000 HOLLIES, consisting of 1500 fine variegated Hollies, 2 to 7 feet; 1500 green Hollies, 3 to 10 feet; and 10,000 smaller Hollies; 2500 bushy AZALEAS, 2 to 4 feet; 1000 Portugal LAURELS, 1000 English YEWs, ROSES, and other Stock.

May be viewed. Catalogues had of Mr. KNOWLES, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Hornsey Lane, N.—Clearance Sale.

MESSRS. PROTHEROE AND MORRIS will **SELL** by **AUCTION**, on the Premises, Harborton, Hornsey Lane, N., near Crouch End Station, and close to Highgate Archway, on **THURSDAY**, December 16, at 12 o'clock, by order of Mr. Cumming, E.C., who is leaving the whole of the STOVE and GREENHOUSE PLANTS, comprising several very fine specimens of *Davallia elegans* and others, *Crotos* in variety, a quantity of specimen Palms, a very fine specimen *Pandanus Veitchii*, Miscellaneous Plants, &c.

View day prior to the Sale. Catalogues on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

6000 unusually fine Bulbs of *Lilium auratum*, and 25 cases of new and rare IRIS from Japan; a consignment of CAMELIAS, AZALEAS, and other plants from Ghent; an assortment of English-grown LILIES, and various other bulbs.

MESSRS. PROTHEROE AND MORRIS will **SELL** the above at the Auction Mart, London, E.C., on **FRIDAY**, December 17. Further particulars next week. N.B. The native drawings of the Iris may be inspected at the Auctioneers' Offices, 98, Gracechurch Street, E.C.

To Market Gardeners, Farmers, and Others.

MESSRS. SADGROVE will **SELL** by **AUCTION**, on **THURSDAY**, December 9, on the Premises, Glancus Street, Bow Common, E., the remaining stock of Messrs. Bantall & Co., CHEMICAL MANURE MANUFACTURERS, who are relinquishing business, consisting of about 400 tons of Chemical Manure, quantity of Manurial Compost, Sulphuric Acid, Tools, Barrels, and also the Iron Drying Plants, Bricks and Timbers, constituting the flues in drying sheds.

Lots may be viewed, and Catalogues of Auctioneers, 11, Crooked Lane, King William Street, E.C.

In Liquidation.—Princes Risborough, Bucks.

Near the Station, G. W. R.

IMPORTANT SALE OF NURSERY STOCK, consisting of 20,000 Spruce Fir, 10,000 Chinese and American Arborvitæ, 10,000 choice Limes, 5000 English Yews, 2000 Evergreen Privet, 20,000 Quicks, 5000 Hazel, 5000 Sycamore, 5000 Chestnuts, 5000 Alder, and a large and general collection of Fruit, Ornamental, and Forest Trees, and other Nursery Stock.

MR. J. A. MUMFORD will **SELL** the above by **AUCTION**, on the Premises occupied by Mr. James Floyd, on **WEDNESDAY** and **THURSDAY**, December 8 and 9, at 10 to 11 o'clock each day. The Spruce is particularly suitable for Christmas Trees, and the whole Stock is clean and in excellent condition for removal.

Catalogues may be had of Mr. JOHN DOVER, "Railway Hotel," Princes Risborough, the Trustee; and of Messrs. MUMFORD AND SON, Auctioneers and Land Agents, Brill, Bucks.

WANTED, TO RENT, near London, a piece of LAND, with from 3000 to 7000 superficial feet of Glass thereon—Addres with full particulars, **FLORIST**, *Gardeners' Chronicle* Office, W.C.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are Eight and a Half Acres of deep, rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business.—For particulars, Apply to J. WATSON, 38, Crome Street, Bury St. Edmunds.

To Market Gardeners.

TO LET, an OLD HOUSE, called The Grange, at Higham Hill, Walthamstow—3 Sitting Rooms, 10 Bedrooms, Conservatory, Forcing Pits, Stable, Coach-house; very productive Fruit and Vegetable Garden, rich soil; in all about 3 acres, also a Field of about 2 acres with Cowshed if required. Apply to

SIDNEY COOPER, Friars Watch, Higham Hill, Walthamstow.

TO BE LET, a good NURSERY, FLORIST, and SEED BUSINESS, in the centre of a good Agricultural district. The Premises comprise a large convenient Dwelling-house, over 6000 feet of Glass, with good Stabling, Sheds, and other Outbuildings, with 12 Acres of good Heavy and Light Sandy Soil. Has this year taken over seventy Prizes at the principal shows in Yorkshire.—Apply to R. HUTCHINSON, Stonefall Nursery, near Knaresborough.

TO GENTLEMEN SEEKING A PLEASANT HEALTHY OCCUPATION.

To Nurserymen wishing to Enlarge their Business.

To Gentlemen's Gardeners with Means.

THE DIRECTION of the **SUNNINGDALE NURSERY**, established and successfully conducted by CHARLES NOBLE, must now, owing to the age and failing health of the Proprietor (who has no son to succeed him), be delegated to more robust hands, and he is prepared to entertain proposals for importing into the business new energies, either wholly or in part. The Grounds are extensive, over two-thirds being Freehold, and one-third Leasehold, to run some time, with little chance of objection to renewal. The situation is one of the very best in England (only a few minutes' walk from a railway station); it contains within itself every kind of soil, from heavy loam to peat and pure sand; and the neighbourhood is admitted on the highest authority to be one of the most healthy positions in Great Britain. The owner is prepared to consider any *bona fide* proposal, either from one or more persons, and every reasonable facility will be given to persons of moderate means. Skill and enterprise will be taken into account, and as favourably considered as mere money. The business is capable of extension, or can be limited at pleasure, and contains within itself several specialties of undoubted value.

Eng-hr t, Nov., 1880.

LARCH for Sale, 2 to 2½ feet, fine, 30s. per 1000; 4 to 5 feet, fine, 5s. per 100. **THORN** or **QUICK**, 2-yr., 1-yr. transplanted, fine, strong, and well-rooted, 11s. per 1000. Standard APPLES, fine trees, 9s. and 12s. per dozen. Standard PEARS, fine trees, 9s. and 12s. per dozen. Dwarf Hybrid Perpetual ROSES, the best sorts, on the Manetti, very fine and strong plants, a few hundreds to spare, 9s. per dozen. Cash with order will receive prompt attention. The stuff is sure to please. Apply to N. LAWRENCE AND SON, Nurserymen, Chatteris, Cambs.

SPECIAL CHEAP OFFER.—Not having room to house large quantities of Choice Plants during the winter, J. H. LEY, Royal Nursery, Croydon, will supply, in really beautiful plants, the after-named choice and valuable collections. None but the best varieties are grown, so that a rare chance is presented for amateurs supplying their wants at a quarter of usual prices, and in quality second to none in the country. Special quotations to the Trade, and liberal reductions to large buyers.

12 ADIANTUM FARLEENSE	.. ..	12 0
12 ACACIAS, four sorts, small pots	.. ..	6 0
12 FLOWERING GREENHOUSE PLANTS	.. ..	6 0
12 STOVE PLANTS	.. ..	6 0
12 ORNAMENTAL FOLIAGE	.. ..	6 0
12 TUBEROUS BEGONIAS, strong	.. ..	12 0
12 " " small	.. ..	6 0
12 TEA ROSES, 5-inch pots, for forcing	.. ..	15 0
12 CLEMATIS, all distinct sorts	.. ..	12 0
12 GARDENIAS, good	.. ..	12 0
12 GREENHOUSE PALMS, distinct	.. ..	6 0
12 CROTONS, newest and best sorts	.. ..	12 0
12 DRACÆNAS, new and choice	.. ..	12 0
12 " " small	.. ..	6 0
12 PRIMULAS (Japanese), four sorts	.. ..	4 0
12 BRITISH FERNS, distinct	.. ..	4 0
12 STOVE or GREENHOUSE FERNS, choice	.. ..	4 0
12 " " rare and valuable vars.	.. ..	9 0
12 ORCHIDS, rare and valuable sorts, distinct and well established	.. ..	21 0
12 SPIRÆA PALMATA, strong	.. ..	4 0
12 DELYTRA SPECTABILIS	.. ..	4 0
12 CARNATIONS, fine named sorts	.. ..	6 0
12 GLOXINIAS, fine named sorts	.. ..	6 0
12 CLIMBERS, for greenhouse	.. ..	6 0
12 GOLD and SILVER FERNS	.. ..	4 0
12 EUCHARIS AMAZONICA	.. ..	6s. and 12 0
12 CALADIUMS, strong	.. ..	6 0
12 SPIRÆA JAPONICA, strong, for forcing	.. ..	4 0
12 MAIDENHAIR FERNS, four sorts	.. ..	6 0
50 LILY of the VALLEY, giant crowns	.. ..	8 0
12 ROSES, strong dwarf, finest exhibition sorts	.. ..	9 0
12 PYRETHRUMS, fine named sorts	.. ..	6 0
12 ANEMONE HONORINE JOBERT, strong	.. ..	6 0
12 DEUTZIA GRACILIS, for forcing	.. ..	4s. and 9 0
12 AZALEA INDICA, grand plants	.. ..	15s. and 12 0
12 AZALEA MOLLIS, new, budded	.. ..	30 0
12 CAMELIAS, finest sorts, budded	.. ..	21 0

N.B.—Half and Quarter-dozens at same rates.

All packages gratis, and plants forwarded directly, securely packed for any distance, on receipt of cash, and a few plants gratis in each order. On £5 orders a collection, amounting in value to 10s., can be selected by purchaser, and will be included gratis; and at the same rate on larger orders.

JOHN H. LEY, Royal Nursery, London Road, Croydon.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 1000.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps. RICHARD SMITH AND CO., Nurserymen, Worcester.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWs, many thousands, 4, 5, 6, 7, 8 and 10 feet high.

" Golden, many thousands, 3, 4, 5 to 10 feet high.

" Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

" laurifolia, myrtifolia, Scottica, Hodgson's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.

" Golden Queen, 4, 5, 6 to 10 feet high.

" Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.

CEURUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

LIBODRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER-VERE, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; a quantity of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high. The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.

Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

RICHARD SMITH AND CO., Nurserymen, Worcester.

A. M. C. JONGKINDT CONINCK

has to offer large quantities of the following Hardy Plants, at very low prices:—

Saxifraga granulata, fl.-pl. Tradescantia virginica alba.

Selaginella helvetica. " " curculca.

Spiræa Aruncus. " " rosea.

" filipedula, fl.-pl. " " rubra.

" palmaria elegans. " " violacea.

Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

New Melon, "Haddo House" (Forrest).

CARDNO AND DARLING have much pleasure in bringing under the notice of Horticulturists the above NEW MELON. It was raised three years ago by Mr. John Forrest, Gardener to the Right Honourable the Earl of Aberdeen, Haddo House, and is one of the hardest and most productive varieties we have seen. The fruit is of medium size, oblong shape, weighing from 3 to 4 lb., flesh deep orange, flavour delicious, rich very thin, and beautifully netted outside. It gained the 1st Prize at the Royal Horticultural Society's Show at Aberdeen, once in 1879 and twice in 1880, being very highly spoken of on each occasion for its beauty and flavour.

C. & D. being entrusted with the entire stock of Seed, are now prepared to offer it in sealed packets, at 2s. 6d. each. Trade price on application.

Seed Warehouse, 80, Union Street, Aberdeen, N.B.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.

Descriptive LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

RASPBERRY CANES.—200,000 of the celebrated CARTER'S PROLIFIC to dispose of at 30s. per 1000. Samples of 100 for 4s. Money Orders on Knockholt, with commands. Apply to

A. AND E. BATH, Colgate Farm, Sevenoaks.

N.B. Free in London. No change of rail.

GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, short jointed and well ripened: Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. each.

ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.

Descriptive Price LIST for *id.* stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade and Large Buyers.

EWING AND CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and FILBERT BUSHES; ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees, MYROBELLA (PRUNUS MYROBALANA), for fencing, &c.

The Royal Norfolk Nurseries, Eaton, near Norwich.

THE MOST SUPERB ROSES that money can buy.

Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.

Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

NEW CATALOGUE for AUTUMN, 1880, post-free, of the finest and cheapest DUTCH, FRENCH, and other FLOWERING BULBS. For prices, see last week's large Advertisement.

SPRING FLOWERING PLANTS, 100,000 fine plants, now ready.

HARDY FLORIST FLOWERS, and the choicest HERBACEOUS PLANTS for Garden Decoration. See CATALOGUE and last week's large Advertisement.

WINTER FLOWERING PLANTS for Indoors. A fine stock of the best sorts, well set with bloom. See CATALOGUE.

PLANTS and ROOTS for forcing, very fine.

DWARF ROSES, well rooted, strong good plants.

FRUIT TREES, STRAWBERRY PLANTS, EVERGREEN and DECIDUOUS TREES and SHRUBS, &c. For prices, List of sorts, and descriptions, see CATALOGUE.

WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

Webb's Prize Cob Filberts.

MR. COOPER having succeeded to the whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.

Calcot Gardens, near Reading, Berks.

"WEBB'S" PRIZE COB FILBERTS, AND HOW TO GROW THEM.

This Pamphlet will be forwarded to any one sending Two Postage Stamps to

Mr. COOPER, Calcot Gardens, near Reading, Berks.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSSES to be DISPOSED OF.

MESSRS. PROTHEROE and MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 98, Gracechurch Street, E.C.

LARCH and QUICKWOOD PLANTS for Sale.—2,000,000 Larch, 1 to 2 and 2 to 3 feet; 2,000,000 Quickwood, 1 to 2 and 2 to 3 feet; also a quantity of SPRUCE, SCOTCH FIR, and BEECH, all transplanted, at greatly reduced prices. For particulars apply to

FRANCIS BELL, Nurseryman, Easingwold

FOR SALE, SPRUCE FIR, 12 to 18 feet, well furnished plants; have been well cut round in the spring. Price on application to

H. APPLEBY, Box Hill Nursery, Dorking.

Notice.

RASPBERRY CANES—Raspberry Canes.—100,000 to offer. Also SEAKALE, ASPARAGUS, and RHUBARB, including all the leading kinds, both for Forcing and Planting.

N.B. The cheapest and best house in the Trade.

H. THORNTON and CO. (late Dancer), NURSERYMEN, SEEDSMEN, and MARKET GARDENERS, Fulham, London, S.W.

N.B. We make the growing of Seakale a speciality, so that intending purchasers may depend upon being supplied with the very best that can be procured in the trade. We are also large growers of all the various kinds of Herbs, both culinary and medicinal. Price per dozen or 100 on application.

Best Milltrack MUSHROOM SPAWN.

Norway Spruce.

SANDY and SON have many thousands of the above to offer, fit for Forest Planting, from 1 to 3 feet. Prices and samples on application. Unknown applicants will please send cheque or reference with order.

The Nurseries, Stafford.

CALOCHORTI, &c.

THESE ARE CALIFORNIAN GEMS, and from their great beauty are sometimes called Butterfly Tulips, and C. venustus is known as the lovely Mariposa Lily; they are perfectly hardy, and should be planted in light sandy soil in a dry situation.

CALOCHORTUS LUTEUS, golden-yellow, with purple blotches. 12s. per dozen.

CALOCHORTUS VENUSTUS, pure white, with crimson blotches; individual flowers nearly a foot in circumference. 12s. per dozen.

CYCLOBOTHRUS PULCHELLA, the Golden Star Tulip of California; another gem, freely producing singularly formed, highly attractive golden-yellow flowers, with fringed petals; culture same as Calochorti. 18s. per dozen.

BLOOMERIA AUREA, a hardy Californian bulb; flower-stem 12 to 18 inches high, producing large umbels of bright yellow flowers; a remarkable acquisition. 9s. per dozen.

BRODIAEA COCCINEA, the Vegetable Fire Cracker of California; umbels of deep magenta-crimson drooping flowers; very showy. 12s. per dozen.

BRODIAEA GRANDIFLORA, a handsome bulbous plant that should have a place in every flower border; grows about a foot high; colour rich purple-blue. 2s. per dozen.

ERYTHRONIUM GRANDIFLORUM, large pale lemon-coloured flowers, marked with crimson in the centre, and giving from five to ten flowers on a stem; hardy, and a valuable acquisition. 12s. per dozen.

TRITELEIA LAXA, rich Tyrian-purple; flowers large, and produced in umbels on stalks 9 inches in height, and containing as many as eighteen to twenty flowers on each; quite hardy. 6s. per dozen.

All or any of the above can be sent by post.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

A Bargain.

ONE HUNDRED CHOICE and RARE ORCHIDS for £10 10s., consisting of the most beautiful and fragrant sorts in cultivation, and forming in itself a select collection for the amateur. Could not be bought anywhere else in Europe for £50. This offer is for cash only, and during the present month, to make room before winter. Package included for cash with order. All correctly named, and packed to travel any distance safely. Will produce quantities of flower during winter and spring. Selected for cold or warm house, or mixed. Inspection requested. Nursery close to stations L.B. & S.C.R., twenty minutes from London Bridge or Victoria.

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WHITE FLOWERS for CHRISTMAS.—

PRIMULAS, Double White, very fine and bushy, 100s. per 100; ditto, smaller, 60s., in 48-pots. Matted Baskets, &c., 4s. each.

VINES, Pot, very fine, from 30s. per dozen.

APPLES, Dwarf-trained, 18s. and 24s. per dozen, fine.

ROSES, Dwarf, H.P., and Tea, a matchless stock.

EDWIN HILLIER, Winchester.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.

Descriptive Price LIST on application.

RICHARD SMITH and CO., Nurserymen, Worcester.

ENGLISH YEWs, 5 to 6 feet, 15s. per dozen; 6 to 7 feet, 24s. per dozen; 8 to 10 feet, 42s. per dozen.

IRISH YEWs, 3½ to 4 feet, 75s. per 100; 4½ to 5 feet, £6 per 100; 6 feet, £10 per 100.

The whole of the above are well grown plants, and have been recently transplanted.

HENRY GODFREY, Nurseryman, Stourbridge.

ROSES, FRUIT TREES, CONIFERS, ORNAMENTAL TREES and SHRUBS.

PAUL & SON,
THE "OLD" NURSERIES, CHESHUNT, N.,

INVITE INSPECTION FOR

ROSES,

Which, as STANDARDS and DWARFS, are of the Advertisers' usual free quality and of moderate prices. For Descriptions and Prices, see Descriptive LISTS.

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STANDARDS, PYRAMIDS and DWARF-TRAINED.

PAUL & SON, believing it is not generally known that they are now amongst the largest holders of really fine Fruit Trees in the Kingdom, invite the inspection of intending Planters of the following, amongst other leading articles of their stock:—

40,000 STANDARD APPLES, with fine heads and clear straight 5 to 6 feet stems, from £7 10s. to £10 per 100.

STANDARD PEARS, PLUMS, and CHERRIES, in proportionate quantities.

10,000 of the cleanest best HORIZONTAL and FAN-TRAINED TREES of APPLES, PEARS, and PLUMS which can be found.

10,000 PYRAMIDS, from 2 and 3 years to transplanted root-pruned trees of 10 to 12 years' growth.

50,000 GOOSEBERRIES and CURRANTS, of all the best sorts.

Specialties of STRAWBERRIES and other SMALL FRUITS.

VINES, extra fine Fruiting Canes, all grown from eyes this year.

The COLLECTION of CONIFERS and EVERGREEN PLANTS, AVENUE and STANDARD ORNAMENTAL TREES and SHRUBS, now one of the most complete of the Kingdom.

Prised Descriptive CATALOGUES of the above Post-free.

PAUL & SON, THE "OLD" NURSERIES, CHESHUNT, N.
LONDON "ORDER OFFICE," LIVERPOOL STREET STATION, E.C.

To the Trade.

DUTCH BULBS at DUTCH PRICES.—

White Garden LILIES, 11s. 6d. per 100; DIELYTRA SPECTABILIS, 25s. per 100; ANEMONE FULGENS, 16s. per 100; single FERN ANEMONES, 20s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to

SANDER and CO., Seed Growers, St. Albans.

New Decorative or Market Pelargoniums. THE FOLLOWING SIX VARIETIES

have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London:—

FORMOSA, 10s. 6d.
RUTH LITTLE, 10s. 6d.
ROSEY MORN, 7s. 6d.
MISS MAY GILL, 7s. 6d.
CRIFERION, 7s. 6d.
CAPTAIN BEATTIE, 7s. 6d.
MISS TILL, 5s.
EVENING STAR, 5s.

We recommend the above as worthy companions of those favourites, Mrs. Bradshaw, King-ton Beauty, and Miss Bradshaw, sent out by us some time since. For descriptions see *Gardener's Chronicle*, November 27.

T. JACKSON and SON, Nurseries, Kingston-on-Thames.

TUBEROSE, LILIES OF THE VALLEY, CHRISTMAS ROSES, &c.—50 Double American TUBEROSE Pearl, and how to grow them, for 25s. 100 Berlin LILIES OF THE VALLEY, single crowns, and how to grow them, for 15s. 25 Christmas ROSES for 12s. 6d. Consignments will shortly arrive, the best that can be procured. LAURUSTINUS, fine bushy plants and well rooted, 1½ to 2 feet, 60s. per 100; 2 to 3 feet, 75s. per 100. On receipt of Post-office Orders the above will be forwarded to any address carriage paid. —R. H. VERTIGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

RARE and CHEAP LILIES, including that lovely Lily, LILIUM AURATUM, are offered at prices which will command patronage. Finest possible roots of auratum, Size No. 1, 6d.; No. 2, 1s.; No. 3, 1s. 6d.; and No. 4, 2s., with liberal discount to Trade. CATALOGUE free on application to

W. GORDON, New Plant and Bulb Importer, Office, 10, Cullum Street, London, E.C.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Spruce Fir for Christmas Trees.

W. CROWDER, The Thimbleby Nurseries, Horncastle, has the above to offer; also to the Trade or Gentlemen:—

ALDER, 3 to 4, 4 to 5, and 6 to 7 feet.
BEECH, 2 to 3, 3 to 4, and 4 to 5 feet.
CHESTNUT, Horse, 7 to 9, and 9 to 10 feet.
ELM, Huntingdon, 7 to 9, and 9 to 10 feet.
FIR, Spruce, 1 to 1½, 1½ to 2, and 2 to 3 feet.
AUSTRIAN, 1 to 1½, and 1½ to 2 feet.
LIMES, 4 to 6, 6 to 8, 8 to 10, and 10 to 14 feet.
SYCAMORE, 1½ to 2, 2 to 3, 6 to 8, and 8 to 10 feet.
YEW, Common, 2 to 3 feet.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks, free for a penny stamp.

RICHARD SMITH and CO., Nurserymen, Worcester.

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RODGER McCLELLAND and CO.'s New Special LIST of above, including double and single Primroses, Hepaticas, choice Pansies and Violas, Daisies, Phloxes, and all kinds of Spring-flowering Plants and Spring-blooming Trees and Shrubs, is now published, and will be forwarded on application to all applicants.

64, Hill Street, Newry.

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MR. R. BATH, who has just completed a heavy shipment of his famous "FASTOLF" CANES to Australia, can now supply all home orders with promptness, at 4s. per 100. P.O.O. or Cheque with order.

500,000 CARTER'S PROLIFIC to be disposed of at a very low figure, in quantities of not less than 500.

Crayford, S.E.

EVERGREEN HEDGES, in great variety, very cheap.

Descriptive Price LIST on application.

RICHARD SMITH and CO., Nurserymen, Worcester.

Surplus Stock.

TO BE SOLD, Cheap, as the ground is wanted for other purposes:—

Limes, Laburnums, Horse Chestnut, 10 to 12 feet; Wych Elm, 12 to 16 feet; Norway Maple, 14 to 16 feet; Birch, 6 to 8 feet; Beech, 8 to 10 feet; Mountain Ash, 10 to 12 feet; Black Italian, Lombardy, Ontario, and White Abele Poplar, 7 to 8 feet; Scarlet and Turkey Oak, 8 to 12 feet; Sumach, 7 to 9 feet; strong twice transplanted Alder, 5 to 6 feet; a great quantity of nice bushy English Yew, 5 to 6 feet; Beech, 5 to 6 feet; for Hedges; also large quantities of Forest Trees for cover planting; Wych and Osier, 4 to 6 feet; Quick and Privet for hedges; Spruce Fir, 5 to 7 feet; Evergreen Shrubs, Rose, Fruit, and other trees, in great variety. Catalogues, &c., on application.

W. VIRGO, Womersley Nurseries, Guildford, Surrey.

SPRUCE FIRS for Christmas Trees, well formed, 3 to 4 feet, 30s. per 100; 4 to 5 feet, 40s. per 100.

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Christmas Roses.

A. RIEMSCHEIDER, Brandenburg on Havel, Germany, has to offer 10,000 HELLEBORUS NIGER, extra strong, at 150s. per 1000. All Orders should be addressed to

Messrs. R. SILBERRAD and SON, 25, Savage Gardens, Crutched Friars, London, E.C.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.

RICHARD SMITH and CO., Nurserymen, Worcester.

NOTICE.

THE

GENERAL HORTICULTURAL CO.

(JOHN WILLS, (Limited),

Warwick House, 142, Regent Street, W.,

IS NOW IN CONNECTION WITH THE

EXCHANGE SYSTEM

OF THE

UNITED TELEPHONE COY.,

and Orders for Fruit, Bouquets, Floral Decorations, Plants, &c., can be sent by that medium, and will have immediate attention and prompt despatch.

FRUIT and FLOWERS, for SHOOTING and OTHER PARTIES, will be forwarded to any part of the country on receipt of Letter or Telegram.

JOHN WILLS, General Manager.

SEED POTATOS.

100 Tons	CHAMPION
250 "	PATERSON'S VICTORIA
50 "	MAGNUM BONUM
30 "	MYATT'S KIDNEY
20 "	FORTYFOLD
20 "	RINTOUL'S WHITE DON.

All for delivery first week of January, 1881, or before, weather permitting. The above varieties are well grown, true to kind, and free of disease. Special prices on application.

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SEED and NURSERY ESTABLISHMENT,
CUPAR FIFE, N.B.THE LARGEST ROSE GARDENS
IN ENGLAND.

CRANSTON'S NURSERIES.

(ESTABLISHED 1785.)

New Rose Catalogue for 1880-81,

now ready and may be had post-free on application.

Awarded over 60 First Prizes for Rose Blooms
this season.CRANSTON'S NURSERY and SEED CO. (LIMITED),
King's Acre, Hereford.PLANT FRUIT TREES
EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

Descriptive Priced CATALOGUE, free on
application.CRANSTON'S NURSERY & SEED CO.
(LIMITED),

KING'S ACRE, HEREFORD.

LANDSCAPE GARDENING.
GARDEN PLANS.

Previous to Laying-out a Garden, however small, a Plan should be had, showing how the Grounds will appear when finished. This prevents disappointment and unnecessary expense.

Designs and Estimates given for artistically Laying-out Gardens of all sizes.

E. CHAMBERLAIN, Garden Contractor.

NURSERIES:— { Haverstock Hill, N.W., and
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PLANTING SEASON.

100 Acres to Select from.

FOREST TREES

OF ALL SIZES, CONSISTING OF

FIRS, LARCH.

" SPRUCE.

" SCOTCH.

ASH, SPANISH CHESTNUT, QUICKS, &c.

Samples and prices forwarded. Also Descriptive Priced

CATALOGUES of Ornamental Trees, Roses, &c.

HOLLAMBY'S NURSERIES,

GROOMBRIDGE, TUNBRIDGE WELLS.

NEW SEEDLING GOOSEBERRY.

IMPROVED EARLY HEDGEHOG.—We are now prepared to send out this splendid Gooseberry. It is a seedling raised from the well-known "Hedgehog," and is an improvement on that fine variety in every way. Ripe fruit of it was shown at the Royal Caledonian Horticultural Society's Show, July 7, 1880, and received a Certificate.

Price, 12s. per dozen.

IRELAND & THOMSON,

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Paul's Nurseries and Seed
Warehouse,

WALTHAM CROSS, HERTS.

WM. PAUL & SON

invite attention to the following articles, which they continue to make objects of special care and attention:—

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B. EVERGREEN, CONIFERS, ORNAMENTAL TREES, CLIMBING PLANTS, &c.

C. FRUIT TREES, including GRAPE VINES, and STRAWBERRIES.

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F. NEW ROSES, GERANIUMS, PHLOXES, DAHLIAS, &c.

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NEW ENGLISH ROSE,

H.P. MRS. JOWITT (Cranston's).

First-class Certificate awarded by the Royal Horticultural Society, South Kensington, July 27, 1880.

First-class Certificate awarded at Wirral Rose Show, July 24, 1880.

First-class Certificate awarded at Shrewsbury, July 28, 1880.

First-class Certificate awarded at Liverpool Rose Show, July 31 and August 2, 1880.

We are now booking orders for this superb New Rose, to be sent out this Autumn. For description see our new ROSE CATALOGUE, now published.

Extra strong ground plants, 7s. 6d. each.

Usual Discount to the Trade.

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THOMAS IMRIE & SONS

can offer the following varieties:—

KIDNEYS.	ROUNDS.
MYATT'S ASHLEAF.	DALMAHOVS.
RIVERS' ROYAL ASH-LEAF.	RED BOGS.
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OLD ASHLEAF (true).	FORTYFOLDS. [DONS.
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MAGNUM BONUM.	REGENTS, Scotch
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INTERNATIONAL.	SCHOOLMASTER.
SCOTCH BLUE.	RADSTOCK BEAUTY.
	RED EMPEROR.

Prices per Cwt. or Ton on application.

AYR, N.B. — November 20, 1880.

TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

Trade terms on application.

MAIRIS AND CO., Weston-in-Gordano, Bristol.

WM. CUTBUSH & SON

Have a very fine lot of this charming species, which cannot be too highly recommended.

The Colours vary from Pale Primrose to Dark Orange.

Fine plants, well set with bloom-buds, 24s., 30s., and 42s. per dozen.

HIGHGATE, LONDON, N., and BARNET, HERTS.

STANDARD PEAR TREES.

All the leading kinds of Hardy
Pears—Grand Trees.

Prices, with Sample, on application to

CRANSTON'S NURSERY and SEED CO.

(LIMITED),

KING'S ACRE, HEREFORD.

NEW CUCUMBERS.

"CHEAL'S PROLIFIC,"

Averaging 15 inches to 20 inches in length, very even in size, and having scarcely any handle, very slightly spined and fluted, covered with a delicate bloom, and is short and crisp. The vigour and fruitfulness of the vine has proved itself to be unequalled. Where quantity and quality are required, this variety will be found to be invaluable. Price, 2s. 6d. per Packet.

"CRAWLEY RIVAL."

This is nearly equal to "Cheal's Prolific" in cropping, the fruit is rather larger in size, of a deeper green, having black spines and rather more distinctly ribbed. Price, 2s. 6d. per Pkt.

These two varieties will be found invaluable for market purposes, and having tested them, side by side, with twenty leading varieties, we have no hesitation in pronouncing them to be the best for general cultivation. We advertised them through the season as open to inspection by the public, many of whom availed themselves of the opportunity of comparing them with the different varieties grown, and they were universally admired by all.

NEW MELON.

"SHEPHERD'S PERFECTION."

The fruit is oval in shape, slightly quartered, a beautiful golden-yellow, and finely netted; flesh bright green. The quality of this fruit is first-class, and in flavour it is unsurpassed. Average weight, 6 to 8 lb. Price, per pkt., 2s. 6d.

CAN BE SUPPLIED BY THE RAISERS,

J. CHEAL & SONS, Lowfield
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Messrs. HURST & SON, 152,
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(ESTABLISHED 1810.)

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FRUIT and FOREST TREES,

Evergreen and Flowering

TREES and SHRUBS,

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A SPECIALITY.



Descriptive Priced Catalogues free.

WOKING NURSERY, SURREY.

BLACK ITALIAN POPLARS, from 40,000

to 50,000 of the above, in sizes, 2 to 3, 3 to 5, and 6 to 8 feet; strong well-rooted stuff. ALDERS, 3 to 4, and 4 to 5 feet. HAZEL, 2 to 3, and 3 to 5 feet. LARCH 1½ to 2½ feet. QUICK THORN, &c. Must be cleared off to make way for building operations. Apply to JOHN DYKES, The Nurseries, Kilmarnock, N.B.

SPECIAL TRADE OFFER

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APPLE, Crabs, 1-yr., very fine, 3s. 6d. per 1000

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ALDER, 1-yr., fine, 3s.; 2-yr., fine, 5s. per 1000

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BEECH, 1-yr., very fine, 3s. per 1000

BIRCH, 1-yr., 3s.; 2-yr., 5s. per 1000

BRIER, Sweet, 1-yr., 4s. per 1000

BROOM, 1-yr., strong, 2s. 6d. per 1000

CHESTNUT, Horse, 2-yr., 10s. per 1000

" Spanish, 1-yr., 4s. 6d.; 2-yr., 7s. 6d. per 1000

ELM, Scotch, 1-yr., fine, 3s. 6d.; 2-yr., fine, 6s. per 1000

HAZEL, 2-yr., drilled, 9 to 14 inches, 10s. per 1000

HOLLY, 1-yr., good, 3s. 6d.; 2-yr., good, 6s. per 1000

LABURNUM, 1-yr., extra strong, 3s. per 1000

OAK, 1-yr., fine, 4s. 6d.; 2-yr., fine, drilled, 7s. 6d. per 1000

SYCAMORE, 1-yr., fine, 3s.; 2-yr., fine, 5s. per 1000

THORN, or QUICK, 1-yr., 3s.; 2-yr., fine, 5s. per 1000

PINE, Austrian, 1-yr., 2s.; 2-yr., 5s. per 1000

" Corsican, 1-yr., 2s. 6d.; 2-yr., 5s. per 1000

LARCH, 2-yr., with leaders, 6s. per 1000, or £25 per 100,000

PINE, Pinaster, 1-yr., 2s. 6d. per 1000

FIR, Scots, true Native, 1-yr., scarce, 6s.; 2-yr. 2-yr., 9 to 15 inches, 17s. 6d. per 1000

SPRUCE, Norway, 2-yr., 1s. 6d.; 3-yr., 2s. 6d. per 1000

JUNIPER, 2-yr., 6 to 12 inches, 10s. per 1000

AUCUBA JAPONICA, 1-yr. cuttings, extra fine, 50s. per 1000

Samples of any of the above per post free.

We can also offer a splendid general stock of transplanted NURSERY STUFF, including Larches, 2 to 3½ feet; Scots Fir and Spruce, 9 to 15 inches; Austrian Pine, Pinaster Pine, and nearly all kinds of Hardwoods, and will be glad to send samples and quote prices to intending buyers.

PETER S. ROBERTSON & CO.,
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THE PARIS EXHIBITION of 1878.

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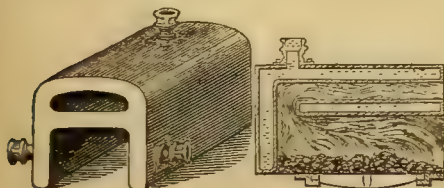
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VEGETABLE NOVELTIES

For 1881.

NOTE.—All these Novelties have received First-class Certificates from the Royal Horticultural Society, or have been recognised as great improvements upon kinds already in cultivation.

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The only Pea certificated by the Royal Horticultural Society in 1879.

Retail price, in sealed packets, 5s. per pint.

PEA—Carter's Telephone.

Awarded the First-class Certificate of the Royal Horticultural Society, 1878.

Retail price, in sealed packets, 3s. 6d. per pint.

PEA—Carter's Pride of the Market.

A superb new Dwarf Pea for Garden or Field Crops.

Retail price, in sealed packets, 3s. 6d. per quart.

PEA—Culverwell's Telegraph.

An indispensable exhibition variety.

Retail price, in sealed packets, 2s. per pint.

PEA—Carter's Little Wonder.

A Dwarf Wrinkled Marrow, as early as Advancer.

Retail price, in sealed packets, 2s. 6d. per pint.

MELON—Blenheim Orange.

Awarded First Prize in a competition of thirty-one varieties at the June Show of the Royal Horticultural Society, afterwards awarded the First-class Certificate of the Royal Horticultural Society. September, 1880.

Retail price, in sealed packets, 2s. 6d. and 3s. 6d. per pkt.

CABBAGE—Chou de Russie.

An invaluable winter vegetable.

Retail price, in sealed packets, 1s. 6d. per packet.

BEAN—Carter's Leviathan.

Takes First Prize everywhere. Producing enormous pods, 13 to 15 inches long.

Retail price, in sealed packets, 2s. 6d. per pint.

MELON—Hendre Seedling.

Awarded Second Prize where Blenheim Orange was First.

Retail price, in sealed packets, 2s. 6d. and 3s. 6d. per pkt.

CUCUMBER—Carter's Model.

The largest and best exhibition variety in cultivation.

Retail price, in sealed packets 2s. 6d. and 3s. 6d. per pkt.

CAULIFLOWER—Carter's Defiance.

Extra early forcing. The best early Cauliflower in cultivation.

Retail price, in sealed packets, 1s. 6d. and 2s. 6d. per pkt.

CABBAGE—Carter's Heartwell.

The best early Cabbage in cultivation.

Retail price, in sealed packets, 6d. and 1s. per packet.

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THE

Gardeners' Chronicle.

SATURDAY, DECEMBER 4, 1880.

BROUGHAM HALL.

FROM the Beacon Hill at Penrith there is a noble view of the valley of the Eden and the mountains of Westmoreland. Looking towards Ullswater, sparkling in the sunshine, Lowther Castle lies on the left, and dense woodlands cover the intermediate country and reach to the base of the Beacon Hill. Hidden among these woods is Brougham Hall, the residence, according to the directories of a past generation, of Henry Brougham, Esquire. "This delightful mansion," says an antiquated guide, writing in 1794, "arrests the eye" of travellers. The great northern road passes in front of Brougham Hall, and the same guide adds that the traffic of the road was a circumstance of no small account to the family residing at Brougham Hall, lending to the scenery life and gaiety such as country families, buried in the woodlands, often sighed for. People in those days suffered from too much retirement, now they suffer from too little.

"The late Mr. Brougham," quoting the historian, was a gentleman of taste, so he must have admired the view from his southern windows, which command glimpses of the river and the woods of Lowther Castle. And he must also have admired on the west, as you may now, the rich meadows on the river banks and the bridge over which the coach from London rattled in approaching Brougham Hall, on the road to Penrith. To the eye, looking from the summit of the Beacon Hill, the woods that environ Brougham lie low, in reality the Hall stands on a natural terrace high above the stream of the Eamont, high enough to command an unbroken view of twenty miles, bounded by Saddleback, lord of the group of mountains which stand before the windows diminished in apparent height by distance. Ullswater, a priceless jewel in Mr. Brougham's landscape, lies in the trough of the mountains on this side of the group; Derwentwater is beyond, and the slopes and steeps of Borrowdale may be detected further off. The whole of this wide landscape is seen from the windows, and, as our informant of 1794 informs us, "in addition to these prospects of Nature, is the constant passage of travellers on the two great roads from London." Mr. Brougham planned and planted some extensive pleasure grounds, which were noted in his day.

It is time to state that the family of Brougham is of great antiquity, living here before the Conquest and deriving their name from the Saxon Burgham, the Brovacum of the Romans—that being the name of their station on this spot. The ancient residence, Brougham Castle, a mile or two distant, must not be confused with the Hall. It was a Border fortress much invaded and knocked about by the Scotch in the time of Henry IV., and afterwards, when repaired and ornamented at great cost, the home of that Countess of the Poets, the Countess of Pembroke, and of Sir Philip Sydney when writing his *Arcadia*—Arcadia itself lying around him. After the death of these illustrious occupants the place fell to ruin, and remains still a ruin.

The estate had long passed from the posses-

sion of the Broughams till the Mr. Brougham the grandfather of Lord Brougham repurchased it, in 1727. The Hall at that time went by the name of the "Bird's Nest," a snug place among the trees. It was more than once improved, and was much enlarged by Lord Brougham after 1832. The ancestors of Lord Brougham, the prime mover in the plan for extending useful knowledge among the people, were lords of the manor of Brougham during 600 years. The skull of Udardus B., a crusading ancestor of 1183, was taken from a tomb in Brougham church some years since, cleaned and perfumed and placed in the Hall. Invaluable skull! worth little perhaps when, like Yorick's skull, the ears were on it, and the lips, which Hamlet had "kissed a thousand times," but priceless when perfumed, as proving the antiquity of the family.

The Crusader, Udardus Brougham, had the keeping of Appleby Castle for Henry II., and did not keep it, for he allowed William, the Lion of Scotland, to obtain possession—the same William who was taken prisoner at Alnwick by the Percies. Edward the Crusader died in his bed at Brougham. Lord Brougham's grandfather died at Brougham in 1782, and the Duke of Norfolk, then living at Greystoke, in Cumberland, attended the funeral as chief mourner, and addressed the guests after dinner in these strange words:—"Friends and neighbours, before I give you the toast of the day, the memory of the deceased, I wish you to drink to the health of the family physician, the founder of the feast!" Other toasts followed, and were unduly honoured, so that in attending the remains to Brougham Church 3 miles along the steep and winding banks of the River Eamont, an accident occurred. The coffin slipped out of the hearse into the river, and the merry mourners first learned what had happened when the Rector came out at the church gates. In 1846 Lord Brougham entering the family vault on the occasion of some repairs, saw the battered coffin of his grandfather, which had fallen down the rocky bank, and he mentions in his *Life* that the scandal of the occurrence put an end to the orgies which were then common at funerals.

The following letter, *verbatim et literatim*, is taken from the *Life*, and affords a specimen of the manner and epistolary style of the year 1778:—"The Duchess of Norfolk presents her compliments to the two Misses Brougham. She has taken the liberty to send 30 yds. of silk with trimming, for a night gown and petty coat for each, which I hope they will do me the favour to accept of."

Lord Brougham spent part of his time at Brougham Hall in youth, but quitted it early for more stirring scenes, and he dated some instructions to his executor relating to the *Autobiography* from Brougham Hall, November, 1867.

The following quaint lines, inscribed in a thatched summer-house in the grounds, may be read with indulgence, since the "hermitage" of the poet belonged to the most restless and active of men:—

"Beneath these moss-grown roofs, this rustic cell,
Truth, Liberty, Content, sequestered dwell;
Say, you who dare our hermitage disdain,
What drawing-room can boast so fair a train!"

H. E.

SEEDLING PERPETUAL FLOWERING CARNATIONS.—Mr. Turner has been successful, at Slough, in raising a batch of seedling perpetual flowering Carnations from the variety A. Aléatière. They have all the dwarf characteristics of that fine scarlet variety, and all of them are varied in colour and form; but the most interesting part of this attempt at seedling raising is the fact that the seeds were sown only last January; now the plants are each producing from six to a dozen flowers, and freely producing side-growths up the stem; thus showing their perpetual flowering character.

New Garden Plants.

QUERCUS GLANDULIFERA, Blume.*

This is a hardy evergreen Oak, extensively planted at Kew, and known in many nurseries as *Q. austriaca hybrida*. It is a handsome free-growing species, the correct nomenclature of which has been a matter of uncertainty till the present year, when it has fruited freely at Kew, a circumstance which enabled Mr. Rolfe of the Kew herbarium to identify the tree with Blume's species above-named, an identification confirmed by Sir Joseph Hooker and assented to by M. de Candolle, the latter of whom monographed the Oaks in the *Prodromus*.

As grown at Kew, the Oak in question after some twelve to fifteen years' growth forms a compact bush of more or less pyramidal habit. The leaves are evergreen, the short stalks and midribs clothed (like the young slender shoots) with rather dense, short-spreading, brownish, stellate grey hairs, elsewhere glabrous, more or less glaucous beneath, oblong-obtuse, rounded at the base, coarsely and remotely toothed, the teeth sometimes glandular at the tips, primary veins 5–7, remote. Stipules long, awl-shaped. Buds ovoid-acute. Bud-scales cinnamon-brown, ovate-obtuse, ciliate at the margins. Male flowers.—Acorns 3–6, ripening in the first year, clustered on the ends of short stout stalks, about one-quarter the length of the leaves, each rather less than 1 inch long, elliptic-acute, with three abortive ovules at the base and one ripe seed; cup hemispherical, of numerous appressed, oblong-obtuse, ciliate scales.

As in the case of most Oaks, the foliage and other characters are variable. The present species is a native of Japan, and specimens exist in herbaria from most of the botanical travellers in that country. The introduction of the plant to Kew is supposed to be due to the late Mr. Oldham. *M. T. M.*

BROXMOOUTH PARK,

THE seat of the Dowager Duchess of Roxburgh, is pleasantly situated on the east coast of Scotland, in the parish of Dunbar in Haddingtonshire, at the mouth of the Firth of Forth, and exactly midway between Edinburgh and Berwick—being 29 miles from either town. The main entrance is from the west lodge. A winding approach crossing the Broxburn leads to the mansion, around which is some fine timber affording the shelter so frequently lacking near mansions on the coast. Here was fought the very decisive and sanguinary battle of Doon Hill, in which Cromwell defeated the Scotch army under Leslie. In 1650, Cromwell entered Scotland at the head of an army 16,000 strong. Eventually he retired before the Scotch host "until he reached the house of the Earl of Roxburgh" (Broxmooth Park), which he made his headquarters; and finding his supplies likely to be cut off, he decided to give battle. In a letter written by Cromwell descriptive of the engagement, we find the loss of the enemy stated as being 3000 slain and 10,000 taken prisoners. On an elevated mound at a short distance from the front of the mansion is a fine Cedar of Lebanon which is supposed to mark the station of the Protector during the battle—the mound is now called Cromwell's Mount. As commemorative of a recent visit of royalty is a healthy young Cedrus Deodara, planted by the Queen in 1878, in another part of the grounds.

The natural position of Broxmooth is extremely good, and is improved by the shelter afforded by the timber. It is more favourably situated as regards temperature than many places one or two hundred miles further south. While the temperature on the Tyne and north of Newcastle was down to 10°, and in the upper portions of the valley of the Tweed reached below zero, the thermometer was not lower than 22° here. The grounds slope gently to the sea, and are bounded on this side by a sea-wall about 1½ mile long, from which the prospect is most beautiful. The grand expanse of the German Ocean dotted with passing vessels; the wide Firth with its burden of commerce; the island of May, distinctly visible at a distance of 15 miles; the immense and peculiar bell-like mass of the Bass Rock, surrounded with turbulent waters, opposite to the town of Dunbar; and the outline of the Fifeshire coast across the Firth unite in rendering the view charming. The coast here is very pleasant, stretches of sand and rugged rocks alternating and diversifying the scene. West-

ward of Dunbar the coast is wild and rocky, but eastward of the town, in front of the Broxmooth grounds, it presents a series of low rocky ledges, mostly of red sandstone formation, succeeded by a greyish sandstone, and that, further to the eastward, by limestone. The rock formation near the port of Dunbar is, in many places, of that striking columnar structure that the red trap occasionally exhibits.

In the grounds, at a short distance from the sea, is an observatory, which affords a delightful prospect, and from which the flag is hoisted when the owner is in residence at the mansion. Extensive and well-kept gravel walks through the woods, across the closely mown lawns and past the lake to the seawall, afford agreeable promenades, with sylvan scenery, garden views, and seashore effects happily mingled. The lake is of 4 acres in extent, and contains two islands of irregular outline, thickly covered with trees and underwood, which form excellent cover for the numerous water-fowl located there, as well as for wild ducks, &c., frequenting the lake. Passing near one end of the lake the Broxburn finds an exit to the sea. This stream is well stocked with trout, and forms an attractive addition to the place as it speeds its hasty course through woods and garden grounds, one of the principal gravel walks extending from the mansion to the beach running for some 300 yards along its course. Near the house a fine grove of Cedars and English Yew is very imposing in appearance—indeed, most Coniferae seem to succeed well here. In an opening in the wood I noticed at one side of the walk a fine specimen of Abies Douglasii, 50 feet high, and an almost equally good one of Cedrus Deodara on the other side. Unfortunately, the former has lost its leader from having overtopped some of its nearer neighbours, and thus become exposed to the gales.

Passing the commodious and comfortable gardener's house, we reach the forcing and plant-houses. Entering a lofty span-roofed range, we pass through a house devoted to miscellaneous plants in excellent health—where a batch of Primulas is conspicuous by their excellence, and where Habrothamnus elegans and other roof climbers were blooming freely—to the stove, the centre bed of which is filled with Palms, Ferns, and the usual stove occupants, the centre plant being Cavendishii, bearing a good bunch of fruits. One side stage is filled with plants for table decoration, and the other with a collection of Orchids—small plants, but very healthy. Allamandas and Ipomoeas were effective as climbers in this house. Near this are the houses devoted to fruiting and succession Pines, well filled with healthy plants, and the shelves and curbs with successional Primulas, &c., while a fine array of Calanthe vestita and C. Veitchii in full bloom made gay another house. In a forcing-house, one end of which is occupied with Cucumber Sir G. Walseley bearing good fruits, are large batches of Lily of the Valley, French Beans, &c., and at one end a plant of Bougainvillea glabra in fine bloom. The Melon-house had just been cleared of its occupants, including a batch of Tomatos, and was filled with sturdy Cinerarias. In this block a pit filled with specimen plants of Mignonette, and another with Tea Roses, deserve notice for their healthy condition, the former plants being vigorous pyramids, and the Roses well set with buds that will be useful for cutting from Christmas onwards. Strawberries for forcing and other subjects occupy the cold pits. The conservatory is the centre of a range the side houses of which are lean-to's, and behind are the rooms for the young gardeners, the store-rooms, fruit-room, stokeholes, and other offices. Leaving the conservatory, gay with Chrysanthemums, we pass to the fruit-houses.

The vineries are five in number, and it is needless to say the Grapes are well done, as the gardener, Mr. McKelvie, has made his mark as an exhibitor of Grapes at both Edinburgh and Carlisle. The early house is devoted principally to Black Hamburg and Foster's Seedling. At the time of my visit (Nov. 22) the Grapes were cut in this house. The next house contains besides Hamburgs several other varieties, amongst which may be noticed fine examples of Burcharth's Prince and Gros Colmar. Three houses planted two years ago give great promise for the future, the wood of the canes being strong and splendidly ripened. The crop throughout these three houses is principally furnished by the supernumeraries on the roof, and canes on the back wall. The first, a Hamburg-house, contains fine examples of Black

* *Q. glandulifera*, Blume, *Mus. Lugg. Bot.* i, 295 (1845); Alph. de Candolle, *Prod.* xvi, 2, p. 41; Franchet and Savatier, *Enum. Plant.* i, 447 (1875); *Q. austriaca hybrida vel semper-virens hort. quorund.*

Prince and Golden Queen; the latter is beautifully finished and of good flavour, but this is the only instance in which I have seen it in even decent condition this autumn, it plainly being a very uncertain variety. Amongst the supernumeraries in the Muscat-house was a cane of Gros Guillaume, bearing a heavy crop of large bunches, some of which will reach 7 lb. in weight. Some good examples of Lady Downe's Seedling were in the house planted with this variety. I also noticed in this house fine bunches of Calabrian Raisin, good in colour and finish.

Three houses are devoted to the cultivation of Peaches and Nectarines; the whole of the trees are in a good bearing state, with wood thoroughly ripened and well set with bloom-buds. The back walls are also planted with trees, promising well for another year. In the late house, a structure 130 feet long, the back wall is utilised for Green Gage Plums and Brown Turkey Figs, and some of the rafters for Tea Roses.

The kitchen garden walls are well furnished with Apricots, Plums, Cherries and Pears, many of which

of common Larch and native Larch being employed by arboriculturists to distinguish the produce of home-grown seeds from that of seeds collected in the native Larch forests of continental Europe. It is well known to nurserymen and foresters that plants reared from home-grown Larch seeds are much harder in their young stages than those grown from seeds that have been collected in the native Larch forests, and that even when older and after being planted out, the latter are more liable to have their tops nipped and be otherwise injured by early frosts than the others. When the Larch was first introduced to Britain from its congenial habitats on the northern slopes of the Alps, the Apennines, or the Carpathian Mountains, it may be assumed that a similar percentage was produced, as native seeds now do, of early maturing and consequently harder plants than the others, and that continuous seed reproduction from the hardiest and hence most prolific of these first introduced plants and their successive progenies has resulted in the plants

the influences of higher temperature and better shelter its growths and fruits were fully matured. Orchardists, however, and other growers for market, while also keeping size, beauty, and quality in view when raising new varieties from seed, had also other requisites to consider, such as hardiness, fruitfulness, lateness in flowering, so as to escape spring frosts, wind-resisting sturdiness of growth, &c. Hence the great diversity that exists in the hardiness and other characteristics of these varieties of *Pyrus communis* and *P. Malus*—a diversity that I never saw more remarkably displayed than in the past summer, when, in some of the Carse of Gowrie orchards, I observed many varieties of Pears and Apples, which had hitherto been deemed quite hardy, but which were then almost fruitless, some being so much injured by the last winter that they were unlikely to recover, while by far the greater portion had suffered only in a somewhat less degree. And as a further proof of the great difference that exists in the growth as well as



FIG. 134.—*QUERCUS GLANDULIFERA*, A HARDY EVERGREEN OAK FROM JAPAN, (SEE P. 714.)

are young trees just coming into full bearing. Brown Turkey and Castle Kennedy Figs also do well on a south wall in this favoured locality. The well-cropped garden is surrounded by borders of espalier trees of Apples and Pears following the lines of the walls on the inner side of the walks. These, I am informed by Mr. McKelvie, bear well, and certainly they, and all fruits about the place, give evidence of the attention of a skilful cultivator. *R. Crossling.*

THE SELECTION OF HARDY PLANTS.

(Concluded from p. 690.)

VII. *Artificial selection of plants.*—The concluding remarks in the last paragraph relative to the deterioration of the Scotch Pine may be looked on as showing an example of the bad effects that may be attendant on artificial selection. And with the Larch (*Larix europæa*) a change is also progressing, which, however, presents the appearance of being beneficial rather than otherwise, and which has led to the names

that are now reared from home-grown seeds being earlier matured and much harder than those grown from native seeds.

Of plants that have long been the objects of artificial selection the following may be instanced as bearing upon the subject here treated of:—

Admitting that the wild Pear (*Pyrus communis*) and the Crab Apple (*P. Malus*) are perfectly hardy natives of Britain, and that our cultivated Pears are merely improved varieties of the former, and our cultivated Apples of the latter, obtained after very long continued and careful selection of those kinds having the best flavoured and most handsome fruit, varying in their times of ripening, so that they can now be had in perfection throughout most of the year. Quality of the fruit being thus the primary object in view, little or no regard was paid by horticulturists to the hardiness of the trees, provided the fruit was possessed of first-class excellence; and in the event of not being found suitable for orchard or open ground culture, a place was allotted to it on the south face of a garden wall or other exposure, where, under

hardiness in the different kinds of Pear and Apple trees, I may mention that the late Patrick Matthew, Esq., of Gourdiehill, who was the most extensive as well as best practically skilled orchardist in the above named district, arranged his Pear and Apple trees so that the finer and more delicate kinds were protected from the northerly and easterly winds by lines and masses of taller-growing and harder sorts. Similar, and in some instances even greater diversity exists in the hardiness of other fruit bearing, as well as agricultural, culinary, and florist plants. Thus among our cereal grains varieties are found much more suited for cold late exposures than others. Some varieties of the common Turnip (*Brassica Rapa*) that yield the earliest as well as bulkiest crops have to be cleared off the fields even before moderate frosts set in, while others are capable of withstanding as much as 15° of frost. All are familiar with the differences in length of time required for maturing the many varieties of Potato (*Solanum tuberosum*); and most cultivators are aware that among the later ripening kinds some have their foliage blackened by early frosts, while that

of others growing alongside or intermixed with them remains fresh and green. But of all the plants that have been long subjected to artificial, or more correctly speaking cultural selection, none have produced in their varieties and sub-varieties such diversity in forms and hardness as the Brassica oleracea, from which have been derived our Cabbages, Kales, Broccoli, Cauliflower, &c.; and the original form of which is found on the southern shores of Britain as well as on those of Southern Europe, but it has no place in the Scandinavian flora, although its hardest varieties, under the names of Russian and Siberian Kale, are grown as far north in Europe and Asia as cultivation extends, while the Cauliflower, and even the Pomeranian Cabbage, require with us the winter protection of glass structures.

In regard to flowers that have been long reputed garden favourites, the differences between them and their primitive types, both in structure and hardness, are so well known to botanists and florists, that further remarks in regard to them are deemed unnecessary.

In treating of the acquirement of hardier varieties or forms of plants it may be supposed that allusion should be made to the acclimatisation theory which has been urged and defended by some horticultural writers, and I here do so by remarking that I have no belief in that theory, the advocates of which maintain that a plant, although only perpetuated by division, such as cuttings, layers, grafts, or buds, can be rendered more hardy by gradually exposing and inuring it to lower temperatures. The *Aucuba japonica*, of which the well-known spotted-leaved variety introduced to Britain in 1783 was the only representative till that eminent botanical collector, the late Mr. Robert Fortune, sent the male and other varieties from Japan in 1861, which old variety has often been deduced as incontrovertible evidence in favour of the acclimatisation theory, the defender of which affirming that when first introduced it required hothouse protection, and although only perpetuated by cuttings or layers it gradually became so hardy as ultimately to withstand our severest winters. No proof exists, however, as to its originally requiring hothouse protection, but, like many more exotics, having been deemed deserving of hothouse treatment it merely got it by mistake; and looking back to the three remarkably severe winters of 1837-38, 1860-61, and of December, 1879, when the temperature fell to about zero, their killing effects on the old *Aucuba* were remarkably alike, and, curiously enough, the *Aucuba japonica* is now looked upon as one of the best proofs that hardier varieties can only be got from among plants that have been reared from seeds, and in "nursery breaks;" of these some are perfectly uninjured, while others, as well as the old spotted-leaved variety, have been more or less severely cut down by the frost of last winter.

The older kinds of our favourite fruit trees, which have been perpetuated by budding or grafting, afford inexhaustible evidence against acclimatisation; for example, the Ribston Pippin Apple, which is supposed to have originated at Ribston Hall from seeds sown about 1688, and the Jargonelle Pear, which has been still longer in cultivation, are both as unsuitable for growing as standards in Scotland as when they were first tried; while the Moorpark Apricot, which has been grown in Britain for about two centuries; the Grosse Mignonne Peach for a still longer period; and the Elruge Nectarine, which dates from the time of Charles II., still stand as much in need of the best garden wall protection as ever they did. *W. Gorrie.*

DRAYTON BEAUCHAMP RECTORY.

A VISIT to this garden, some weeks ago, was well repaid by an inspection of the interesting alpine herbaceous and bulbous plants that are here to be met with, and where the visitor, any day in the year, may find something attractive. The enthusiasm of Mr. Harpur Crewe for these plants has so long been known to the majority of your readers, especially to those who have a love for alpine, as to require no further comment. Mr. Harpur Crewe is never tired of discussing the beauties connected with these plants, and any one having an interest in them will find him both ready and willing to impart any information that he may have acquired respecting them. In the numerous beds which are set apart for these plants—in fact, the

whole, I may say, of the beds, for these are made the bedding plants—the system is adopted of arranging them in families. One of the first plants with which I was familiar, and which attracted my attention on entering, was the pretty yellow-flowered *Neja gracilis*, a plant of Mexican origin, and admirably adapted for autumn flowering on a sunny rock; it is scarcely to be considered hardy in this country, though in some cases it has withstood our mild winters. I believe it was formerly used as a bedding plant, and would no doubt still have good effect so used. Of single Dahlias there was here a good selection, comprising *Dahlia* (*Cosmos*) *atro-purpurea*, with dark crimson well-shaped flowers, which are produced in abundance; and the true *D. Cervantesi*, which is becoming scarce, the plant now grown under its name being quite distinct. *D. lutea* was making a fine display; and very attractive were the rosy-white flowers of *D. major glabrata*. *Rudbeckia* (*Echinacea*) *intermedia* is among the stateliest of late autumn-flowering perennials, and grows to the height of 3 feet, terminating with flowers of a reddish-purple.

Two small circular beds were dotted over with the flowers of *Crocus multiflorus* and *C. speciosus*; and another charming plant was *Convolvulus mauritanicus*, which one so seldom meets with, but which for decorating vases, or hanging in baskets, is much to be admired. *Begonia Veitchii* was also making a fine display, with flowers 2 inches across, of a rich orange-scarlet colour. It is a native of Peru, and among tuberous-rooted *Begonias* holds a first-class place. Several other varieties were also flowering. Among Crane's-bills were *Erodium hymenoides* and *E. manescavi*, the latter with dense tufts of elegant foliage, from which spring numerous flowering stems, bearing umbels of purplish-red flowers. One of three triangular beds was planted with a collection of Mr. Nelson's new varieties of *Phlox setacea*; these are slightly raised, and include *P. Model*, *P. Perfection*, *P. compacta*, *P. grandiflora*, and *P. The Bride*, which are most attractive in the late spring and early summer months. *Campanula rotundifolia* was still flowering, and quietly flowering in a most shady peat-bed was the beautiful yellow-fringed *Orchis*, *Habenaria ciliaris*, of which three spikes of its orange-coloured flowers were at their best. It is a North American species, and a decided acquisition. The reddish flowers of *Anemone japonica* were making a goodly display. *Othonna cheirifolia* is a curious-looking species from Barbary, with oblong spatulate leaves of a bluish glaucous hue. *Tropaeolum tuberosum* was growing vigorously, and flowering profusely; *Delphinium cashmirianum*, a new species, was just passing its flowering season; *Chelone barbata* was producing from its slender flower-stems its scarlet tubular flowers; *Gaura Lindheimeri* was also flowering, as was also *Hyoscyamus physaloides*, a singularly ornamental species from Siberia, with celestial-blue and white flowers.

A fine specimen of *Lychnis dioica alba flore pleno* had evidently been making a fine display during the greater part of the summer, and was still flowering with that freeness which alone should give it a place in all collections. Several forms of European *Cyclamen* were springing into flower; the ever-welcome *Androsace lanuginosa* was still producing in abundance its rosy-coloured flowers, and growing vigorously. *Polygonum sachalinense*, the Giant Knot-grass, makes a most ornamental foliaged plant, growing from 6 to 10 feet high in one season; *P. amplexicaule* is of dwarfer habit, with spikes of erect reddish flowers; *Rudbeckia* *Neumannii* was conspicuous among Composites with its bright golden-orange flowers, which in masses are most effective; *Leucanthemum maximum*, with large pure white flowers with yellow centre, is also to be admired for its late autumn flowering qualities. The morning's sun had tended to open many flowers of *Tigridia grandiflora*. *Colchicum speciosum* is without doubt the finest of the meadow Safrons, and should be grown largely; *Aster novæ-belgiæ* (Kew) is a good form and of free-flowering habit; *Aster amellus bessarabicus* is not to be equalled by any of its congeners, its free-flowering qualities and dwarf bushy habit making it a most desirable autumn flowering border plant, and for growing in masses and cut purposes it is equally valuable. Close to this *Aster* were large clumps of the white Japanese *Anemone*, *A. japonica alba*: its pure white wax-like blossoms, which are produced in abundance, render it invaluable. In the herbaceous border was a most attractive and uncommon Boragin-

aceous plant, *Arnebia echioides* (see *Gardeners' Chronicle*, p. 689, vol. xi.), with chrome-yellow and sulphur-coloured flowers, each petal having in its centre a distinct black spot which penetrates right through it: its flower-stems are erect—the flowers, which are densely set on stems about 1 foot high, being also erect; it is of neat compact habit, and will, when fully known, become a valuable addition to rock and border plants.

The last few flowers were just developing themselves on fine plants of *Stylophorum diphyllum*, and which are deep yellow and large. It is of North American origin, and closely allied to the larger *Celandine*. *Pyrethrum uliginosum* is probably the latest flowering of its family, continuing in profusion long after many others have ceased. It is a most valuable plant for shrubby planting, or for clumps in large borders. *Orchis maculata superba* is a great improvement on the typical form; it is of shorter growth, the flowers are more compact, and much deeper in colour: it had ceased flowering at the time of my visit. *Sisymbrium irio*, with yellow flowers, is a distinct *Crucifer*, with neat attractive Fern-like foliage. *Phygelius capensis*, with scarlet tubular flowers borne on panicked stems, is attractive everywhere, but was doing much better here than it is generally seen. *Cheiranthus tristis*, the "night-scented Stock," and *C. variabilis*, were also flowering. Neither of these two can fairly be considered hardy, although they will flower freely, and grow well for nine months of the year. *Adonis vernalis* was in very fine clumps, and judging from these, a good display of its yellow flowers may be expected in the sunny days of early spring.

In cold pits, which for the most part are planted with the rarer bulbous plants, *Crocus* of the different autumn-flowering species were just opening their buds, which represent a great variety of colour; among these I noted *C. tingitanus*, *C. Sprungeri*, and *C. zonatus*. In this frame also I noted *Iris cristata*, a pretty species of North American origin, and introduced as far back as 1756; this is still uncommon in gardens, and should be grown largely. It is of dwarf habit; the flowers, which are of a pale lavender-blue, rising from 4 to 6 inches in height. It is growing here in the greatest luxuriance. Another species, named *I. cretensis*, is in habit closely allied to *I. ruthenica*, which I am not familiar with.

Among *Calceolarias*, of which many species are grown, were *Calceolaria hyssopifolia*, *C. bicolor*, *C. crenatifolia*, *C. lobata* and *C. Pavonii*; this latter is a large and gross-feeding plant, requiring plenty of moisture. Of *Salvias* there is almost an endless variety; the most noticeable are *Salvia confertiflora*, of distinct habit and good flower; *S. Pitcheri*, *S. farinosa* (syn.), *S. leucantha*, a white-flowered Mexican species. *Loasa vulcanica* was one mass of pure white blossoms; it is of prickly habit, and has a tendency to sting one's flesh and cause irritable pain. A whitish flowered variety of *Delphinium Staphisagria* was also flowering. Such are a few among the many interesting plants to be seen in this garden. *F.*

FICUS STIPULATA.*

EVERY gardener knows the neat cheerful looking Fig which clothes the walls of his greenhouses and stoves with dense dark green foliage, forming no bad substitute for Ivy. Lately (pp. 560, 561) we had occasion to figure not only the ordinary creeping state, but also the very different form which the plant assumes when it gets away from a wall, and which it was surmised might, as in the case of the Ivy, be the form assumed when the plant assumed the fruiting stage. Since our figures were published we have received from Mr. Garnier, gr. to Mitchell Henry, Esq., M.P., Kylemore Castle, Galway, fruiting specimens which amply confirm the assumption before alluded to. As will be seen from the woodcut (fig. 135) the fruit is shortly stalked, turbinate, obtusely acuminate, about 2½ inches long by 1½ wide at the broadest part, and in colour pale violet, with a glaucous bloom; the flesh being white and insipid. On referring to the Kew herbarium we find fruiting specimens from a garden near Paris, and a note of Mr. Gay's stating that the plant fruits frequently in the greenhouses of the Lisbon Botanic Garden. In this country the fruiting must be of rare occurrence, as we have hitherto found no reference to it. The plant is a native of China and perhaps of Japan, and is much more hardy than is commonly supposed. *F. minima* of gardens is probably only another form of this variable plant. *M. T. M.*

* *Ficus stipulata*, Thunberg. *Diss. de Ficu*, n. 7 (1786, Miquel); *Pleurostigma stipulatum*, Zuccarini; *Tenorea heterophylla*, Gasparini; *Ficus repens*, hort.

FRUIT SHOWING AND GROWING AT MAIDSTONE.

IN connection with the exhibition of Chrysanthemums held at Maidstone on the 19th ult., one of the very finest displays of Apples was made that it has ever been our lot to witness. Kent is termed the garden of England, and right worthily this proud and charming title is upheld around Maidstone—so far, at least, as outdoor fruit-growing is concerned, and more especially so in regard to the two noblest of our fruits, Apples and Pears. *Habitués* of Regent Street have for months past been amazed at the wondrous beauty and size of the fruits displayed in the windows of the General Horticultural Company (John Wills), Limited. Such Emperor Alexander and Belle Dubois Apples have rarely been seen, and the fabulous prices of 5s. for a single Apple, and 10s. 6d. for a single Pear (Pitmaston Duchess) have actually been received. All these magnificent examples were from the gardens of Roger Leigh, Esq., Barham Court, Maidstone, and were grown by Mr. Haycock, who

Stone's Apple, Beauty of Kent, Warner's King, Round Winter Nonsuch, Winter Hawthornden, Mère de Ménage, Hanwell Souring, Blenheim Orange, Pomme Royale, Ribston Pippin, Mannington's Pearmain, King of the Pippins, Court-pendù Plat, Warwickshire Pippin, Golden Knob, and Cox's Orange Pippin, all very fine specimens of their respective kinds.

The 2d prize in this class was awarded to H. A. Brassey, Esq., M.P., Preston Hall, for a collection very little inferior. Among the finer examples it contained we may mention Powell's Russet, Cox's Orange Pippin, Brabant Bellefleur, Beauty of Wiltshire, Dumelow's Seedling, and Golden Noble. The 3d prize went to Sir F. Geary, Bart., Oxonhoath, who had some extraordinary fine examples of New Hawthornden and Red Baldwin, an Apple new to us by that name. In the class for nine varieties of dessert Apples the 1st prize was very worthily awarded to A. Warde, Esq., West Farleigh, who had in his collection very fine Ribston Pippin, Court-pendù Plat, Cornish Aromatic, Melon, Cox's Orange Pippin, Keddeleston Pippin, &c.; and the 2d to

Well done, Maidstone! We could, however, just wish that the prizes for such fruit had been a little more liberal, that more classes might be introduced, and classes to exhibit the representative fruit of this garden of England. A great fruit show at Maidstone would be an attraction for all England: it would not fail to show that there, at least, our native fruits can be grown to as great perfection, and to as much profit, as in America.

THE BOUGAINVILLEA.

ONE of the first plants that strike the eye on entering the city of Kingston, Jamaica, is the Bougainvillea. Planted in the area gardens of the citizens, it soon overtops the walls or railings, and, hanging over in large and conspicuous festoons, forms when in flower one of the most attractive and gorgeous of the plants here cultivated. Although introduced but a few years ago, it is now found generally distributed throughout the whole island. Much has of late years been written by home cultivators as to the best methods of treatment this plant should receive to induce it to flower in greatest profusion. Some advocate greenhouse treatment, others stove, while with another nothing can be done without the intermediate house. A glance at the plant as it flourishes here would, I think, satisfy the most critical observer that nothing more was to be desired, and that the plant was perfectly at home and in its element. Mr. B. S. Williams says, in his *Introduction to the Orchid Growers' Manual*, "I admit that we should by all means take Nature as our guide for the production of good plants, but it should be in her best garb only." I believe Mr. Williams to be right, and his success as a cultivator warrants his assertions, which therefore, I think, may be safely followed.

The Bougainvillea in Jamaica is in her "best garb," and being so, will, I think, justify the following remarks on the soil, climate, and situation in which it is found, for the benefit of those who have not been fortunate enough to see her under such favourable conditions.

The soil in and surrounding Kingston is a sandy loam, in some places slightly mixed with clay, and in others with a large proportion of gravel, rendering it generally a dry and arid soil. The average maximum and minimum temperatures for the year are, respectively 80° and 70° Fahrenheit, though the thermometer at times rises several degrees above 90°, and is sometimes, but rarely, as low as 60°. The average rainfall is about 60 inches per annum. The situation is a flat open plain, many miles in extent, rising gradually from the sea to the foot of the mountain ranges, to the nearest point of which the distance is some seven miles. Our plants here flourish in full exposure to the rays of the tropical sun, and commence to bloom in the month of October, lasting in a continuous succession till the following May, or even later. No artificial methods of cultivation are necessary; all that is required is that it shall be properly planted, and supplied with sufficient water until established, when it may be left entirely to itself. The species here cultivated is *B. glabra*, though *speciosa* is sometimes seen also in fine condition. To illustrate the rapidity, size, and rate of growth, I may mention that there was planted, in 1876, several small plants of *B. glabra* at King's House, the residence of his Excellency the Governor of Jamaica, and on measuring them to-day I find one of them has attained the following dimensions:—At the ground-line the stem measures in circumference 1 foot 11 inches, and at 2 feet from the ground 1 foot 4 inches, while at 10 feet high it measures over 1 foot. It is planted near a large and very old specimen of *Tamarindus indica*, L., from 25 feet to 30 feet high, which it has nearly covered, and when in bloom presents a truly magnificent sight. When the bracts first appear they are light in colour, deepening gradually until the flowers have faded, when they again assume a tint similar to that exhibited on their first appearance. The plant here mentioned is not a solitary instance, as many can be found of equal, and perhaps of larger dimensions. It is grown here as climbers, hedge-plants, and also for single specimens, but it never appears to greater advantage than when on a large tree. It needs continuous pruning throughout the year when grown as a single specimen or for hedges, which operation, contrary to the opinion usually held, does not interfere seemingly in the least degree with its flowering properties. The plant

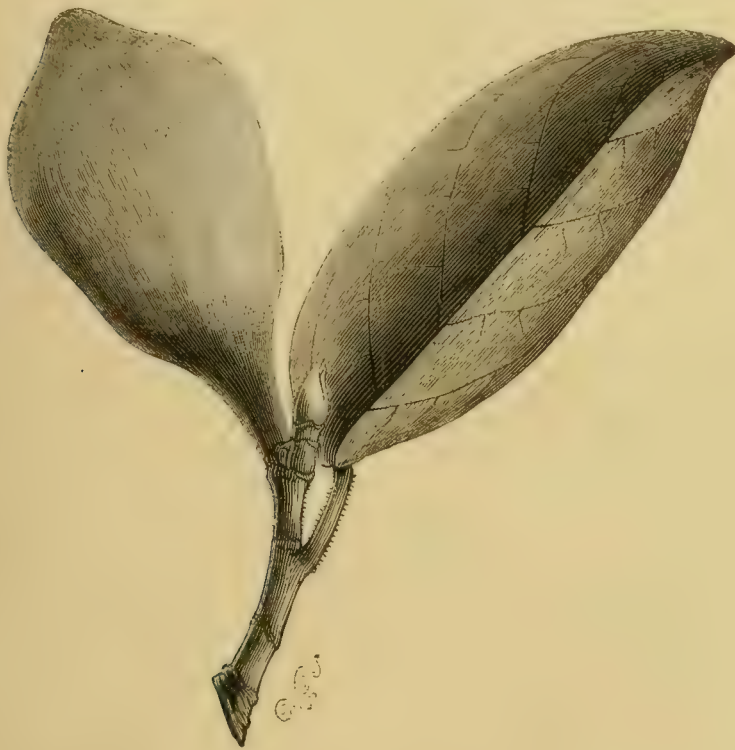


FIG. 135.—FRUIT OF THE CREEPING FIG, *FICUS STIPULATA*. (SEE P. 716.)

seems determined to cut a niche in the Temple of Fame as a fruit grower.

No doubt the excellent example that is here set, and the dazzling prices obtained, will tempt many others to go and try to do likewise. It seemed a pity, however—we think, a great pity—that Mr. Leigh should have transferred his entire display to London, and not have put in an appearance in Maidstone. Greek there would have met Greek, for assuredly some of the collections of Apples shown would have been difficult to beat. The redoubtable Mr. Lewis Killick, the champion of Hereford and many other Apple "fights," was there, and strong too, with his Loddington Seedling, or Stone's Apple (all honour to Mr. Killick for introducing to our notice this magnificent variety), Round Winter Nonsuch, Lord Derby, Blenheim Orange, and Weavering Apple (the older and more proper name of Warner's King); but they had no place beside the splendid examples from W. Skinner, Esq., Boughton Monchelsea, to which the 1st prize (a silver cup, presented by H. A. Brassey, Esq., M.P.) was awarded. This was in a class for eighteen varieties of Apples, distinct, open to all England, and the names were as follows:—Bedfordshire Foundling,

G. Edmett, Esq., who had in his collection a fine dish of Evagil, a very pretty pale-skinned sort, not so much grown as it deserves. The 3d prize went to Mr. Killick. For nine varieties of kitchen Apples there was a remarkably strong competition. In all cases the kitchen varieties were superior to the dessert. The winning lot came from A. Warde, Esq., with splendid examples of Mère de Ménage, Dumelow's Seedling, Belle Dubois, Reinette du Canada (extra fine), Hanwell Souring, Loddington Seedling, Bedfordshire Foundling; 2d prize to H. A. Brassey, Esq.; 3d to Mr. Killick.

For three varieties of kitchen Apples, A. Killick, Esq., of Weavering, was placed 1st with magnificent examples of Blenheim Orange, Cellini, and Warner's King, or Weavering Apple, as it was called here long before Warner's King was heard of. The other classes for Apples were well represented, but call for no special mention. Mr. Killick was awarded an extra prize for a large collection of Apples which added much to the interest of the show. The Pears, Grapes, and other fruit, although good, were of no particular merit.

It was very gratifying to note the interest exhibited by the visitors in this fine display of fruit.

suffers but little from the attacks of spider, or other insects, even in the hottest seasons, but is (though rarely) sometimes disfigured by the attacks of the American Dodder, *Cuscuta americana*.

I well remember, some years ago, when at Shrubland Park, how proud the veteran Mr. Blair was on producing a fine wreath of *B. spectabilis*, and I may mention that the condition under which the plant flowered corresponded as nearly as possible with that of the natural ones here existing. I also remember the many eulogies passed upon the Bougainvillea grown at a place denominated by the writer the "home of the Bougainvillea," otherwise "Swyncombe;" and had I the pen of a Fish I also might launch out into eloquent praise of the plant as here to be found in its splendour. I have contented myself, however, with describing it as concisely as possible, and but little needs to be added, excepting that it does not succeed well above 3000 feet, possibly not so much on account of the lower temperature, as from the very heavy rainfall there experienced—sometimes 150 inches annually. It is also a notable fact that the Bougainvillea produces here, at all times during its growth, formidable spines, while they do not appear in such numbers under home cultivation. This habit is also common with other genera of the order Nyctaginæ—notably *Pisonia*, a species of which (*P. aculeata*) is here one of the most terrible enemies to be met with in bush travelling in the lowlands; while others of the order, as *Mirabilis* and *Boerhaavia*, are quite smooth and succulent—a species of the last-named forming, with *Cyperus hydra*, one of our greatest pests on garden walks. In the language of Brother Jonathan, "they beat all creation." *J. Hart, King's House, Kingston, Jamaica, Oct.*

THE FRENCH MODE OF CULTIVATING ASPARAGUS.

WHEN in France some years since I had the privilege of visiting Argenteuil, and, if I remember rightly, of going over M. L'herault's grounds. The system seems the same in all the gardens and grounds in that neighbourhood, which is the great head centre of the enormous Asparagus trade that fills the Parisian and other markets with the finest Asparagus in the world. The district is warm and dry, the soil light and fine rather than rich. Peaches do not seem to like it, for I saw no healthy strong trees in the district.

But what surprised me most of all on the spot—and the impression is vividly recalled by M. L'herault's mode of culture, described on p. 620—is the immense amount of manual labour bestowed on the Asparagus. This seems out of all proportion to the yield, heavy in individual stems though the latter doubtless is. It is needful, however, to bear this guarded expression in mind while estimating gross yield. I do not consider the latter greater in France than in England, and much doubt whether it be so great. The wide distance of the plants apart, the blanks here and there, which are serious matters with the plants a yard or more apart, while they favour size also rather tell against quantity.

The moderate cutting seemed universal. I saw no sign anywhere around Argenteuil of exhaustion from over-cutting; on the contrary, all the beds and rows seemed to have been cut for the permanent good of the plants rather than the produce. The labour again and cost also of staking in a country like France, where wood is the national fuel and stakes are dear, is very great. A great deal of the Asparagus was staked, though more of it was unstaked. But it was not on that account uncared for; on the contrary, each plant was earthed up into a compact little hill—a foot, 18 inches or more in height—around its stems. This was pressed firmly around the plants to prevent the wind blowing them about, as well as to blanch the shoots and feed the roots of the Asparagus, as was carefully pointed out on the spot. The whole process of culture was carried out with the hand only; neither hoe, nor fork, nor spade were used. The little mounds were levelled down to the crowns to illustrate the mode of gathering, the young shoots being snapped off right down to the crowns by a sudden twist of the finger and thumb. The soil of several plants was also scraped off clean, and laid up in a ridge between the beds, to share the winter treatment, and the ameliorating action of the ridge of earth left thus through the winter. It was again replaced to share the

spring dressing. And all these processes were performed by M. L'herault and some other large growers with a dexterity that astonished me, and without apparent inconvenience to the fingers. But to repeat this twice a year over all the grounds, and partially over Asparagus that is cut, involves an enormous amount of labour. The soil has been so often moved, that it is what we should in figurative language call an ash-heap; and the growers are wonderfully proud of its fineness. Another thing very much astonished me: there seemed no appearance of manure in any quantity in any of the Asparagus gardens; the contrast in this respect between the grounds at Argenteuil and the market gardens around London was complete. Any manure seen seemed mere rich mould rather than any rich animal or vegetable matters in a state of decomposition. Adverting to the absence of manure on the spot, the answer was that the weather and winter exposure of the soil between the rows sufficiently enriched it; and my guide never tired of handling, smelling, almost tasting, and loudly extolling its merits. Neither does the ground seem to have been trenched or richly manured at first. The Asparagus is planted flat, and under it the ground seemed hard and rather sterile. The roots strike out horizontally rather than bore perpendicularly, and all those seen were thick and healthy. Still a few plants here and there had the jaundice or yellows, such as are often seen in England. The mode of hand gathering in the light—that is, uncovering before gathering—is doubtless of immense advantage to the roots. I remember positively shrinking from the use of an Asparagus knife the first time it was given me to use, and all the best growers around Argenteuil gather with their fingers only. Frequently visiting the chief vegetable market in Paris, the Halles Centrales, and seeing the enormous piles of Asparagus, I could not help thinking of the labour and backaches that its mere gathering involved, and the time needful for it. For the French are plodding rather than quick labourers; they seem to have no regular hours as in England—from day-dawn to dark they seem to plod on; even the horses keep on ploughing till the shadows of the night hide them out of sight. Probably these long hours are needed to make even Asparagus culture pay. That it does pay I was assured over and over again, and the spot (Argenteuil), it was said, had become rich on this special industry, and the town has a comfortable well-to-do look about it. The whole district is warm and well sheltered, but by no means very extensive. The Asparagus grounds or gardens seem also owned by those who hold them, and possibly this may partly account for the amount of care and labour lavished on the Asparagus. The greatest point in the whole matter seemed the extreme fineness and frequent movements of the soil. The growers also seem extremely careful in the sorting of their "grass," and for the best of all reasons, as size and price seem synonymous terms in all the Parisian markets. The quality of the Asparagus is assuredly not superior to that grown in England, and the method of blanching the whole of it, within an inch or two of the point, is most wasteful of the grass. But fashion wills it so, though surely it would be more rational to allow 6 inches of the monstrous grass to become edible, than arrest its career at an inch or so. But this is an old and hackneyed question, that nations and individuals elect to decide for themselves, though when adverted to the amount of labour bestowed on Parisian Asparagus one can hardly conclude without wishing for a more profitable climax to all the loving and anxious care of the cultivator, than a sweet morsel, an inch or so in length, at the end of walking-sticks from 9 inches to 1 foot long. Small fine Asparagus may be had in Paris under the name of English Asparagus, and is only used for soup. *D. T. Fish.*

THE PITMASTON DUCHESS PEAR.—Some very fine fruit of this valuable Pear were exhibited at the Birmingham Chrysanthemum Show last week by Mr. G. Stacey, gr. to F. Osler, Esq., Edgbaston, and were much admired by the gardeners present for their large size and handsome proportions. A leading fruit grower in Warwickshire expressed the opinion that this Pear will, in course of time, become a leading market variety, and strongly recommends that it be largely planted as standards. As it bears very freely and is of the best quality, and is a good grower also, this prediction is likely to be realised. The fruit is large for the trees to be grown as standards, but it was the opinion of this authority that the finest fruit would be obtained from standard trees.

MOOR PARK, NEAR LUDLOW, SHROPSHIRE.

MOOR PARK, the seat of Major Foster, is situated in the midst of some of the finest scenery in Shropshire—a county rich in historic associations, and second to none in England for grand and romantic, bold and majestic scenes. Moor Park, which well merits a description in our pages, and which came into its present owner's possession by purchase about six years ago, is situated in the parish of Richard's Castle—a parish taking its name from a castle built by one Richard Scroop, one of the favourites of William the Conqueror. The original house is said to have been built in the time of Queen Anne, the architecture being of that period; and the ancestors of the late owner, in whose possession it had been for a long series of years, scrupulously preserved that style throughout the numerous additions and improvements which they from time to time effected.

The entrance lodge is situated half a mile from the house, and two miles from the Butter Cross of the ancient borough town of Ludlow, on the high road to Leominster, which passes through the upper part of the park, but is well masked by massive earthworks.

From the lodge the house is reached by a drive passing through most picturesque scenery. From some points you have distant views of some of the Herefordshire hills, also of some of the noted hills of Salop. A little farther on you pass along the edge of a most beautiful ravine, in which are several pools or small lakes with waterfalls, producing quite a charming effect. Leaving these, you begin to rise a gentle slope, or, as it is called here, a pitch, which brings you to the entrance front of the mansion, a magnificent red-brick building with Dundee stone dressings. This front is over 300 feet long. Major Foster has spent a large sum in building, and the whole mansion is finished, fitted, and furnished in a manner at once elaborate and chaste. The garden front commands a charming and extensive landscape, having views of the before-mentioned hills to the left, the Abberley Hills in Worcestershire in the front, and the Malvern Hills to the right.

The park and grounds which surround the mansion consist of 200 acres of rich grass-land, and possess some fine specimens of Elm, Ash, and Oak trees, the latter of which indeed are so abundant as to be called the weed of this part of England, though we cannot but think that the term is strikingly inapplicable to trees, many of which have from 18 to 20 feet girth, and are from 70 to 80 feet high. We ourselves noticed one which measured 23 feet round at a distance of 4 feet from the ground. It may interest some to know that the Oak which furnished the stern-post of the *Alabama* grew near here.

The upper part of the park is bounded by what may be called in this utilitarian age an immense forest, which is pretty well stocked with wild deer, who make terrible raids on the Swedes and Winter Greens of the neighbouring farmers and cottagers. Major Foster rents this extensive track of forest for sporting. The scene of "Comus" is a beautiful sylvan glen on the edge of this forest. The masque was written by Milton at Ludlow Castle, and was first played in the banquetting hall of that edifice before the Earl of Bridgewater in 1634. This leads me to speak of the historical associations in connection with the interesting ruins of Ludlow Castle, independent of the literary interest just alluded to. It was formerly a royal residence, Edward V. having been there when he was proclaimed king. Arthur, Prince of Wales, the eldest son of Henry VII., also resided there. Later on it stood a siege from Cromwell's army.

The water supply at Moor Park is on a most comprehensive scale. That for the use of the lower part of the house, gardens, stables, &c., is conveyed in pipes from a spring in the Park, whilst that for the upper part and the fire tanks is obtained from a noted spring called Boney Well, situated some two miles away among the hills—a place often visited by tourists.

There are some very good specimens of natural inarching here, some in Beech and Ash, and some in Oak. One Beech is very curious: two large branches or holes are as it were braced together about 30 feet from the ground by a piece some 3 inches in diameter.

In passing through the grounds one cannot help

remarking that Roses are a feature here, and we were told that they do remarkably well in this part, as is also the case with Rhododendrons, and in fact most kinds of ornamental trees and shrubs.

The conservatory, a large structure divided into two compartments, and connected with the house by a glass covered way, was very gay at the time I saw it. A quantity of young Azaleas of the choicest kinds were a mass of bloom as well as others of a larger size, some of them 6 or 7 feet high, and older varieties fast coming into bloom; quantities of pots of Mignonette 18 inches high and as much through, feathered to the pot, and as green as in the open in summer. Also Roses of the best kinds, fine plants well bloomed; among them were Rubens, Hippolyte Jamain, Adam, Adrienne Christophe, Madame Bonnet, Perle des Jardins, Catherine Mermet. The conservatory is very lofty and well furnished with creepers, some of which have made marvellous growth—Cobaea scandens planted for quick effect, also Tropaeolum Ball of Fire—but they will soon have to give place to better things; Tacsonias in variety, Passifloras, Bougainvilleas, and other choice creepers are following close upon the temporary ones. Here also are two fine young plants of Araucaria excelsa, 18 feet high.

A great number of cut flowers and a large quantity of plants are used here for table and room decoration, such as Crotons in variety, Pandanus Veitchii, borbónica, Livingstonia, &c.; Dracenas in variety, Arecas, Cocos, and several other things. Ferns are also in force here—Adiantum Farleyense stands out proudly: there are four or five large plants, one very large, and all at home. But the contents of the hothouses I was only able to see under difficulties, for at the time of my visit the whole of the houses were in the hands of Messrs. Weeks, the horticultural builders, who were improving and considerably enlarging the establishment. One large entirely newinery was in course of erection, and one large new span-roofed forcing-house; but what particularly attracted my attention was the new Peach-house on cast-iron and slate foundations and fitted with improved Peach stages. The novelty of the arrangement consists in the Peach stages being placed across the house instead of lengthwise as is usual. By this means the back wall is not unduly shaded, and it can therefore be wired and covered with trees which will have a fair share of sunshine. The border between the Peach stages is used for growing early salads. The Peach trees, although recently planted, presented a highly satisfactory appearance.

I may add that the general appearance of the whole of the hothouses and grounds reflected the greatest credit on Mr. Ashby, the obliging and intelligent head gardener. Z. Y. X.

PAPER MATERIALS.

1. *Bamboo*.—The energy and persistence with which Mr. Routledge has advocated the claims of Bamboo as a paper material have attracted much attention in India. The nature of the problem which has to be solved has been discussed in previous Kew Reports (1877, pp. 35, 36, and 1878, pp. 42 to 44), and need not be further dwelt upon. It is now generally conceded by those interested in the matter that the young Bamboo shoots must be cropped so as not to impair the vitality of the clumps. Dr. King, Superintendent of the Royal Botanical Gardens, Calcutta, remarks that the plan of taking a few shoots annually from each clump is the principle on which Bamboos have been cut in India from time immemorial.

That without such caution the Bamboo cannot be cut indefinitely, even in countries where it is merely used for local purposes, is shown by the fact that in the Government forests in India it has been found necessary to give the Bamboos rest. For example, Dr. Brandis, Inspector-General of Forests, states in his recent report that "in some forest tracts of the Damoh district the growth of the Bamboo had been so greatly restored by four years protection against cutting that it was lately found possible, subject to certain restrictions, to reopen these blocks for the cutting of Bamboos." Dr. King lays down very clearly the questions which now remain to be settled. They are "Whether commercial success can be obtained—(1), by forming plantations of bamboos for the collection of succulent shoots; (2), by collecting the immature shoots of wild Bamboos in the forests and carrying them to a paper factory; or (3), by fitting up a floating paper

stock mill and moving it about on rivers by the banks of which Bamboos naturally abound."

2. *Broussonetia papyrifera*.—The bark of the well-known Paper Mulberry supplies the material from which the tappa cloth of Polynesia and the bulk of the paper of Japan and China is manufactured. The Japanese cultivate the plant very much in the same way that we grow Osiers, and they use only the young shoots for the manufacture of paper. A sample of the bark which came into the hands of Mr. Routledge is stated by him to be "nearly, if not quite, the best fibre I have seen." . . . "I must admit it is even superior to Bamboo." . . . "It requires very little chemicals, and gives an excellent yield—62.5 per cent. in the grey, i.e., merely boiled, and 58 per cent. bleached."

3. *Esparto*.—It is evident from the mode in which this grass (*Macrochloa tenacissima*, also known as Alfa) is collected in Mediterranean countries that the supply must eventually materially diminish, if it does not altogether die out. It grows sporadically in strong ground under conditions which do not admit of any steps being taken for its cultivation. Mr. Routledge writes in the early part of last year:—"I have just had two large cargoes of Alfa from Tripoli, and the rapid deterioration of this comparatively new district is striking; the grass when first it was introduced was long and strong; now some of it is as fine and short as the shortest Spanish. I have a quantity varying from 6 to 10 inches only. It is the inevitable result of over-cropping."

Esparto is consequently becoming relatively scarcer in the market, while its price is rising. Paper manufacturers are therefore anxiously on the look-out for some material equal in quality to Esparto and procurable with as much facility, and at as reasonable a price as Esparto was when first introduced.

4. *Guadua*.—The gigantic Bamboos of the Old World belonging to the genera *Bambusa* and *Dendrocalamus* are represented by those belonging to *Guadua* in the tropics of the New World. In order to ascertain how far a supply of this kind of Bamboo would be available, Mr. Routledge and some other gentlemen interested in the matter sent Mr. Thomson (late Superintendent of the Cinchona plantations, Jamaica) on a mission to Venezuela, to explore the Bamboo forests. The species met with by Mr. Thomson appeared to be *Guadua amplexifolia*. He reports:—"This *Guadua* grows about the same size as *Bambusa vulgaris*, viz., from 50—60 feet in height, with culms 5—6 inches in diameter. The latter are much thicker in texture than the Bamboo stems, and their fibrous tissue is much tougher, so that much more labour is required to cut them down than in the case of the Bamboo. And this applies equally to the young stems, i.e., young shoots of Bamboo, say 10 feet high, are easily cut with a knife, but each stem of *Guadua* of a corresponding size and expansion requires more than one blow from a sharp axe."

The Bamboo (*Guadua*) forest over large extents of country is generally of the same age and consequently the plants flower and die simultaneously—a circumstance which only happens after protracted intervals, but which when it does happen is succeeded for a time by an almost total disappearance of the plant. This had happened in Venezuela about the time of Mr. Thomson's expedition, and Mr. Routledge informs us:—"I regret to say that I do not see much inducement to proceed with the undertaking I proposed. To do so would involve laying out regular plantations, and having regard to the uncertain political condition of the country, the difficult and dear labour, and some other drawbacks, the prospect of commercial success is not sufficiently tempting for me and my friends to embark in the undertaking."

5. *Indian Forest Fibres*.—The important collection of Indian forest products transmitted to Kew by the Indian Forest Department (see Kew Report, 1878, p. 50) included an extensive series of bark fibres. Specimens of all these were placed in the hands of Mr. Routledge, of the Ford Works, Sunderland, to whom Kew is under constant obligation for information and assistance in connection with the paper manufacture. He was good enough to test them all as regards their yield when converted into rough (paper) stock, and he has furnished us with a report [of which we need only give the concluding sentence]:—"I do not consider, with the exception of Nos. 1 (*Bauhinia Vahlia*) and 7 (*Ficus infectoria*), it would pay to import them from India."

6. *Molinia carulea*.—The proposition of using this common British grass for the purpose of paper.

making was mentioned in the Kew Report for 1878, p. 45. Mr. N. G. Richardson, of Tyaquin, county Galway, has since actively promoted its experimental cultivation in the West of Ireland. At a private meeting held at Athenry a committee was formed to raise subscriptions to plant 10 Irish acres of bog with it at Tyaquin. Mr. W. Smith, of Golden Bridge Mills, had manufactured paper from this grass, with which he was so well satisfied that "he was prepared to buy 1000 tons if any one would supply him."

7. *Portuguese Esparto*.—A grass sent for identification by Mr. Routledge under this name was determined to be *Stipa capillata*. He informed us that it would make paper, but that the yield of fibre was not even equal to straw, say 33 per cent.

8. *Rye-straw*.—The claims of Rye-straw (*Secale cereale*) have been urged as a paper material by Mr. Noble. It has the *prima facie* merit of being a home-grown material. Mr. Noble says:—"Rye (not 'Rye-grass') should be sown early in October, so as to be cut green in May and June, in time to get the land clear for Turnips and other vegetables. I have found it best to sow 4 bushels per acre for the purpose of getting a heavier crop, stifling the weeds, which would be injurious to the purpose for which it is intended; and the thinner and longer the stems are grown the more fibre they produce."

Mr. Noble believes that Rye-straw will make paper not inferior to that made from Esparto, and that paper-makers can afford to give a price for it which will be sufficiently remunerative to the farmer to grow it.

Mr. Routledge remarks upon the proposal to use it:—"It is very largely used in the States, also on the Continent. It will make a harder and firmer paper than any other cereal straw, except perhaps Maize." From the lately published Report of the Royal Gardens, Kew, for 1879.

PLANT PORTRAITS.

ALOE GREENII, Baker, *Bot. Mag.*, t. 6520.—A species with leaves lanceolate from a broad base, with curved spines; flowers pink, in long racemes, each tubular, dilated at the base, contracted below the centre. Kew.

ANGRECEUM SCOTTIANUM, *Floral Mag.*, t. 421. —See *Gard. Chron.*, p. 136.

CENTROPOGON LUCYANUS, *Revue de l'Horticulture Belge*, October, 1880.

DRACENA AURANTIACA, *Floral Mag.*, t. 423.—One of Mr. Wills' seedlings, with narrow leaves striped with green and orange-red.

ERANTHEMUM CINNABARINUM: *Garden*, Sept. 4: *Acanthaceae*.—A stove shrub with ovate acuminate leaves and terminal many-flowered panicles of scarlet flowers, each with a long slender tube and a flat irregularly 5-lobed limb. Martaban.

INOLIRION PALLASII, *Garden*, Oct. 16: *Amaryllidaceae*.—A beautiful hardy bulbous plant, native of Southern Russia, with narrow lanceolate leaves, and terminal cymes of long-stalked, six-parted, flowers, with narrow oblong violet-purple segments.

LATHYRUS ROTUNDFOLIUS, Willd., *Bot. Mag.*, t. 6522.—A charming hardy, free-flowering, everlasting Pea, with rose-coloured flowers; native of Asia Minor and the Caucasus. Contributed by Mr. Corderoy.

PRUNUS DIVARICATA, Led., *Bot. Mag.*, t. 6519.—A very free-flowering Plum, native of the Caucasus, of which there is a specimen near the Succulent-house at Kew, but which never produces fruit. It has been considered as the wild form of the *Myrobalan* Plum.

ROSE MRS. HARRY TURNER, *Floral Mag.*, t. 422.—A richly-coloured vermillion-tinted Rose, of good form and substance. Mr. C. Turner.

RUBUS DELICIOSUS, *Garden*, Oct. 9.—A very beautiful and hardy flowering shrub, with 3-lobed dentate leaves and large white roseaceous flowers.

SALVIA HIANs, Royle, *Bot. Mag.*, t. 6517.—"A very handsome perennial," with ovate, crenate, villous leaves, and terminal spikes of large blue flowers, the lower lip of which is spotted with white. Kashmir. Flowered at Kew.

STELIS BRUCKMÜLLERI, Rehb. f., *Bot. Mag.*, t. 6521.—An inconspicuous Orchid of small stature, tufted habit, elliptic stalked leaves, and long spikes of small purplish flowers. Mexico? Kew.

TOXICOPHLEA THUNBERGII, *Rev. Hort.*, Oct. 1, 1880.—See *Gard. Chron.*, 1872, p. 363.

TULIPA BIFLORA and *T. ILIENSIS*, *Bot. Mag.*, t. 6518.—Small yellow-flowered species, of no great beauty. The first is a native of Siberia, the second of Central Asia.

ABIES AMABILIS.

SOME time since we announced the rediscovery of this noble Fir by Messrs. Engelmann, Sargent, and Parry, in the very locality where it was first made known by Douglas more than fifty years ago. This was the more interesting, as much confusion has occurred as to its synonymy, and some doubts had even arisen as to the existence as a distinct species of the plant in question. It is also satisfactory to find that the plant cultivated in English nurseries as *amabilis* is in all probability correctly so named. We have now the pleasure of giving illustrations taken from photographs and drawings made on the spot and kindly furnished us by Dr. Engelmann and Professor Sargent, and we also avail ourselves of the opportunity of publishing Dr. Engelmann's descriptive letter :—

"Portland, Oregon, Aug. 6, 1880.

"In an expedition to explore the forests of the Pacific coast regions we, Prof. C. S. Sargent, Dr. C. C. Parry, and myself, three weeks ago ascended Silver Mountain, near Fort Hope, Frazer River, and found there, at an altitude of 4000 to 5500 feet, a Fir which we recognised as the long doubted *Abies amabilis*, growing with *Tsuga Mertensiana*, *T. Pattoniana*, *Pinus albicaulis*, and *P. monticola*, and rather higher than *Pseudo-Tsuga Douglasii*.

"A few days ago Prof. Sargent undertook the ascent of the very mountain just south of the Cascades of the Columbia, where Douglas fifty-five years ago discovered *A. amabilis* and *A. nobilis*, and found on that classical ground, not only these two trees, but also *T. Pattoniana* and *monticola*, some *P. contorta* and a few feeble *Abies grandis*. The *amabilis* is there better developed than further north, and we had photographs taken of specimens, copies of which I send to you.

"It is a magnificent tree, at about 4000 feet altitude, the largest specimen, growing on the banks of a mountain torrent, was probably 150 to 200 feet high, with a trunk about 4 feet in diameter, branching to the ground and forming a perfect cone of dark green foliage. The bark of the old tree is $1\frac{1}{2}$ to 2 inches thick, furrowed and reddish grey, that of younger trees, less than 100 years old, is quite thin and smooth, light grey or almost white. It certainly is very closely allied to *A. grandis*, but is readily distinguished by its very crowded darker green foliage (whence the name, which I had given it in my Synopsis of the American Firs, taking it then for a form of *A. grandis*, viz., var. *densifolia*, was well applied), and its large dark purple cones. The technical characters are the following :—

"Leaves densely crowded, dark green, channelled, and without stomata above, keeled, and with two white bands below, slightly notched on the lateral and sterile branches, acute on the leaders and on the cone-bearing branches (these acute leaves often with a few stomata on the upper side towards the tip), resin-ducts close to the epidermis of the lower side (fig. 139).

"Cones (fig. 141) deep purple, 4 and sometimes 5 inches long, 2 to 2 $\frac{1}{4}$ inches in diameter, slightly tapering to a retuse tip; scales in $\frac{3}{4}$ order, not much broader than high, their bracts often more than half as long as the scale, obovate, abruptly acuminate, deep purple upwards (fig. 137).

"Wings of seeds obliquely cuneate, as long as wide, or longer (fig. 137).

"*A. grandis*, which is common on the low lands along the rivers in Oregon, Washington Territory, and the southern parts of British Columbia, and abnormally ascends, has lighter coloured, usually longer, and always less crowded (distichous, with 2—4 ranks of shorter leaves on the upper side of the branchlets), also without stomata above, more deeply emarginate on the branches, obtuse or very shortly cuspidate on the fertile branchlets, acute or acuminate only on the leaders; cones 3—4 inches long, $1\frac{1}{2}$ inch, or scarcely more, in diameter, apple-green, and usually less resinous; scales much broader than high, their bracts about one-third the length of the scale, obcordate or retuse mucronate, light green; wings of seeds hatchet shaped, wider than long (fig. 138).

"*A. amabilis* has the purple cones and sharp-pointed leaves (on fertile branches) of *A. subalpina*, but this latter has not such crowded leaves, much smaller cones, and is especially distinguished by the parenchymatous resin ducts. *A. subalpina*, common in the Rocky Mountains, has been found also in Oregon (probably only east of the Cascades) and northward, but we have not as yet met with it here.

"We send you a photograph of a cone-bearing branch, and, slightly smaller than natural, one of a

sterile branch of an old tree (fig. 140); on the latter you will see the crowded arrangement of the leaves; on the former the shape of the cone, and the sharp-pointed leaves at its bases (fig. 141.) It will thus appear that



FIG. 136.—ABIES AMABILIS: DIAGRAM OF SECTION OF LEAF, SHOWING THE POSITION OF THE RESIN CANALS.

Lambert's figure of the cone scale and bract of his *Abies grandis*, though a little exaggerated, is in the main correct, especially as to the long, abruptly acuminate bract, the figure of which has given rise to



FIG. 137.—ABIES AMABILIS: BRACT, SCALE AND SEED.

the confusion with the Californian *A. magnifica*. G. Engelmann."

To these remarks of Dr. Engelmann we may add a few notes concerning the cultivated *amabilis*, speci-



FIG. 138.—ABIES GRANDIS: SCALE, BRACT AND SEED.

mens of which have been kindly placed at our disposal by Messrs. Barron, Lee, Paul, Veitch, and others.

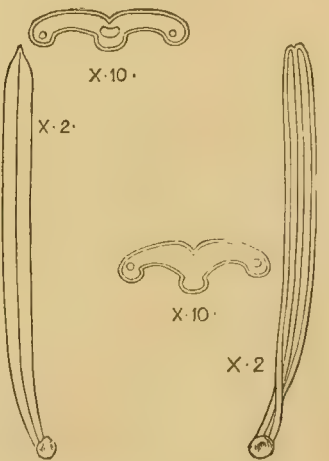


FIG. 139.—ABIES AMABILIS: LEAF FROM STERILE AND FROM FERTILE BRANCH, WITH SECTIONS.

Habit as of *A. Nordmanniana*.

Branches, smoky-brown or olive-grey, slightly woolly or glabrous, marked with circular leaf-scars; shoots given off nearly at right angles.

Leaves very fragrant, those on the sterile branches densely crowded, in many rows all of about the same length (10—12 lines), the leader leaves appressed straight with the white surface outermost; leaves on the lateral branches given off at an angle of about 60°, all turned to one side, the uppermost appressed and parallel to the long axis of the shoot, linear obtuse, twisted at the base, notched at the apex, or in the case of the smaller more crowded ones at the base of the shoots, pointed, all dark shining green above, furrowed in the centre, and with few or no stomata, lower surface with a prominent midrib, and with a glaucous band with about six rows of stomata on either side between it and the green recurved margins. On transverse section the leaves have a somewhat oblong obtuse figure depressed in the middle above, prominent beneath. The hypoderm or strengthening cells are continuous throughout, the palisade cells well marked, the resin canals subepidermal and surrounded by strengthening cells continuous with the lower hypodermal cells; the central fibro-vascular bundle is double.

So far as we can decide in the absence of fruiting specimens we have no doubt as to the identity of these plants with Douglas' original species now rediscovered, but it should be borne in mind that much of what has of late years been sold at Stevens' as the seed of *amabilis* has proved to be either *magnifica*, *concolor*, or *lasiocarpa* (hort.).

As to the limitations of these species, their synonymy, their distinctions from *grandis*, and other points, we reserve any fuller expression of opinion till we are in possession of the new facts gleaned by the American botanists in their expedition. It is clear, however, that considerable changes will have to be made. Amongst other things it is obvious that the *A. amabilis* of the *Pinetum Woburnense* is not the plant we are now concerned with. The *lasiocarpa* of Hooker (not of gardens) is very like the specimens of *amabilis* as here described, but the resin canals in the type specimen of *lasiocarpa* are, as correctly figured by Mac Nab, in the substance of the leaf, not immediately beneath the epidermis. In addition to the photographs, Dr. Engelmann was good enough to send us a few leaves of *amabilis*, whose structure we found to be the same as in the plant cultivated in our nurseries as *amabilis*. The very large cells forming the bundle-sheath are remarkable in Dr. Engelmann's specimens. M. T. M.

GREENHOUSE FLORISTS' FLOWERS.

AZALEAS.—As work is not very pressing at this season an opportunity may well be afforded to train the plants into the required form. Some varieties have a tendency to grow with a very straggling habit, a few strong shoots grow out of bounds and leave the others behind; the strong growths must be restrained by stopping them in the growing season, and by tying them down now. The large pyramid trained plants once so popular are not so often seen at exhibitions, nor are they grown so much, and this is well. The bush form is that which the plants take naturally, and that is the form they should be trained to. The plants trained to single stems with round heads are much admired, but there is a stiff artificial look about them if the growths are tied in too closely: this is a fault in all cases. It is much better to allow the growths to hang loose, merely training them so that the plant has the required shape. Do not let the plants get too dry at the roots; it is a great mistake to let the soil become dusty dry. The plants should be kept very nearly as moist as they are in summer, and see that the soil is moist quite down to the drainage. If there is any trace of live thrips fumigate until they are destroyed. Admit plenty of air in favourable weather; it is best to avoid cutting winds, although cold is not injurious.

BOUVARDIAS.

We have still some flowers in the greenhouse, and should have many more if the plants were put in heat, say a temperature of 55° to 60° at night. The highly coloured varieties, such as *B. elegans*, Hogarth, and *leiantha* are very much darker in the cold weather. The plants that flowered earliest have been placed aside, and the soil will be kept dry; they will do under the stage of a greenhouse if no better place can be obtained for them.

CALCEOLARIAS.

These plants still make rapid growth, and at this season they require all the light that can be afforded



FIG. 14C.—*ABIES AMABILIS*: STERILE BRANCH. (SEE P. 720.)

to them. It is not too late to repot them into the flowering pots. If a choice can be made it is better to put the plants in a pit than in a greenhouse, as they do not like the dry air and excessive ventilation required for flowering plants. If they have to be put in the greenhouse it is necessary to place them near the glass. The leaves must be kept quite free from insect pests, as greenfly is a most determined enemy; if it once gains a footing on the leaves it is hardly possible to form good specimens of the plants. Never use artificial heat where it can be done without; a degree or two of frost does the plants no harm. The plants require as much ventilation as possible, but drying winds blowing on the leaves would check the growth of the plants.

CHINESE PRIMULAS.

These plants are now exceedingly useful for conservatory and greenhouse decoration. The richly coloured flowers will enliven our gardens all through the winter and early spring months. The improvement during the last few years has been very rapid, not so much in the form of the flowers, which has also been improved, but in the colours, which are very varied and in some cases very brilliant. We pot on our large plants into 8-inch pots, and they form very large handsome specimens for flowering in March. The soil must not be heavy: I find they like a small portion of peat mixed with the loam if that is rather heavy. We apply water with a small pot, taking care neither to disturb the soil nor to wet the stems.

CINERARIAS.

It is now a good time to repot the plants into their flowering pots if they are intended to flower in May. Those who are going to exhibit would do well to use 8½-inch pots, the soil should be rather rich, say good rotten turfy loam four parts, one of rotten cow-manure, and one of leaf-mould, with a little sand. The plants must have plenty of room and the leaves should be within 1 foot of the glass. Like the *Calceolaria* they are impatient of a dry atmosphere with artificial heat. This brings thrips and greenfly, besides other ailments. The plants will not stand frost like the *Calceolarias*, indeed they are more easily damaged than *Pelargoniums*. See that they do not suffer for want of water at the roots, as very serious injury is sustained from that cause alone. It is best to fumigate occasionally, and also to dust the leaves with dry flowers of sulphur on the first appearance of mildew.

CHRYSANTHEMUMS.

The bloom has been rather late this year, but now even the latest varieties are in flower, and the main collection is still in good order. Mildew is a very troublesome parasite; it would, perhaps, be difficult to get a large collection into the blooming state without it. Continue to dust the leaves with flowers of sulphur, and keep it off as much as possible. The only work that can be done now is to attend to the plants with water, and to remove decaying flowers before they injure the others. Some time during this month the cuttings must be put in. I prefer to put one in a small 60-sized pot, using light sandy loam. If very large specimen Pompons are desired it is quite necessary to put in the cuttings very early in December. The best way to get large specimens of the large-flowered section is to select old plants that have been grown to produce exhibition blooms. Those that have formed from three to six growths 2 or 3 inches up the stem, are the best. The plants should be taken up, and have nearly all the soil shaken from the roots, and be potted in 6 or 7-inch pots. Place them in cold frames, or on a shelf in the greenhouse. Pompons seldom do well treated in that way; it is best to propagate them from cuttings. Some varieties, including Mrs. Rundle, and its forms of the large flowered section, can be grown into good specimen plants from cuttings put in early.

STAGE AND FANCY PELARGONIUMS.

See that the plants are now potted into their flowering pots if not yet done. They continue to grow all through the winter; there is not much growth, but it is necessary to see that the plants are kept in good health by keeping up a dry, airy atmosphere. If the houses are properly heated and the ventilation perfect, the leaves are not likely to be subject to spot. The growing shoots on the earliest flowering plants must be tied out now, and they must not be bent down too much at once. Rather make two or three tyings. Use a few sticks to get

the centre growths into position. The fancy varieties must also be tied out, but it is better not to use sticks for them. Do not forget to place them at the warmest end of the house, and use rather lighter soil for potting.

ZONAL PELARGONIUMS.

The plants in flower will require a night temperature of 55°, with a rather dry atmosphere, and as much ventilation as possible. We have not the advantage of a hot-water pipe fixed near the roof glass in our house, but the plants are flowering very well, although the individual flowers are not nearly so large as they are at Swanley. The trusses last a long time in a cut state at this season of the year, and it is not necessary to say that they are very useful indeed. The small plants now require very little attention, merely to receive water when the soil is quite dry, and to be kept in a dry, airy house. *J. Douglas, Loxford.*

Forestry.

FARMERS not unfrequently complain that forest trees harbour birds to the serious destruction of their grain crops. This, in many districts, is a well-founded complaint, for I have seen in hundreds of instances the whole of the grain picked out of the heads before it was ripe or could be cut down. By a certain process of reasoning it might perhaps be shown that the complaint should be charged against the birds rather than against the trees, just as we hear it sometimes affirmed that the public-house, and even the drink, are blameless, and that the active agent, man himself, alone is to blame for the black and grim results. The present is not the time, nor this the place, to discuss that subject; but I think no one will challenge the statement that anything and everything is evil, wrong, or sinful, that leads to bad results and sad consequences. If this view be the correct one, then it follows, as certainly as effects follow causes, that trees in our fences, along the roadsides, by the margins of our fields, and anywhere else found, have always an attraction for birds, small or great, vocal or mute.

I saw lately, and no one will wonder, the whole of the rooks of an extensive rookery set afloat by the simple process of cutting down the trees. I am not saying it was a wise or proper thing to do, for that is a subject of discussion not yet exhausted, but I state the fact as illustrative of the connection between things, and their dependence upon each other. Practically putting it, then, are we to sacrifice our trees, our birds, our music, all for the sake of a few bushels, or it may be quarters, or tens of quarters, of grain? The answer and response will simply be according to the taste and liking of the farmer who gives it. The graminarian will say, Cut down the trees, and preserve the grain; the admirer of the landscape beauty will say, Better sacrifice grain than deface the landscape beauty; and the lover of the music of the grove, together with the lover and admirer of Nature's works, will say, Of all the sacrifices to be made, the least is that of sparing a mouthful of grain for our choristers, and the perch and tithe for the rook, with his sable robe; for although he takes his tithe of grain, there are more take tithe than he, and certainly as little for it in but too many instances.

"I never could understand," said a simple-minded but practical good old farmer, "why the headlands and margins of my fields adjoining plantations were always so poor, and the crops so deficient, compared with the interior and other parts of the fields, notwithstanding they were equally and liberally manured like all the rest of the farm, and in addition had the droppings and soil of the stock while grazing in the field." The explanation of the mystery was this: the roots of the trees—which invariably extend beyond the furthest extremities of the branches wherever they find freedom and food—were the subterranean robbers, doing their work by stealth and beyond observation. The marginal trees of a wood or plantation are frequently twice as large as the common crop, just because they have more freedom, and are better nourished, as in this case, by the farmer's liberal hand. This is indeed and truly another farmer's grievance, and the question once more is, What can be done to remedy the evil? This is, fortunately, one of the few that may be, if not cured, at least prevented by well-timed and judicious shortening of the landward boughs and branches.

This work requires to be attended to in the early

age of the plantation, at which stage, by skillfully shortening the branches from time to time, the spread of the roots is prevented, as the roots and branches extend much in the same line, and to the same extent.

In dealing with old or middle-aged trees which have this defect, care should be taken not to cut within several feet of the bole of the tree, but at such a distance from it, and in such a way, that the sap may flow into minor and secondary branches, thereby preserving and maintaining the vitality of the bough so pruned or shortened.

It is sometimes necessary to cut a trench like a drain alongside and near to the fence sufficiently deep to go below the tree-roots, and cut them with a pickaxe or other implement, not only severing the roots, great and small, but in the process cutting a piece—say a foot long—clean out, otherwise in a short time they will again adhere, and continue the growth after being cut. *C. Y. Michie, Cullen House, Cullen, Banffshire, Nov. 29.*

Notices of Books.

Tit-Bits for the Table. *Excellent Recipes collected during Thirty Years by a Lady, with Bills of Fare for Public and Private Dinners, and Useful Hints for Young Housewives.* Edmonston & Co., Ludgate Circus.

This little book recommends itself on the title-page! It contains directions for making various "tit-bits," which will, no doubt, prove unexceptionable to people possessing faultless digestions, and who do not object to using a knuckle of veal (4 or 5 lb. in weight), half a pint of cream, four eggs, sweet almonds, &c., for a soup! but we cannot recommend the recipes for economical households. See the following, for instance:—"Take fifty oysters, blanch them but do not let them boil, strain them through a sieve, and save the liquor [certainly!]; put ½ lb. of butter into a stewpan, when it is melted add 6 oz. of flour, stir it over the fire for a few minutes, add the liquor from the oysters, two quarts [!] of veal stock, one quart of new milk, season with salt, peppercorns, a little Cayenne pepper, a blade of mace, Harvey sauce and essence of anchovies, a tablespoonful of each [!] [poor stuff, if it requires so much flavouring], strain it, let it boil ten minutes, put the oysters into the tureen with a gill of cream, and pour the boiling soup over them." A "tit-bit" possibly, but such recipes mislead "young housekeepers" with small establishments to manage, and we presume the book is intended for the guidance of these, since the "household hints" are expressly stated to be for a residence containing a dining-room, drawing-room, and four bed-rooms, with a kitchen and scullery. The household hints we cannot praise as either novel or very useful. We do not think, for instance, that many people would care to have their dining-room table "oiled and rubbed" every Monday morning after breakfast. The other directions are merely to the effect that the hall should be washed and the bed-rooms swept, which even the "Dora" class of housekeepers know, it is to be hoped, in these "advanced" and advancing days. The lists of dishes served at past "public dinners"—the annual dinner of the Edinburgh Burns Club, the Scottish Conservative Club, the Worshipful Company of Blacksmiths, the Society of High Constables, &c., are not likely to prove very interesting, except to the minority who read "cookery books" for amusement, or to see, when restricted to Barmecide feasts, what they would like to have for their dinners!

A Smaller Manual of Modern Geography.

By John Richardson, M.A. (Murray.)

A very condensed account of geographical facts, physical and political. It appears to us to be better suited for reference than for ordinary school use. In any case, a very large amount of useful and varied information is contained in something fewer than 300 pages. A copious index renders the book available for general use.

The British Moss Flora.—Dr. Braithwaite (303, Clapham Road, London) has issued the third part of his exhaustive publication on British Mosses, to which we have before alluded. Text and illustrations are alike excellent.

Garden Operations.

KITCHEN GARDEN.

The most important operations to be effected at this season are chiefly those of a somewhat laborious character, as manuring, trenching, digging, &c., and the execution of these will mainly depend on the prevailing state of the weather. A complete clearing up of fallen leaves should take place, and all available surfaces of ground, as those beneath trees or round the margins of walks and elsewhere, should be pricked over to bury all surface weeds and to add to the general effect. We have done a considerable portion of manuring here, choosing the most decomposed for the Asparagus beds, on which it has been laid about 3 inches thick; this will be covered with about 3 inches of soil taken from the surface in the alleys and be allowed to remain so until the period for forking over the beds in spring. The alleys also receive a similar dressing of good manure, which is dug in and well mixed with the soil to fit it for the surface-dressing of the roots on another occasion.

It is customary with me, in the early part of December, to make a sowing of early Peas out-of-doors, between the lines of the main crop of Lettuce plants for spring use, which are set so as to allow the Peas to stand 6 feet asunder. Under any circumstance this crop should have a warm sheltered position, with rich friable soil to grow in. Last year's results with this crop showed that Harbinger comes into bearing nearly a week earlier than William I. and other growers of moderate height; we shall now, therefore, sow this kind more extensively. Now is also a proper time to make a sowing of the dwarf section of Peas, appropriate places for which are to be found at the base of south or east walls where, with a little care, a few dishes of excellent Peas are to be obtained prior to those coming in which are more exposed. Laxton's Unique and Little Gem are real good sorts for this purpose. Early crops of Peas require careful attention. As soon as they appear immediate steps should be taken to protect them from the attacks of birds, slugs, &c.; they should, therefore, be stuck with small leafy twigs of Hornbeam or Beech. This affords excellent protection against the effects of cold winds. They should also be dusted over thinly with pure wood-ashes occasionally, and in other respects be well cared for as the requirements may need. A planting of Longpod Beans should be made for an early crop. Keep the ground about crops of Lettuce, Cabbage, Spinach, Onions, &c., stirred occasionally at suitable times, and make up defective plants with others from the store beds. In the event of frost coming and abiding for any length of time it will be prudent to be provided with a supply of Turnips, Artichokes, Horse Radish, &c., on hand. Seakale roots ought also to be provided.

FORCING DEPARTMENT.—Much time and labour will be taken up here if good supplies of Asparagus, Rhubarb, Mushrooms and Seakale are to be insured in regular succession. The scarcity of Apples will doubtless increase the demand for Rhubarb. Seakale also, which is the most useful forced vegetable of all, should be had in quantity. Roots of this should therefore be introduced into the forcing place about every ten days or so, as may be required. Successional lots of Mint, Tarragon, and Chicory, also Mustard and Cress and French Beans, will require like attention. Keep up a store of fermenting materials fit for immediate use. As pits or frames become empty the old decayed stuff should be taken out and be refilled with the warmed material, in readiness for coming requirements in the way of Asparagus, French Beans, Potatoes, Carrots, Radishes, &c. Potato sets for an early crop should now be introduced into a moderate heat.

COLD FRAMES.—The inmates of these useful appliances require perfect ventilation whenever the weather will admit of it. Dwarf Peas should be sown at once in such conveniences at about 18 inches apart. This method of cultivation is a most commendable one, especially in those places which are naturally low and moist. In like manner it may also be recommended for a crop of Potatoes, to come in just prior to those from early borders out-of-doors, for which purpose the sets should be planted now, at about 18 inches apart. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—Directions contained in the last Calendar will apply to the early house until the blossom-buds begin to swell, when a slight increase in the temperature may be indulged in by day, particularly when the weather is mild and gleamy, as it is at the present time, with the thermometer marking 50° in the open air, and a soft wind blowing from the south. Under these favourable conditions the young aspirant to the production of ripe Peaches in May, by throwing open the ventilators and gently warming the pipes, will have no difficulty in

raising his house to the maximum heat of 55° or perhaps 60° without in any way distressing or over-exciting the trees, but he must adhere to the safe practice of shutting the valves at night and allowing the temperature to descend to a point ranging betwixt 45° and 50°, or even a few degrees lower when external changes render it advisable. The Peach being so impatient of dry fire-heat gentle syringing backwards and forwards with tepid water is of great importance, and a little extra attention to the frequent turning of and additions to the fermenting material will be well repaid by the gentle warmth imparted to the surface roots and the genial humidity of the atmosphere. Where the roots are confined to the inside borders the latter should be examined where most likely to become dry, by boring down to the drainage, and in the event of any part of the soil having escaped previous waterings, no time must be lost in getting it properly moistened with tepid water a few degrees warmer than the maximum of the house. It sometimes happens that the compost during the resting period shrinks from the boundary walls, and the water applied to the surface escapes without entering the solid, and as a matter of course the most important part of the border. To prevent this the extremities should be well rammed before the house is closed for forcing. Success or failure frequently depend upon the attention that is paid to details, one of the most important in Peach culture being liberal supplies of water to the roots. Follow up pruning and cleansing in succession-houses intended to be closed for forcing about Christmas. Lay in the wood sufficiently thin to admit of the full development of the foliage, as fine fruit of good colour and flavour cannot be obtained where the young growths and leaves are deprived of the benefit of light and air. Keep all doors and ventilators in late houses constantly open during mild weather, particularly where fire-heat has not been provided for protecting the blossoms in the spring. In many places these structures are filled with plants, and in the anxiety to preserve the latter the lights are frequently closed at night when they should be left open; imperceptibly, but surely, the blossom-buds swell and expand early, often to be injured or cut off by spring frosts. *W. Coleman, Eastnor.*

ORCHARD-HOUSE.

It may not be out of place to offer a remark on the treatment of the trees inside. Many persons do not place them out-of-doors, and if they are left in the house there may be scale upon them or even bug, which is worse. I would strongly advise care in using any washes too strong, for Gishurst compound, soft-soap, and tobacco-water with sulphur, though useful and quite harmless to the buds when used of sufficient strength, yet if used too strong will cause the flower-buds to drop off, and the young wood may even be killed. I do not know of any better wash than soft-soap itself. Dissolve 3 oz. in a gallon of rain-water, then take sponge and wash all the wood thoroughly; the young wood must be done very carefully, taking care not to injure the flower-buds. After this has been done add 3 oz. of flowers of sulphur to the same quantity of soft-soapy water, and apply it to the old wood with a soft brush. When the trees are inside in pots, the soil must not be allowed to become too dry. If artificial heat is used to exclude frost, they will probably dry up at the roots, and will require a thorough watering two or three times during the winter; those close to the hot-water pipes will require careful watching. The first week of the present month is a very good time to start a house for early fruit; but it must be started very gently indeed. If the trees were forced early last season, the buds will be very prominent. In very cold weather 40° at night will be a high enough temperature, and about 5° more in mild weather. The Strawberry plants on the shelves should be arranged in the order of their ripening, the earliest in the sunniest part of the house, and following on with the later varieties. Pioneer, recommended as one of the early varieties, would not do with us, being so liable to mildew. Be very cautious with the syringe thus early in the forcing season; the trees might be dewed over on the mornings of fine days, but not at night at present. *J. Douglas, Loxford.*

PLANT HOUSES.

ORCHIDS.—Where a nice collection of Masdevallias are grown they form a very prominent feature in the cool-house. Their dark, leathery foliage, unaccompanied by pseudobulbs, make an excellent contrast to the many lighter shades of green possessed by the various species of Odontoglossums, Oncidium, and Epidendrums. The summer-flowering M. Harryana, of which two distinct types are under cultivation, is a host in itself. Perhaps of the two sections, sanguinea and corulea, the former finds the most admirers; for besides M. sanguinea and that excellent variety from the Meadowbank collection known as the Bull's Blood, others have turned up here and there of good shape, and possessing the texture and crimson colour of the lip of *Laelia elegans prasiata*, and, moreover, not in the least wanting in size. A

small plant of such a variety was exhibited in a group for competition (amateurs) at the last June show of the Royal Botanic Society, Regent's Park. It was only a small Orchid, but through it some scores of Orchid owners and growers broke the Tenth Commandment. Of the *corulea* section some collections can boast of at least three splendid forms, named respectively *violacea*, *corulescens*, and *purpurata*. There is no authority that I am aware of for either of these three names, and from the fact that either of the above varieties may be found in some collections under very different ones, purchasers would do well to buy this section of Masdevallias in flower only, or, from no fault of the vendors, they might purchase the same plant, under different names, over and over again. Taking it for granted that there are three first-class varieties at least of each section, there yet remains a whole host of intermediate forms where the two colours are so blended and the shape so varying that one is puzzled to know what to call them, or, indeed, to know where to draw the line so as to divide M. Harryana from M. Lindeni; all, however, are well worth growing where room is no object, and it is certain that even the inferior varieties will give every satisfaction to both owner and grower until their minds are disturbed by seeing better ones. The grand M. Veitchiana is also, when properly handled, a summer-flowering variety, indeed nothing less than the clear light of early summer will bring the flowers of this species to perfection, as regards depth and brilliance of colour; those flowers that would open in the winter months should be pinched off, or perhaps I shall be better understood if I merely state that here we expect each plant of M. Veitchiana to flower freely during May and June, and afterwards we encourage it to grow by keeping all solitary flowers picked off. There are no bad varieties of M. Veitchiana, but the very best ones quickly deteriorate if the plants are allowed to flower out of season, or from poor root-action. The best form of the orange-scarlet M. ignea is a very desirable Orchid, flowering as it does in the winter months and remaining long in perfection. The poor varieties of this plant, which are far too common, are not worth house-room, and the same may be said of all, but the deep coloured form of M. amabilis. M. militaris, which will be found in most collections under the name of M. coccinea, has short very dark leaves, and a flower equal to the very best M. ignea. M. polysticta, which will now be throwing up flower freely, lacks brilliant colours, but each spike carries several of its spider-like flowers, and altogether makes a pretty object. M. Trochilus, M. Peristeria, and M. elephanticeps, are three rare species, grown more for the singularity and quaintness of their blossoms than anything else. The flowers of the first named are very large when the plant is strongly grown. M. macrura, now flowering, is the giant of them all having leaves more like a Cattleya than a Masdevallia, and flowers of great boldness and size to match, and of a pleasing colour. Contrasting greatly in growth with this giant are those five charming Masdevallias, Estrade, Shuttleworthii, ionocharis, xanthina, and Wagnerii. A nice tuft of either of these dwarfs smothered with their small pretty flowers, forms a lovely object. These should all be grown with their leaves almost touching the roof-glass, and must on no account ever be allowed to get dry at the root. There yet remains to be mentioned the yellow-flowered M. Davisii, which is good in every respect, and very distinct from all the others. It will open a few of its rich golden flowers now, but its main crop appears in the spring.

The whole of the Masdevallias mentioned are cool, but not cold-house plants. I have heard of them standing uninjured in a house with the inside temperature at 21°, or 11° of frost, and I have had myself a plant of M. coriacea planted in a sheltered corner out-of-doors that stood apparently uninjured several slight frosts, but it totally collapsed under the influence of 7° of frost. Nevertheless, those who wish to grow their Masdevallias perfectly free from black marks, to flower them profusely each year, and at the same time to rapidly extend small bits into large masses, will do well never to let them be lower than 45°. The nearer the winter night temperature is to 50° the better, with an advance of 5° by day; but during very cold weather, when much fire-heat has to be used, the lower temperature is best. A chink of air should nearly always be on this house, and when the external air stands above 45° ventilate freely. Shade from all sunshine, keep a moist atmosphere by damping down two or three times a-day, and never let the plants get the least dry at the roots. The best two months for potting are September and February. Use equal parts of peat and sphagnum for the roots to run in, and see that the pots are two-thirds full of drainage. Pot moderately firm, but so that the water will rush rapidly through the whole mass. Masdevallias make many roots, and require accordingly a good share of pot-room. Other Masdevallias which are perfectly at home in this house through the summer, but now require a little more heat, are M. tovarensis, M. Chimera and its varieties, Wallisii and Backhouseana, M. nycteria, M. bella, M. vespertilio, M. psittacina, and M. radiosa. *J. C. Snyers, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Dec. 6	Sale of Lilies and other Bulbs, at Stevens' Rooms.
TUESDAY, Dec. 7	Sale of Dutch Bulbs, at the Auction Mart, by Frotheroe & Morris.
WEDNESDAY, Dec. 8	Sale of Pottery, at Stevens' Rooms.
THURSDAY, Dec. 9	Sale of Trees, Plants, and Bulbs, at Stevens' Rooms.
FRIDAY, Dec. 10	Sale of Imported Orchids, at Stevens' Rooms.
SATURDAY, Dec. 11	Sale of Plants and Bulbs, at Stevens' Rooms.

A SHORT article on the subject of GERMAN GARDENERS IN ENGLAND AND ENGLISH GARDENERS IN GERMANY appeared at p. 727 of our last volume, and this was followed by other communications of the same nature, notably by one from Mr. D. T. FISH, p. 791. These have been translated and republished with some comments in the *Deutsche Gärtner-Zeitung*. Some of these comments deserve our notice. With regard to the statement that young English gardeners go abroad very little, because it is difficult for them to obtain employment, whereby they might earn sufficient to live upon, our contemporary says no fears need be entertained on this point, for numerous Scandinavian and some Swiss and French gardeners go to Germany for improvement, and competent men have no difficulty in finding situations where they can remain as long as it answers their purpose. It is further stated that many foreigners have taken situations or established remunerative businesses in Germany. The fact that there are numerous German gardeners employed in Belgium and France is adduced as a proof that English gardeners likewise could find employment in those countries. We doubt not that an energetic young English gardener would succeed in finding employment in any of the countries named, and we are aware that a few English gardeners do go abroad; but are we to understand that it is as easy for Englishmen to find employment in Germany as it is for Germans in this country? We should rejoice to know that this was so. Independently of the practical advantages attending travel, the social intercourse of persons of different nationalities tends to remove prejudices and false impressions, and often begets friendships of life-long duration. Such results are worth great sacrifices, and we hope the time has arrived when our young men will go abroad much more than has hitherto been the case. At the same time, in spite of the friendly invitation of the writer of the comments in question to Englishmen "to leave their insular home with good courage, as they will find not only is there something to be learnt abroad, but that they can also live there," we are still of opinion that it is difficult for Englishmen to find employment in good establishments abroad. Our contemporary urges that as German gardeners go abroad by hundreds, and there are at the present time at least 150 in the Seine and Marne and Loire departments of France alone, that a movement in the opposite direction is equally practicable. Without entering into a discussion of the matter, we must say that we should have supposed the contrary, because, if Germany can spare hundreds of gardeners at a time, receiving relatively few foreigners to fill their places, the supply must be in excess of the home demand. We will explain what we mean by the facilities being greater for a German in England than for an Englishman in Germany. The number and size of the horticultural trading establishments of the first class, and the number of large public and private gardens in the United Kingdom, is proportionately larger than in Germany; so that, other things being equal even, there is a better chance for the German. And, as a matter of fact, German and other foreigners are taken on the staff of gardeners in the gardens of the Royal Horticultural Society at Chiswick, in the Royal

Botanic Gardens, Kew, in the Royal Gardens at Windsor, and in most of the large horticultural establishments in London and the provinces. Generally speaking, the kind of work they are called upon to perform is agreeable, and the amount is not excessive. Can our contemporaries assure us that such advantages await Englishmen in Germany save in very few instances? One other point we will notice. Objection is taken to Mr. FISH's remark that many young Germans expatriate themselves to escape military service; and it is stated that the number of such "cowards" is relatively so small as not to be worth considering in the total that present themselves for service. It is not necessarily an act of cowardice to evade devoting three of the best years of one's life to military duties, and most of the men who shirk the service would doubtless willingly fight for their country in case of need. However, these are mere collateral questions. We wish to inspire our young men with the desire to travel, and make the acquaintance of the best of their foreign colleagues in their own countries.

— THE NEILL PRIZE.—The Council of the Royal Caledonian Horticultural Society have awarded the NEILL Prize for the biennial period, 1878-80, to Mr. DAVID THOMSON, gardener to the Duke of Buccleuch, Drumlanrig, as a distinguished horticulturist.

— THE FIRST COMMISSIONER OF WORKS.—Mr. GEORGE J. SHAW LEFEVRE, M.P., has accepted the office of First Commissioner of Works, in place of the Right Hon. W. P. ADAM. He will be succeeded at the Admiralty by Mr. G. O. TREVELYAN, M.P.

— DESTRUCTION OF FRUIT TREES IN UNTERFRANKEN.—From published statistics that part of Bavaria called Unterfranken suffered severely from the hard winter. The loss is recorded of 209,400 Apple trees, 48,471 Pear trees, 13,922 Walnut trees, 34,860 Cherry trees, 1,174,500 Quetsche Plums, 21,185 other kinds of Plum trees, and 2,790,000 Grape Vines. It is estimated that the total damage amounts to upwards of a million sterling.

— FLOWERS FOR THE SICK AND NEEDY.—A good deal of true sympathy has been shown in some towns by the collection and distribution of flowers, evergreens, Mosses, &c., among the inmates of hospitals, &c. The good people of Hull were among the earliest to practise this form of charity, and a report of their proceedings for the last four years is before us, which might serve as a guide to those desirous of organising similar good work. PLAXTON & Co., Hull, are the publishers.

— PRESERVATION OF FLOWERS.—According to the *Illustration Horticole*, Dr. MIERGUES has adopted a plan for preserving flowers in a fresh state for long periods. Some paraffin is melted in a water bath, and the flower dipped in the melted substance. When taken out the flower is rapidly rotated, so as to get rid of the superfluous paraffin, and to separate the petals one from the other.

— THE COLORADO BEETLE.—The *American Entomologist* quotes from another journal the statement that lately there was such a swarm of Potato bugs on the Connecticut River Railroad, between South Ferry and Holyoke, that it was with difficulty the locomotive could draw the train through them. The crushed insects made the rails very slippery, causing the wheels of the engine to slide.

— YEAST AS AN INSECTICIDE.—According to the *American Entomologist*, Prof. PRENTISS comes to the conclusion, as the result of his experiments, that yeast cannot be regarded as a reliable remedy against such insects as commonly affect plants cultivated in greenhouses, rooms, or parlours.

— BROWALLIA ELATA.—There is at present a very large number of plants of the pretty blue *Browallia elata* in flower at the Royal Nurseries, Slough. They have been grown from seeds sown in July, and each plant is in a 48-sized pot. They are really very

beautiful, and exceedingly valuable for cutting from. The flowers are of various shades of blue, and some come white, but the white varieties are destroyed. They are easily cultivated, and grow out-of-doors in the summer, succeeding best in sandy soil. It is a Peruvian plant of the natural order Scrophulariaceæ, introduced so long ago as 1768.

— NEW CHRYSANTHEMUMS.—Mr. BULL has a very pleasing display of Chrysanthemums in his show house at Chelsea, where a few days ago we also saw some new Japanese varieties, which, as novelties in this family are not over plentiful this year, may as well be recorded. The first we have to mention—Madame Clemence Andiguer—is a great beauty, being very large and very full, the petals strap-shaped and flat, and the colour pink with a white centre. It appears to be very distinct, and should prove to be one of the finest of exhibition flowers. To-kio is remarkable for its very bright colour—a lustrous scarlet with orange centre. The flowers are of medium size, and the habit of the plant neat—qualities which render it a very desirable sort to grow for general decoration. Marguerite Monarch has broad strap-shaped petals, which are creamy-yellow beneath and ruby-red above; the flowers large and full, and very attractive. M. Rieux, a fine orange-coloured flower, with much divided petals, is very pretty; and Madame Rieux, which may be described as a Japanese Pompon, is quite a gem, the flowers being symmetrical in outline and very full, the petals lilac on the upper surface, white at the back, and toothed at the apex. Mons. Brunet is a large, white or bluish-white flower, with bold flat petals; and Parasol is a good orange-scarlet flower, with broad petals, incurving towards the centre. Madame Emile Dufour, rose-pink, with orange centre, has long, twisted petals; and M. Bonamy Ainé is a pretty little flower that should be grown for cutting, the flowers being lilac in colour, very close, and distinct. Lovers of the pretty and most useful Pompon varieties should make a note of Marie Crozat—a perfect gem in shape, with claret-coloured petals, laced with white: it is a little beauty.

— THE GARDENIA.—There is no flower in such universal demand as the Gardenia. Before all white flowers—the Camellia, Eucharis, or any other choice forms—the Gardenia is preferred. The petals are of the purest white, large, but not disproportionately so; handsome and full, and up through the fine pores of the scented petals there is exhaled a perfume so rich as to be scarcely rivalled by that of any other flower. At the present moment Gardenias are commanding high prices, for it is the season of the year when they are scarce. A house of good Gardenias is just now a possession of great value.

— LETTUCE IN WINTER.—The question was put a few days ago, What is the price of good Cos Lettuces in the market? and the answer was that good examples with full hearts were fetching 1s. 6d. each. Small Cabbage Lettuces were worth about 2s. to 2s. 6d. per dozen. Happy should he be who has a good supply of Lettuce of the Cos varieties. The best for winter work is unquestionably a strain known as the Hardy Winter White Cos, when it can be had true. Fifteen years or so ago a very fine type of this was brought into Covent Garden Market, and no doubt the growers have it now, but they are naturally conservative of a good thing, and save enough seed only for present wants. The Stone Tennis-ball Lettuce was then one of the best for early winter work, and as there are now an abundance of Tom Thumb and other small Lettuces, it, if not retained in catalogues, can still be found under a more recent designation. At this time of the year Lettuces in frames should have an abundance of air to keep them short and stocky, and induce them to heart-in well. Slugs are the arch enemy of the grower, and their fondness for the soft succulent leaves is proverbial.

— NEW GERMAN HORTICULTURAL PERIODICALS.—We have received the first numbers of two new horticultural periodicals in the German language—namely, *Zeitschrift des Schweizerischen Gartenbauvereins*, edited by G. L. MEYER, and *Deutscher Garten*, edited by Dr. C. BOLLE. They both make a brave start, and we wish them success; but in Germany, and other parts of the Continent, this class of literature has to depend for funds almost entirely upon the number of subscribers, unassisted by adver-

tisements. This renders the Editor's task difficult, and if he succeeds in maintaining the status aimed at he will deserve congratulation. *The Deutscher Garten* especially is well printed on good paper, and contains a coloured figure of *Incarvillea Koopmanni*, besides a number of elegant woodcuts. Mr. MEYER's journal is of more modest pretensions.

— **BOTTOM-HEAT FOR STOVE PLANTS.**—Gardeners know well the advantage of bottom-heat for stove-plants, either in the form of a bed of tan or Oak leaves. The same object is attained by hot-water pipes under a bed of cocoa-nut fibre refuse. In a long pit in Mr. TURNER's nursery one bed is heated and the other is not. Both are filled with *Poinsettias*, and on the heated side the leaves are dark green, and

Germany, and as it blossoms in September it will be a welcome acquisition.

— **DECIDUOUS TREES.**—It seems ungenerous to appear joyful now that all the leaves have fallen; but, however beautiful leaves are when on the trees, it must be admitted that in the stage of decay they are a sad nuisance. This year the leaves have been long in falling, and their falling has been to the gardener a source of great, because lengthened, vexation; the fierce equinoctial gales of the preceding weeks, however, made an effectual clearance, not only from off the trees, but also from the surface of the earth, for myriads seem to have been swept into a leafy limbo never more to be seen. If trees have charms when clothed in foliage, they have great beauties when

its ripening warmth, makes the open field to glow with burning heat, the leafy trees interpose their grateful shade for the protection of man and beast; and then in autumn, having aided in the production of the luscious and acceptable fruits, the ripened foliage changes to many-hued tints, that for the time are beautiful beyond compare. Few of us, we think, would care to forego these pleasures for the sole one of eternal summer and perpetual leafage.

— **CONVENTIONALISM IN ART.**—Those who would care to see how a plant can be de-naturalised and so distorted that its lineaments can scarcely be traced should see an illustration given in last week's *Builder* of *Masdevallia Lindenii* and of certain "decorative suggestions" founded upon it. The

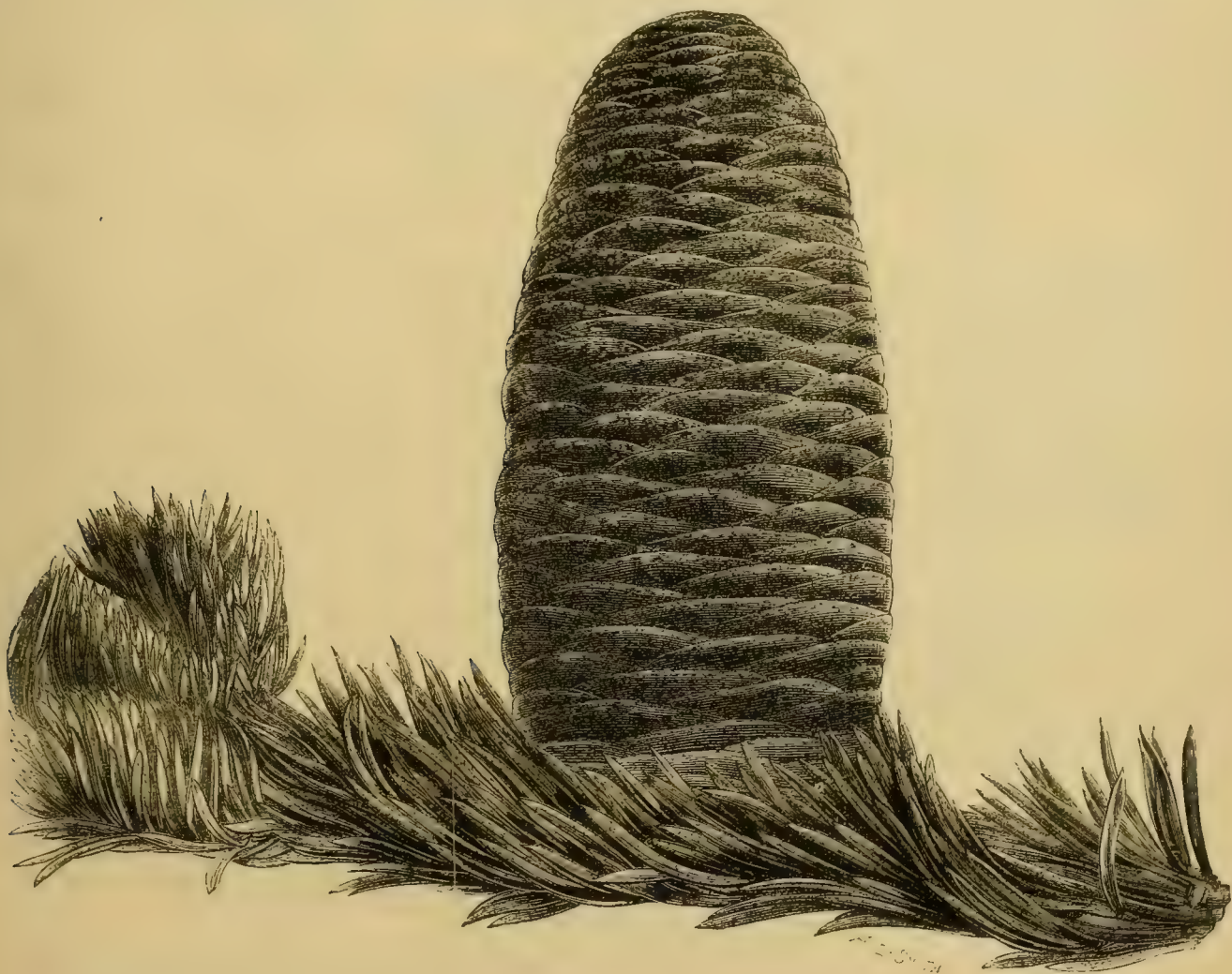


FIG. 141.—*ABIES AMABILIS*: CONE DARK PURPLE, SLIGHTLY REDUCED. (SEE P. 720.)

the plants making strong growth; on the other side the growth is not at all satisfactory, and the leaves have not the same healthy hue. No better example could be given of the advantages of one system of culture over the other.

— **INCARVILLEA KOOPMANNI.**—Not long ago we recorded the publication of a second species of *Incarvillea*, *I. olgae*, and now a third has been described and figured in the *Deutscher Garten*. It is an erect, branched, glabrous shrub, about a yard high, with pinnatifid leaves and terminal racemes of trumpet-shaped, purplish pink-and-white flowers, about the size of those of *Amphicome arguta*, an allied plant from North India. *Incarvillea Koopmanni* is a native of Central Asia, having been discovered at Margilan, not far from Taschkend, by a Mr. KOOPMANN. It appears to be quite hardy in North

divested of their summer clothing, and few things in Nature exhibit more elegance, lightness, and delicacy of construction, than the spray of our deciduous trees. But the great charm of deciduous trees is found in the elements of variety they introduce into the garden and our landscape scenery. A country of eternal greenery, a season of eternal leaf, must indeed prove monotonous to the admirers of Nature in all her aspects. That infliction our climate withholds, and thus we have the winter months of leafless time, when sometimes in the snow and hoar frost the trees may be said to rival in marvellous beauty all that fairy story can describe. In the spring the gradual expansion from dormant bud to broadened and beautiful leafage is a period in Nature's annual courses of which poets may sing for ever, and never exhaust the theme. Summer, with all its dense and luxuriant foliage, is indeed a glorious time; when the meridian sun, pouring down

"evolution" is so very far removed from its starting point that all resemblance is lost. In previous numbers similar illustrations have been given from various *Aloes*, *Agaves*, and other plants of architectonic character, and with much success, as the artist had only to follow Nature's lines. In the present case he has let his imagination run riot. We do not say the result is absolutely displeasing, but the identity of the plant has gone past all recognition, and with it all the significance attaching to its singular form and brilliant colouring. Can this be Art?

— **BEGONIA FOLIOSA.**—Although this species is certainly not worth growing for the sake of its small whitish flowers, it is a charming and graceful foliage plant for mixing with more showy flowering things. The small, crowded, distichous, three-lobed leaves are dark glossy green, and the somewhat large

stipules are silvery-white. In the *Refugium Botanicum* the late Mr. W. W. SAUNDERS thus speaks of it:—"I have no Begonia, among a very large number of species which I cultivate, with the same gracefully pendent habit as the species now figured. The flowers are insignificant, but the plant, when grown in shallow pots and suspended in a moist warm atmosphere, gives out numerous drooping leafy branches, and is striking for its elegant shape." In the T range at Kew there are several well grown examples. It is a native of Columbia.

— THE BRAZILIAN TURBAN GOURD AS A WINTER FOOD FOR ANIMALS.—This is described as one of the most useful of the Gourds, and an analysis of it is given in the *Jahresbericht der Königlichen Central-Thierarzneischule*. The ripe flesh separated from the seeds and placentas contains 11.47 per cent. of dry substance and 88.53 of water. It is easily kept from one to two months after it is ripe; and if cut into slices about an inch thick and hung up it quickly dries into a hard mass, which is easily reduced to a powder that may be kept for years without injury. This powder is regarded as an excellent substance to mix with other food for horses, cattle, sheep, &c. It contains 11.92 per cent. of water. The dry substance obtained at a temperature of 230° Fahr. exhibited the following composition:—

Protein compounds	10.87 per cent.
Fat	1.64 "
Non-nitrogenous compounds ..	72.75 "
Coarse fibre	9.39 "
Ash	5.35 "
100.00	

The ash contains 22.1 per cent. of phosphoric acid.

— IPOMŒA HORSFALLIÆ.—Soon after the introduction of this charming climber, nearly fifty years ago, Sir JOSEPH PAXTON spoke of it as unquestionably the most deserving of cultivation of twining plants for the stove. In one of the warm compartments of the T range at Kew there is a fine plant now blooming freely. The stalked quinate dark green leaves are somewhat like those of the common Virginian creeper, and the compound many-flowered cymes of very rich deep glossy rose-coloured blossoms are very handsome. It remains a long time in bloom, and is undoubtedly a most desirable plant for the rafters of the stove.

— RHUS TOXICODENDRON NATURALISED IN WEIMAR.—Professor HAUSSKNECHT recorded a short time ago in the *Weimarsche Zeitung* the fact of this poisonous shrub having established itself by the roadside near Weimar. It is unknown how it was introduced, but it was spreading rapidly by means of its suckers. Prof. HAUSSKNECHT recommended that it should be at once carefully eradicated, to prevent the possibility of an accident.

— SIPHOCAMPYLUS HUMBOLDTIANUS.—A stove shrub from Peru, with alternate, ovate-acuminate, minutely-toothed, dark green leaves; the beautiful bright scarlet drooping blossoms are about 2 inches long, the violet-purple anthers contrasting remarkably with the golden-orange of the inside of the corollatube. This charming Lobeliad is now blooming at Kew.

— CULTIVATION OF THE SOJA BEAN IN GERMANY.—A series of experiments in Bavaria gives such results as to discourage further attempts to acclimatise this legume. From a report on these experiments in the *Zeitschrift des landwirthschaftlichen Vereins* of Bavaria, it appears that it may yield a fair crop in exceptionally favourable years, but the climate generally is not suitable.

— ERANTHEMUM ALBIFLORUM.—This Acanthad, introduced from Bahia about a quarter of a century ago—may now be seen in flower at Kew. It has large, handsome dark green, sessile leaves and racemose panicles of snowy-white flowers.

— BRISTOL CHANNEL OBSERVATORY.—Mr. E. J. LOWE, whose meteorological observations at Highbury, near Nottingham, have been of so much value for the last forty years, has lately purchased an estate near Chepstow, where he proposes to establish an observatory, he himself undertaking to furnish the site, and building materials, and to endow the observatory with his collections of instruments, books, and papers, provided a fund can be raised to pay for the

erection of the building and the payment of a small staff of assistants whose labours Mr. LOWE would himself gratuitously supervise. The site is said to be favourable for the purpose, and as great practical benefits are likely to accrue to the Bristol shippers, the matter will, we hope, be taken up warmly in that city and the neighbourhood.

— BOMAREA OLIGANTHA.—To Herr MAX LEICHTLIN, of Baden-Baden, belongs the credit of first introducing and flowering this pretty climber, some three or four years ago. It was first described by Mr. BAKER in the *Gardeners' Chronicle* for 1877, p. 648; but had that gentleman known the plant in its present state, it is unlikely that it would have received its present specific name. Far from being "few-flowered" some of the heads on the Kew plant contain nearly a score flowers, and the individual ones, too, are somewhat larger than described by Mr. BAKER. The perianth is regularly funnel-shaped—the outer segments being reddish and the inner ones yellow, spotted with claret-brown.

— FOOL'S PARSLEY.—This plant (*Ethusa Cynapium*), according to Dr. JOHN HARLEY, has been maligned. Almost all the books from olden times to the present represent the plant as a dangerous poison. In so doing they have copied from one another without verifying facts. Dr. HARLEY was unable to find any confirmatory evidence, while from his own personal experience he has been led to the conclusion that it is perfectly harmless.

— SOLANUM VENUSTUM.—A graceful and free-flowering warm-house climber, with alternate bright green leaves, the lower ones and those of the inflorescence pinnately trifoliate, the other ovate-lanceolate, entire. The flowers, which are of a delicate pale mauve colour, measure about two-thirds of an inch in diameter, and are produced abundantly in drooping, branched panicles, sometimes 6 inches in length. A native of Brazil. There is a good specimen now in flower in the Palm-house at Kew.

— MR. C. M. HOVEY.—The name of this gentleman is well known on this side of the Atlantic as that of an ardent and diligent horticulturist. In a country where, when Mr. HOVEY began life, horticulture had made but little advance, the work done by him and his associates seems, and is indeed great. For thirty years or more he edited the *Horticultural Magazine*, he was one of the founders of the Massachusetts Horticultural Society, and was the raiser of new Strawberries, Camellias—only last week we had occasion to mention the *Salvia* which bears his name—and other plants, which have well held their own even in the race with later comers. In his honour a dinner was held on October 30 at Boston. Apart from the well-deserved honour to the man, the retrospect which was traced at the banquet by Mr. HOVEY and Colonel WILDER was of great interest. After alluding to his literary labours, Mr. HOVEY, in returning thanks for the compliment paid to him, adverted to his introductions in the following terms:—"As regards the introduction of new fruits, I have ever esteemed it a great honour to have first made known the superiority of such varieties as the Sheldon and Dana's Hovey Pears, the Hovey Strawberry and the Diana and Concord Grapes. The Strawberry, the pet of my boyhood days, which you all know was my first attempt at hybridisation, and your ex-President (WILDER) has recently said, that to carry off the prize over all existing kinds, after nearly fifty years, was glory enough. The Camellias, which I am proud to say our Society has so highly honoured, and which the Royal Horticultural Society of London last year appreciated and certificated, were early attempts in the great art of hybridisation, and the Azalea, Rhododendron, Japan Lily, the Cactus, and others, were prominent objects of continued attention."—Colonel WILDER supported his friend with his accustomed eloquence, and narrated in terms of honest pride their associated labours in the cause of horticulture. "When," said Colonel WILDER, "when Mr. HOVEY raised his famous seedling Strawberry fifty years ago, and which still lives in its pristine vigour, there never had been, so far as I know, another hybridised Strawberry produced on our continent; now their name is legion, and every year furnishes us with many new kinds of most excellent quality, and so large is the production that we have received in our own market 16,000 bushels from Norfolk and from a single town

and vicinity in Massachusetts 10,000 bushels a year. Alike astonishing are the advances in Grape culture. At the time of which we speak, not a Grape had been raised by cross-fertilisation in our land. Now we have more than 100 varieties of American Grapes, and the time is not distant when sections of our vast territory will have its Grapes suited to its peculiar location, and every man can sit under his own vine if not under a Fig tree. Fifty years ago Mr. LONGWORTH, the great pioneer in Grape culture, had but just begun his vineyards for the manufacture of wine; now we have Grapes for five and six months in the year: the annual product after supplying our tables produces more than 20,000,000 of gallons of wines, California alone sending to New York monthly 200,000 gallons of wines and brandy, much of which is exported to Europe to be muddled over and sent back to us again, greatly reduced in flavour, body and quality; and should the Phylloxera continue its destruction of the European vineyards, the foreign demand will only be limited by our ability to supply. How wonderful the increase of Apples and Pears. Some of us can remember when there was not a barrel of fruit exported from Boston. Now there are in good years 300,000 barrels sent abroad from this city to Europe and elsewhere, a single vessel lately having taken 10,000 barrels to Liverpool."

— THE CEROPEGIAS.—Some of the most singular forms assumed by flowers may be found in the peculiar genus *Ceropegia*, which contains a considerable number of species confined to India and Africa. In the Succulent-house at Kew the species now in bloom afford a pretty good illustration of the differences in colour and the strangeness of the forms of the flowers exhibited by the genus. In *C. Sandersoni*, from Natal, there is a stout Vanilla-like stem and small succulent distant pairs of leaves; the flower, curved at the base, is 3 inches long, and about 2 inches across the top, the five corolla lobes uniting to form the wonderful umbrella-like cap, the under-surface of which is blotched verdegis-green on a pale yellowish-green ground. *C. Gardneri*, from Ceylon, has shown flowers spotted and marked with purplish-brown on a light ground; before the blossoms open "their lobes are folded in a very remarkable manner, so as to present five spreading lobes like the lobes of a starfish, or still more like the expanded corolla of a *Stapelia*." The lanceolate acuminate leaves of this species are a dark lurid green. *C. Thwaitesii*, another Cingalese species, has flowers altogether different in shape and colour from those of the two first-named; the lobes unite to form a cone-like cap—yellow, blood-red, green, dark brown, and black-purple, combining to form a striking and novel effect.

— NATIONAL ROSE SOCIETY.—The annual general meeting of the above Society will be held at the Horticultural Club, 37, Arundel Street, Strand, on Thursday, Dec. 9, at 3 o'clock, for the purpose of receiving the report, electing the officers and committee for the ensuing year, and the transaction of other business. A dinner of the Society will be subsequently held at the same place, the Hon. and Rev. J. T. BOSCAWEN in the chair.

— LINUM TRIGYNUM.—To those who might be doubtful of the usefulness of this pretty East Indian Flax for general decorative purposes at the present somewhat dull season of the year, a visit to Kew would certainly be sufficient to convince them, a number of well-grown plants in the T range being now thoroughly clothed with their large, handsome, golden-yellow blossoms.

— THE USES OF YUCCAS.—The *Journal of Applied Science* draws attention to the uses to which some species of *Yucca* are put by the Indians in New Mexico, Arizona, and Southern California. *Y. baccata* is described as one of the most useful plants of these regions. The fruit is eaten in both the fresh and dry states. The plant grows from 2 to 18 feet high, and further southwards it becomes a tall tree, the trunk varying in diameter from 8 to 20 inches. The plant abounds in fibre, and the stems are charged with a saponaceous principle which the Indians and Mexicans make use of in place of soap by simply cutting slices off the stem, beating them into pulp, and mixing them with water. The fibres obtained from the leaves are of great length, very strong and durable, and seem well adapted for the various manufactures of the Indians. Those of

Southern California make with them excellent horse blankets, while all the tribes living in the country where the plant is found use it to make ropes, nets, hair-brushes, shoes, and mattresses. The plant, so fibrous and so abundant, on land utterly worthless for the growth of anything more valuable, can be had for the gathering, and seems to offer a valuable material for paper manufacture. Of *Yucca brevifolia*, which has already attracted some attention as a paper material, it is stated that the plant also produces abundance of large seeds which contain such a quantity of nutritive matter that they are ground into a fine flour and eaten either raw or cooked in the form of mush by Southern Californian Indians. The leaves of *Yucca Whipplei*, which is a common ornamental garden plant in most parts of California, contains a very soft white fibre capable of being made into a good thread. The Indians use the fibre for padding their horse blankets. The young and still tender flower-spikes are eaten either raw or roasted, and the seeds, like those of *Y. brevifolia*, are ground into flour and used as food. The fibre from the leaves of *Y. angustifolia*, a species very common in Utah and Arizona, is considered the finest yielded by any of the *Yuccas*, and like all of them is adapted to manufacturing purposes. "The young flowering stems are used by the Indians after the manner of Asparagus, and eaten raw or cooked are not to the despised. The root pounded up is employed as a substitute for soap."

— ORCHIDS IN FLOWER. — The following Orchids were in flower at Mr. WILLIAM BULL'S establishment, King's Road, Chelsea, on the 1st inst. :—

<i>Ada aurantiaca</i>	<i>Maxillaria picta</i>
<i>Ansellia africana</i>	<i>Mesosopindium sanguineum</i>
<i>Aerides Huttoni</i>	" <i>vulcanicum</i>
<i>Barkeria cyclotella</i>	<i>Odonoglossum biconense</i>
" <i>Lindeyana</i>	" <i>baphicanthum</i>
<i>Calanthe Masuca</i>	" <i>cirosum</i>
" <i>vestita luteo-oculata</i>	" <i>cordatum</i>
" <i>rubro-oculata</i>	" <i>crispum</i> (Alexandria)
" <i>intermedia</i>	" many varieties
" <i>Veitchii</i>	" <i>grandiflorum</i>
<i>Catasetum maculatum</i>	" <i>guttatum</i>
<i>Cymbidium giganteum</i>	" <i>Trianae</i>
" <i>Mastersii</i>	" <i>grande</i>
<i>Cypripedium barbatum</i>	" <i>Hallii xanthoglossum</i>
" <i>Bullenianum</i>	" <i>madrense</i>
" <i>Harrisianum</i>	" <i>nebulosum</i>
" <i>insigne</i>	" <i>Pescatorei</i>
" <i>picturatum</i>	" <i>Phalenopsis</i>
" <i>longifolium</i>	" <i>roseum</i>
" <i>purpuratum</i>	" <i>Roezlii</i>
" <i>Sedeni</i>	" <i>Rossii majus</i>
" <i>venustum</i>	" <i>Uro-Skinneri</i>
" <i>paudinum</i>	<i>Oncidium cheiroporum</i>
<i>Dendrobium bigibbum</i>	" <i>ucculatum</i>
" <i>chrysanthum microph-</i>	" <i>dasytle</i>
" <i>thallum</i>	" <i>excavatum</i>
" <i>formosum giganteum</i>	" <i>guttatum roseum</i>
" <i>nobile</i>	" <i>Kramerianum</i>
<i>Epidendrum cuspidatum</i>	" <i>raniferum</i>
" <i>vitellinum majus</i>	" <i>recurvum</i>
<i>Leelia albidia</i>	" <i>tigrinum</i>
" <i>autumnalis</i>	" <i>uniquiculatum</i>
" <i>atrorubens</i>	" <i>unicorne</i>
" <i>marginata</i>	" <i>Wiltoni</i>
" <i>Perrinii</i>	<i>Phalenopsis amabilis</i>
<i>Lycaste Skinneri</i> , several	<i>Pilumna nobilis</i>
varieties	<i>Saccolabium Blumei majus</i>
" <i>rubella</i>	<i>Sophrontitis grandiflora</i>
<i>Masdevallia Harryana cœru-</i>	<i>Stelis acutissima</i>
<i>lescens</i>	<i>Trichosoma suavis</i>
" <i>igneæ</i>	<i>Vanda cœrulea</i>
" <i>lilacina</i>	" <i>tricolor</i>
" <i>polysticta</i>	" <i>nebulosa</i>
" <i>tovarensis</i>	<i>Warscewiczella marginata</i>
" <i>Veitchiana</i>	<i>Zygopetalum Mackayi</i> ma-
<i>Maxillaria grandiflora</i>	jus

— VEGETABLE PRODUCTS OF CALDERA, CHILI.—In an official report on the trade and commerce of Caldera, Chili, an interesting description is given of the country and its natural resources, from which we gather the following notes. Caldera is described as the principal port of the province of Atacama, of which Copiapó is the capital. It has a population of about 2500 inhabitants, who are mostly engaged in receiving and despatching goods to and from the interior, in working mines, and trading with the neighbouring ports. With the exception of fresh fruit and vegetables, brought down by rail from Copiapó, and a few oxen driven down from that town, Caldera, in common with all the ports of the desert of Atacama, is entirely dependent upon the coasting steamers for provisions. These (with a few exceptions, such as sugar, coffee, tea, maté, wines, ales, and preserves), are all grown in the south of Chili, whence a great quantity of flour, Barley, Potatoes, Beans, charqui, cheese, butter, &c., is imported for transmission to the interior through Copiapó. The valley of Copiapó is long and narrow, and winds between two high barriers of naked hills, or ramifications, of the Cordilleras, and which are studded with mines either worked or abandoned.

It is watered by a rivulet that a man can jump across, and has plenty of arable land, but the great scarcity of water only enables a small portion to be cultivated. This, however, produces about 4000 hectolitres of Wheat annually, a great deal of Barley, as well as four or five crops of "Alfalfa" (Lucerne), which is found to be the most suitable plant for fattening animals; of these a great number are annually driven over the Cordillera from the plains of the Argentine Republic. In 1879 no less than 5000 oxen, 4000 sheep, and 800 mules, were taken over passes 17,000 feet in height above the level of the sea, over roads often impassable in winter for the snows, and where the animals suffer much from want of water and food. In order to accomplish the journey, the oxen are shod with iron, with a shoe divided into two parts, one being nailed on to each half of the hoof, and allowing the foot fair play. Notwithstanding this, they are exhausted and footsore on their arrival, and require two or three months fattening in the pastures of the valley of Copiapó previous to being brought to market. A good deal of Paraguayan Tobacco is smuggled over the mountains—an operation which, of course, is strictly prohibited by the Government, but which at the same time is indirectly caused by it; for, to enforce its own monopoly in the sale of tobacco, it causes annually millions of plants to be destroyed. It has been proved that the climate and soil are excellent for the cultivation of this plant, and the valley of Copiapó is no exception. Fortunately a law has been passed, which will come into force in 1882, granting its free cultivation. In the gardens round Copiapó almost any plant will grow, for the soil is rich, but the difficulty of obtaining water causes endless disputes and lawsuits between the agriculturists, and a dry year often ruins many. As it hardly ever rains in the province, what little water there is comes from the melted snow of the Andes, or from wells which are sometimes used for irrigation, with a windmill or a horse attached to draw the water. In the streets of Copiapó water is sold at the rate of one cent a bucket. In Caldera, where all the fresh water used is condensed from the sea, it is sold at five cents a bucket, and there are some brackish wells in the neighbourhood of water good enough for animals which is sold at twenty cents a large barrel.

— TREES DYING IN VIENNA. — Vienna has lost the greater part of the Plane trees and Ailantus trees forming the avenues in the Ringstrassen. They died off during the spring and early summer, and nearly all the Vienna newspapers have been bewailing the loss, and demanding an explanation of the cause. A commission of inquiry ascribes the loss to the soil and watering; but it is much more likely, as Dr. REGEL suggests, that the severe winter of alternating frosts and thaws did the mischief. Dr. REGEL goes on to say that last winter was the mildest they have experienced in St. Petersburg for many years, yet 30,000 young Apple trees, and all the Crab stocks in the nurseries, were killed. The lowest temperatures did not exceed 2° below Fahrenheit's zero, and this would not of itself kill them, for they will bear as much as 34° below zero under different conditions. There were several thaws during the winter, succeeded by snowless frosts. The damage was at first not apparent, as the buds swelled and broke in the spring, though the roots were frozen dead.

— CHRYSANTHEMUM ETOILE D'OR. — In the current number of the *Belgique Horticole* M. ED. MORREN states that this yellow-flowered variety of *C. frutescens* was first brought into notice as long ago as 1844, by M. PEPIN, in the *Revue Horticole*. It was raised from seed of the ordinary white variety by M. GONTANT in the South of France.

— LAPAGERIA ALBA. — A flowering shoot of this beautiful climber, a yard and a-half in length, and literally covered with flowers, is now an object of great curiosity and interest in the window of the General Horticultural Company (JOHN WILLS), Limited, Warwick House, Regent Street. It was sent by TITUS SALT, Esq., Milner Field, Bingley, from his fine Lapageria-house, and the truly wonderful profusion of bloom is remarkable. From each eye or joint of the shoot have issued clusters of flowers consisting of mostly four, but in some cases five fine blossoms of pearly whiteness. The general body of the passers-by look upon this unusual floral production as something artificial, and many enquiries are made as to

whether this is so. It would seem that their belief in the productive skill of the artificial flower-maker is illimitable, while their conception of novelty or unusual beauty in natural production is limited to a great extent to what they have seen. Some thickly flowered shoots of *L. rosea* accompany the white variety. Like its chaste companion, this has flowered with great freedom, the blossoms being unusually rich in colour.

— CANADIAN FRUIT, ROOTS, AND VEGETABLES. — A collection has been made by the Winnipeg Agricultural Society, and the Ontario Root Growers Association, Toronto, and the samples of produce thus gathered have arrived in Liverpool for exhibition at the Smithfield Club Cattle Show, on the stand of MESSRS. SUTTON & SONS, of Reading. Before being sent on to London they have been placed on view at the establishment of Mr. JAS. CUTBERT, seedsman, Clayton Square. In addition to the Manitoba products, a collection of vegetables have been sent to this country by Messrs. RENNIE, seedsmen, of Toronto, Ontario. Amongst them are a mammoth Squash, weighing 313 lb., which was planted on May 1 and pulled on October 6, thus showing an average growth of nearly 2 lb. a day; some red Mangels grown by Mr. STOCK, one of which weighs 73 lb., being the heaviest on record; Yellow Globe Mangels, 58 lb.; Citrons, 33 lb.; and field Pumpkins, 37 lb. There are also upwards of fifty different varieties of Apples, which are well worthy inspection.

— DIMORPHIC FLOWERS IN EURYALE FERON. — The number of plants now known to produce two kinds of flowers—ordinary ones and others much less conspicuous—is considerable; but we do not remember an instance of a plant, whose ordinary flowers are large, also bearing closed (cleistogamic) flowers. That *Euryale* does, we learn from a letter in the current volume of the *Revue Horticole*, p. 411. A correspondent, dating from Kashmir, states that he sends seeds of a *Nymphæacea* which he had never seen in European gardens, and thinks may be a novelty rivaling the *Victoria regia*, &c. From the description given there is no doubt that the plant in question is *Euryale ferox*, which is not uncommon in Kashmir, and which has been cultivated in Europe since early in the present century. The writer of the letter quoted from states that the plant which he describes flowers and fruits under water, the flowers appearing to remain in the bud-stage. The sepals of the calyx are thick and closely cohere, thus preventing the ingress of water and protecting the organs of reproduction; but, what was more surprising, coloured petals were found inside.

— THE CULTIVATION OF ECONOMIC PLANTS IN CEYLON.—Recent reports from Ceylon show that much progress is being made in the colony in the extended cultivation of economic plants. Liberian Coffee is reported to be daily becoming more extended. The plants on the "Liberia" estate in the Polgahawela district have been bearing at the rate of from 12 to 15 cwt. per acre. A good average outturn of the old *Coffea arabica* does not now exceed 4 cwt. per acre, so that the cultivation of the newly introduced species shows what may be expected in the course of a few years, and the more so as the land available for its growth is practically unlimited, and is situated within easy reach of the shipping ports. A Planters' Association has been formed in the district of Kalutara. This borders the seashore between Colombo and Galle, and has hitherto, until very recently, only produced Cinnamon, Cocoa-nuts, and other low country growths, but the spread of Liberian Coffee has caused much of this land to be taken up for that cultivation, for which purpose it seems to be specially suited, and the increasing settlement in it of Europeans, consequent upon its introduction, has necessitated the formation of this association. It is stated on the authority of the *Ceylon Observer*, that Ceylon grown Cacao compares very favourably as to prices obtained with those realised for the Trinidad variety in the London market, that from Ceylon being quoted at 86s. against 64s. for the Trinidad produce. In the Jaffua district an unusually heavy crop of Tobacco is reported. The Colombo and other local markets have been completely glutted with it, prices having gone down very low in consequence, and a difficulty created in obtaining purchasers for the large quantity remaining in the Jaffua stores. On the subject of Cinchona cultivation there seems to be much difficulty in procuring good seed of the variety

Ledgeriana. Hitherto the supply of this kind had come in greatly restricted quantity from the trees in Java, but it is now procured of equally good quality from the plantations on the Nilgiri Hills in Southern India. Dr. MOENS, the director of the Java Cinchona plantations, has been paying a visit to the island, and was to inspect most of the principal Cinchona estates in Ceylon. It was hoped he would be able and willing to afford many useful hints as to cultivation. A commission of planters and Government officials from Java, it is stated, was to arrive in the colony last month, for the purpose of making investigations into the cause and possibility of a cure for the Coffee-leaf disease. On the subject of Tea cultivation it seems that at a meeting of the Ceylon Company the chairman announced that it was not the intention of the directors to recommend the extended cultivation of the plant, in view of the prospects of unremunerative prices being realised. This feeling, however, seems not to be shared in by the generality of Ceylon planters, and it is stated that large quantities of Tea seeds and plants, chiefly from Assam varieties, have been distributed during the last year. A leading organ of the Ceylon press considers that the Tea industry will be "one of the chief supports of the planters in the future." One planter alone sold 15,000 rupees worth of seed and plants during the last year. Locally grown Tea realises 1 rupee per pound in the island, while in the London market it sells at about 10s.; recently, however, some Ceylon Tea fetched in Mincing Lane so high a price as 1s. 7d. An agency for the sale of Ceylon Tea and Coffee has recently been started in New Zealand by two old Cingalese planters. Dr. TRIMEN's recent report on indiarubber will show what has been done in Ceylon in this important commodity.

— AGAVE ATTENUATA.—A couple of fine specimens of this remarkable Agave are now flowering in the Palm-house at Kew, to which place they have been removed from the Succulent-house. The fine crowns of very thick, fleshy, singularly glaucous, spatulate-lanceolate, entire leaves, from 2 to 3 feet in length, are borne on stems respectively about 6 and 7 feet in height, and from 3 to 4 inches in diameter. The arching flower stems, each 8 or 9 feet long, spring from the centre of the crowns, the lower portion of the spikes being beset with the long stamens and styles of the already opened, almost innumerable flowers. The barren portion of the scape is densely clothed with appressed lanceolate leafy bracts, and measures about 2 feet in length. Each of the plants here noted is much finer than the specimen figured in the *Botanical Magazine*, 1862, tab. 5333, under the more recent name of *A. glaucescens*, or that described by Mr. BAKER in the *Gardeners' Chronicle* for 1877, p. 748.

— THE WEATHER.—General remarks on the weather during the week ending November 29, issued by the Meteorological Office, London:—The weather since our last issue has undergone a very sudden and decided change, having been very mild in all parts of the kingdom, with rather heavy rain at the southern and western stations. Lightning was seen in several places, and thunder occurred in London on the 25th, and at Stornoway on the 26th. The temperature has been a few degrees above the mean in all districts. The maxima were high for the time of year, varying in most districts between 57° and 59°, while the only time during which the thermometer was low was on the morning of the 23d, when it fell to 12° at Glenalmond, 17° at Leicester, and 18° at Durham and Sillioth. The rainfall was rather less than the mean over the central and eastern parts of England and east of Scotland, but more in all other districts. Bright sunshine shows a decrease in all places, the percentage of total possible duration ranging from 16 in "Scotland, E." to 35 in "England, S.W." The wind was south-westerly or westerly in all parts of the kingdom, and, though generally moderate or fresh in force, increased to a gale at times in the west and north, and on the 25th and 26th blew a gale on all our coasts, the wind on the latter day being exceptionally violent at all our western and northern stations.

— GARDENING APPOINTMENTS.—Mr. GEORGE J. McBETH, late Gardener to GEORGE THOMPSON, Esq., of Pitmedden, Dyce, has been appointed Gardener and Land Steward to Lady KATHERINE BANNERMAN, of Crimnagogate, Lomay, Aberdeenshire.

Home Correspondence.

Heating by Hot Water.—Your article on heating by hot water, at p. 660, in short compass contains much that is excellent, so simply put that none can fail to profit thereby, most especially your remarks upon the "insufficient number or insufficient size of the flow pipes often used," with the consequent slowing of the currents and loss of propelling force even at the commencement of the circuit. This is a most important point, and one which is often overlooked—permit me therefore to add a few supplementary remarks in the same direction. The subject of friction, as bearing upon circulation in hot-water pipes is one of great import, yet I think but little has been written thereon. In drainage it is laid down as an axiom that it is a mistake to lay a house drain so as to enter the main drain at right angles, for the larger current will dam up the lighter current, and create a silting up at the junction, but if the house drain is let in with a bend at an acute angle, so that the two currents run along in nearly the same direction, they push one another forward, and the heavier current sucks out along with it the smaller one. Another axiom is that all bends and angles must be rounded off so as to oppose the least possible resistance to the onward flow, otherwise friction ensues and deposit silts up. Apply these principles to hot-water circula-

tion, and it at once becomes evident (1) that to unite a pipe, either flow or return, with a main at right angles is a mistake, friction must ensue, and the currents be slowed or, as you term it, throttled; (2) that all pipes should be carried as nearly as possible straight to the end and back, and (3) that all bends and turns should be rounded with as easy a curve as possible, and never at a right angle: in this way only can friction be diminished to a minimum. It is scarcely necessary to remark that to introduce a current into a house heated with 4-inch piping from a flow of 3-inch through an intervening 2-inch pipe or valve, is to put on friction with a vengeance. Each circuit should be complete in itself, and not run into another circuit. I have seen in churches the circulation completely at fault from this cause—the pipes lukewarm, and no amount of firing able to warm them; when the circuits were relaid so as to be complete in themselves all heated satisfactorily and with ease, and the churches were comfortably warmed. It is then of the greatest importance that the flows should be sufficiently numerous and large also the mains, that the smaller branches from them into the houses should be proportionately large to the amount of work they have to do, and that no angles be allowed. If these points be properly attended to, friction or, as you call it, throttling, will be diminished to a minimum. Another point to which my attention has been directed is the escape of heat up the chimney. If our boilers were properly constructed, our mains laid without friction and covered in, then all the heat available from the fuel burnt ought

theoretically to go into the houses, and no more fuel be burnt than is absolutely necessary. The true test of this would be that the water in the return pipes would have parted with its heat, so as to enter the boiler cool, and combustion so retarded by the damper pushed in that the chimney would remain cool: this may be tested, if the chimney-stack be iron, by placing the hand thereon a yard above the damper; if the hand can be retained there, then all available heat has been absorbed by the water, otherwise there is waste. Theoretically this is perfection, but in practice how different. I often find my chimney-stack (iron) so hot that I can scarcely touch it, and I am thus conscious of a great waste of heat. I have noticed the same in dwellings where a boiler has been placed below: as the flue goes upwards the rooms through which it passes are made so warm that no fire is needed therein. It is evident there is commonly a great waste of heat in this way. It seems to me that the economical test of a boiler set in a stokehole should be not merely the amount of heat given off from the pipes, in regard to the fuel consumed, but should also include the measure of the escape of heat up the chimney. *Alexander Wallace, Trinity House, Colchester.*

Gleichenias.—I fancy that the different species of this graceful genus require very different temperatures, though all like boggy soil; but of one fact I am quite



FIG. 142.—FLOWER OF BENTHAMIA FRAGIFERA

sure, that in *Gleichenia dicarpa* we have a species which would brave the British winters without protection. It ascends to the very limits of snow in the Australian alps, fringing beautifully the coldest brooks, and delighting to be bathed in the cool water as it rises from time to time when snow or rain are augmented. Whoever has a spring in a shady glen of Britain could rear this *Gleichenia*, and keep it without any winter covering; indeed, this Fern might be naturalised in your forests unless perhaps it be suffocated by stronger native plants. *Ferd. von Mueller, Melbourne.*

Benthamia fragifera.—Some twenty years or more ago there was a controversy regarding the hardihood of the beautiful *Benthamia*, which, though somewhat favourable to its endurance of frosts, failed, however, to establish the fact that it was, or is, safe to plant it extensively. That the *Benthamia* will withstand 15° of frost has been amply demonstrated, however, and this leads to the question—How many of the shrubs so abundantly planted beyond common Laurels and Hollies will do this? And if we risk Garryas, Magnolias, &c., why not give an equal chance to this showy subject? About the year 1845 there was a plant near St. Austell, at Heligan (see fig. 143) the dimensions of which the then owner gave as exceeding 20 feet in height, with a bole some 7 inches in diameter a yard or so from the ground. It is a tree which, as its appearance suggests, will not stand or live in too windy or exposed situations. Are there still examples of it at

Belsay Castle, Northumberland?—or can any reader give information of plants or trees which were planted previously to the year 1860? *William Earley*. [The illustrations we give are those of the trees first introduced into the garden of J. H. Tresmayne, Esq., of Helegan, Cornwall, in 1825. Each tree in 1849 measured about 22 feet in height. The plant is too tender near London to be recommended for outdoor culture, but in the south-west and in Ireland it would be quite at home, and we have occasionally received ripe fruits from those districts.]

Hybrid Caricas.—Some years ago Mr. Linden introduced from the hotter parts of Colombia (Guyana, I believe) a small species of Papaw, *Carica erythrocarpa*, figured in the *Illustration Horticole*. Some years later I introduced from the barrancas (ravines) which intersect the town of Bogota another species of the same genus, described in the *Botanical Magazine* as *Carica cundinamarcensis*. By a mistake this introduction was ascribed to the late Professor Jameson, of Quito, from the slopes of the Tunguragua. How this error originated I cannot say, but Sir Joseph Hooker has corrected it since, and acknowledged that the first plants of it were presented by

hybrids, with scarcely an exception, the sexes are on separate plants, the males and females continuing now for two years on the same plants. Out of twenty males only two gave each one female. The females are the first to bloom. I forgot to say that I could never keep the *C. erythrocarpa* alive after its first fruiting (up to that time it grew well enough). I have kept up the species by continuous seeding. The hybrids are as vigorous as ever, and the two plants which bore fruit last year are again laden with fruit, some of them with as many as eleven, in twos generally, and even in threes at the base of the several leaves all along the stem. In a few weeks they will be the pride of the house until December next year. The hybrids require a temperate-house (verging to the hothouse) during winter, and do well in the conservatory during summer. *C. erythrocarpa* requires the stove. *C. cundinamarcensis* passes the winter in a conservatory. The fruits of *C. cundinamarcensis* are very sweet-scented when ripe; the hybrid has little smell; the *erythrocarpa* is scentless. In May, 1879, I took two of the hybrids to Kew. None had yet flowered at that time, and I do not know what has become of them. Mr. Smith, the Curator,

doubt that in dry, sheltered situations it is perfectly hardy, and in such it should be planted extensively, as its lovely grassy green is so distinct and telling, and sure to attract and be admired even in the most select of Pinetums. *John Roberts, The Gardens, Tan-y-Bwlch, North Wales.*

Salvia Pitecheri.—Having been, I believe, the first to cultivate this plant in England, from seed collected by Mr. Elihu Hall, Dr. Parry's colleague in one of the earliest of the more recent botanical explorations of the Rocky Mountains, I have been equally interested and mystified by the varied references to it during the last month in the horticultural press. As the plants raised by me did not mature seed, I am unable to fix precisely the date of introduction, but it was several years prior to its appearance on the Continent, the firm of Huber, of Hlyères, having been the first to offer seed. This was probably received from the Museum of Natural History, Paris, or the Botanic Garden, Bordeaux, to which institutions I believe Mr. Hall distributed seeds. The seed first appeared in my catalogue about 1873, and occurs in every subsequent edition, being there described as a pale blue early blooming species, which the original plant cultivated by me certainly is. It is a perfectly hardy border perennial, as will be readily believed when I state that I still possess plants of the first batch raised from Hall's seeds, which have endured the vicissitudes of at least ten changeable years, and bloom with me regularly about the month of July. It is, therefore, difficult to suppose that Mr. Cannell's plant can be identical with the species so named by Torrey, though apparently superior to it in the deeper blue of its flowers. The seed received by me was collected on the Colorado plains east of the Rocky Mountains; it has been collected also on the prairies of Kansas. If it occurs also in New Mexico, as stated in your notice, it is just possible that more than one form exists of this plant, unless we admit the hypothesis of a seminal variation or of hybridisation with some less hardy species. In Professor Gray's *Enumeration of the Plants of the Rocky Mountains*, collected by Dr. Parry in 1861, this species is said to be "intermediate between *S. azurea* and *S. farinacea*—two *Salvias* which would seem to be distinct enough." What is the origin of Mr. Cannell's plant? *W. Thompson, Ipswich*. [The specimen figured at p. 685 was compared by us with type-specimens at Kew. It is, however, most probable that much variation exists. Eds.]

Luculia gratissima.—Some fine specimens of this beautiful winter-flowering plant are now in bloom in the nurseries of Hans Niemand (late Felton & Sons), Birmingham. The beautiful rose-coloured and deliciously scented flowers are very valuable for any purpose where cut flowers are needed. Mr. Spinks, the energetic manager, assured me that he had had it in flower for some time. *A. O.*

Araucaria excelsa.—Last summer I planted out some *Araucaria excelsa*, but as yet I have been afraid to expose them to above 6° of frost without protection. I should be glad to know if any of your readers have tested the hardiness of this plant, and with what results? *J. Roberts.*

Calanthes at Denton.—In the gardens at Denton Hall, Grantham, the seat of Sir W. E. Welby, Bart., is to be seen one of the finest displays of *Calanthe* it is possible to conceive. The plants are fine examples of cultivation, and are splendidly arranged, being mixed with various well-coloured *Crotons* and *Dracenas*, graceful *Palms* and *Poinsettias*. The spikes of *C. Veitchii* are very fine, as are also those of *C. rubro-oculata*. In the same gardens some houses of *Grapes* are particularly fine, the Alicante being wonderfully good; those since planted by Mr. Towers, the gardener in charge, have done well; and the way in which things are managed in this garden reflects great credit on him. *A. Oultram.*

Tomato Disease (see p. 698).—During the last nine years we have annually grown a large quantity of Tomatos out-of-doors, and always with thorough success and freedom from the disease, excepting in the summer of 1879, when, in consequence of the inclement and very unseasonable weather that prevailed throughout the summer and autumn months of that memorable year, the plants absolutely refused to grow, and had it not been for a batch of plants that had been grown on and fruited in large pots in the forcing-houses and subsequently (early in July) turned out of the pots and planted in an unheated Peach-house between some young trees and trained thinly to the wires under the roof of a lean-to house having an angle of 45° to the sun, we should, indeed, have been badly off for Tomatos, which here, like many other places, are used extensively for salads, sauces, &c. Before concluding my remarks I shall again, with your permission, refer to the plants grown in this house. For outdoor culture we sow the Tomato seed early in March and get the plants well



FIG. 143.—PENTHAMIA FRAGIFERA.

myself to Kew Gardens before Professor Jameson sent the seeds. There is a misprint in the name given in the *Botanical Magazine*; it should be written as above, from its habitat in the State of Cundinamarca (United States of Colombia). It is a very fine foliaged plant for planting in the open border or for the conservatory. It grows fast, and may be taken up in the autumn. Four years ago I impregnated flowers of *C. erythrocarpa* with the pollen of the *C. cundinamarcensis*, and got a very large batch of seedlings. The foliage was identical in all the seedlings, and presented a mixture of the characters of both parents, glabrous and shining, like the *C. erythrocarpa*, but darker, and in shape the first leaves of each growth were but slightly more incised than those of the mother plant, but the middle and last ones were nearly of the shape of the male parent, and it was the same at each growing season. During the summer of 1879 two plants (one year old) produced, the one two female flowers, the other only one female and no male flower. The first that opened I impregnated with pollen of *C. cundinamarcensis*, the two others with pollen of male flowers produced upon other plants of the hybrid stock. All three grew into fine red fruit, which adorned my hothouse for a whole year. They are just ripe. Although they have lost a little of their brilliant colour I send them to you. In both parents the plants develop on the same specimen male and female flowers, and fruit is produced very freely without artificial aid; but in the

might perhaps be able to show them to those interested in such matters. The male flowers are produced in a cluster, as in *C. cundinamarcensis*; the females are single, or in groups of two, rarely three, on a stalk, at the base of a leaf, as in *C. erythrocarpa*. The two plants, which had each a female blossom, bore it on their male inflorescence of the usual shape. As I have not had *C. erythrocarpa* in blossom for the last two years I do not remember how they flower, but from the way the fruit are disposed along the stem, and their number, it must approximate very much to its offspring. *Jean van Volxem, Brussels*. [In accordance with M. van Volxem's desire we have distributed seeds of these hybrid Papaws, which, judging from the fruits sent and the description given, must be fine indeed. Eds.]

Hardiness of Pinus insignis.—It is very satisfactory to learn from Mr. Sheppard's note that this beautiful Pine passed through the last severe winter uninjured. We have here several nice specimens of it in various aspects and situations, none of which suffered in the least, and happily I have not to record such losses among other Conifers and shrubs as have occurred elsewhere, a few Myrtle bushes being about all we had killed to the ground. I naturally thought that we were favourably situated, being between the hills, and not much above the sea level, hence I could not speak as positively of its hardiness compared with others; but now I consider it proved beyond

established by shifting them into larger sized pots as they require more room at the roots, and, they having been gradually hardened off, plant them out about the middle or end of May (being guided by the nature of the weather) wherever we can find space between the trees against south and south-west walls, in a mixture of three parts loam and one part of well-rotted dung, the soil being pressed firmly around the plants (which are made thoroughly moist at the roots before being turned out of the pots) in planting. The plants are then made secure to the wall by shreds and nails, leaving room in doing so for the development of the shoots, and a Spruce bough stuck in the ground in front of each plant for protection from late frosts and cutting winds. These, however, are removed after the lapse of a week or two, by which time the plants have become inured to the weather and thoroughly established at the roots. As they make fresh growth three or four shoots (according to the space to be covered) are trained 9 or 10 inches apart, which is quite close enough, in an upright direction. After this all the attention we give them is in the way of watering and the necessary thinning and stopping of the shoots, and the removing of the compound leaves to within one leaflet of the petiole, so that the fruits are by this process never allowed to be shaded by the leaves. The operation of stopping is performed above the fruit on each succeeding growth, and the laterals are kept well pinched back so as never to allow the shoots and branching leaves to become over-crowded. By adhering strictly to this rule, and never allowing the plants to suffer for want of water at the roots, is, I believe, to be attributed the cause of our plants having escaped the disease, which I verily believe is caused through the over-crowding of the shoots and leaves, and then fermentation ensues, and as a consequence thereof the discoloration of the foliage and fruit also. Hence the Tomato disease. The evidence upon which I have based my conclusions I will now proceed with. The plants in the house above referred to were, through pressure of work at the time, allowed to get over-crowded, when the symptoms above indicated appeared on the leaves and fruit. This all took place within a week, and I was then told it was the disease, and that the plants might as well be consigned to the rubbish-heap at once. My reply was, that it might be disease (?), but that, whatever it was, we brought it upon ourselves by allowing the plants to become over-crowded, and that instead of consigning them to the rubbish-heap (which then almost seemed to be their proper place) we must get them "all right" again, as we were solely depending on them for our supply of fruit. We therefore set to work and thinned them well out, removing all the affected leaves, shoots, and fruits forthwith, and kept the atmosphere of the house as dry as we could for a week or so; after which the plants resumed their wonted health and vigour, and continued to yield a good supply of fruit until killed by the frost. Before or since this instance we have not seen anything of the Tomato disease, which I firmly believe, as already hinted, is generated by over-crowding, &c. Mr. W. Earley's pot Tomatoes having caught the disease can, like my own case, hardly be wondered at under the circumstances narrated by himself. *H. W. W.*

Rats as Propagators.—A singular illustration of the activity of rats as propagators came under my notice the other day. In one of the houses in the grounds of J. Barclay, Esq., Leyton Green, a rock-work of clinkered burrs has been formed, and among the many plants which have been therein placed are some Begonias of the foliage section. Behind this rockwork some rats have taken up their abode, and managed to elude all attempts to trap them. Having a special liking for the Begonia leaves they have paid great attention to the under leaves of the plants, and have devoured the greater portion of them. Having satisfied their appetites the remnants are left on almost every ledge of rock, the consequence of which is that quantities of young plants are always springing up if the smallest portion of soil be near in which they can make root, which they do in two or three days, until at length a brilliant bank of foliage has been formed. Endless numbers of young plants are continually being uprooted to allow of other plants to grow. Rats are by no means desirable occupants of such a place, but when we see their labours crowned with such success we may be induced to treat the matter of their destruction with greater lenity than otherwise, provided they do not become too troublesome among other things. *J.* [This is indeed a curious case of the struggle for existence. *Eds.*]

The Celery Fly.—We grow a large quantity of Celery here, and our stock is exceptionally good this year. There is not the least sign of the maggot, nor have we found any decayed plant at present. We grow most of our Celery on an open square in the full sun. The trenches, which are made for single rows, are 5 feet apart, and somewhat shallow, as it would not be safe to plant deep in our wet soil. Each plant is tied once or twice with matting during the growing season, and earthing up is deferred till

growth is finished. With the exception of tying, our Celery has had the same treatment for a number of years, but it has not been so good as now. Last year it was very much decayed, and the disappointment which followed caused me to tie it this year and defer the earthing-up, these allowing any superabundant moisture to escape, and so prevent the rot. We have not been called upon to grow Celery as a preventive to rheumatism, but if it is capable of preventing this terrible complaint I should be extremely obliged if your correspondent (p. 698) will tell us the way in which it is done. *G. Merritt, Kimpton Hoo.*

—Never has the Celery-fly been worse at this place than this season. I grow 1600 plants, and I kept two men hand-picking till I found the cure worse than the disease, there being no leaf left. I tried lime, soot, and paraffin oil, but all to no purpose. It would be interesting to know the rainfall at Flixton, where Mr. Fisher is so fortunate. Here the rainfall was in May 3.59 inches, June 5.15 inches, July 9.70 inches, and August 1.53 inches. *J. Hamilton, Needwood House, Burton-on-Trent.*

Maule's Orchid Pots (p. 653).—Mr. Croucher has not grasped the scientific intention as regards the supplying Orchids on blocks with the means of obtaining their proper moisture during their growing season. Capillary attraction we all know raises the sap and moisture to support the most fragile leaves on our trees in summer to the highest branches, exposed as they are to our scorching summer sun, and what must this power be in the tropics? It is one of the many beautiful provisions in the economy of vegetable life; the book of Nature is the schoolmaster to the observing horticulturist, and when Mr. Gibson, the Duke of Devonshire's collector, tells us that when on a tree covered with epiphytes a single branch dies the plants on this branch wither also, we ask, What is the reason? Does it not suggest itself that the circulation is stopped, the sap dried up, and that the Orchids, although not parasitical, enjoy a certain amount of benefit from the sap and moisture flowing under and through the bark that their roots are attached to? Nature never sports for amusement, and when she places her plants on the bark and branches of trees it is the most natural and best condition for life, and the nearer we can approach her the better our success. We know from experience that many kinds of Orchids do best on blocks if dipped two or three times a day, but what becomes of them after all? For instance, where are the *Epidendrum bicornutum*, *Cattleya superba* and many other block-loving Orchids, of which so many are imported and distributed from time to time? Why, they dwindle and die for want of regular and proper moisture that the attention of man cannot always give. As regards the insects we must have them always with us, as the poor in our land; for heat and moisture, and everything that tends to promote an exuberant growth in vegetation, help and assist insect life, and probably they will keep to the haunts Mr. Croucher points out, rather than run the risk of a watery grave. In addition to the moisture supplied through the block, they get a syringing as usual through the growing season, which keeps the water always changed, and there is no fear of a small body of water remaining stagnant throughout the months of June, July, and August, in an Orchid-house—it exhales, and the plants get the benefit of it, and if at any time you wish to dry off your plants you have only to regulate the water supply. An experiment tried this summer, and so simple that any one can test its merits in supplying a natural want, experience, and practice alone, can take the place of theory. *Alexander James Maule, The Nurseries, Bristol, Nov. 29.*

Tacsonia Von Volxemii and exoniensis.—These are, without doubt, two of our best, most showy, and rapid-growing greenhouse climbing plants. On March 28, 1879, I planted with other suitable climbers one each of the above-named *Tacsonias* in a specially prepared border, which is 2 feet wide (between the front wall and the tessellated floor of the central house of a new range), and 2 feet deep from the concreted bottom, upon which were placed 6 inches of brickbats, finely broken, on top, for drainage, over which thinly-cut turves were placed grassy side down, there being ample provision made to prevent the possibility of the border becoming water-logged. The composite soil having been mixed and got into the border in a moderately dry state, the plants, which were in 48-pots, being turned out, the drainage removed, and the balls somewhat reduced, were then planted (making due allowance in doing so for the soil subsiding a little) between the hot-water pipes and the wall 34 feet apart, the intervening rafters being provided with *Lapagerias* (rosea and alba) and *Jasminum grandiflorum*. The roof of this house, which is a span-roofed one, 42 feet long and 32 feet wide, is now being draped with the foliage and flowers of these truly attractive and easily-grown *Tacsonias*, which, depending in graceful profusion, have a very striking and pleasing effect. Were it not

for such drapery as that afforded by these and kindred climbers, the interior roofs of the best and most elaborately finished plant-houses would look very stiff indeed. *T. exoniensis* is a more vigorous grower and profuse bloomer, and comes into flower three or four months earlier than *T. Van Volxemii*; but beautiful as the flowers of the former are in form and colour, those of the latter put them completely in the shade. The deep crimson and finely-formed flowers and singularly elongated thread-like flower-stalks of *T. Van Volxemii* render them peculiarly attractive. With us *T. exoniensis* has been in continuous and profuse flower since March, and *T. Van Volxemii* since the end of July; and the knife has not yet been applied to either of them, but will have to be soon to thin the shoots out a little to prevent their obscuring too much light from passing to the plants that are growing underneath: this, moreover, gives them a lighter and more graceful appearance. It not unfrequently happens that the grace and beauty of these, not only free-growing, but also free-flowering climbers, are destroyed by injudiciously cutting back the young shoots for, it would appear, no better reason than that of confining them to the particular rafters under which they had been planted, instead of training them loosely in all directions underneath the roof. The effect will be all the more beautiful when they are intermixed with those of similar habit, but producing flowers of different shades of colour, the one forming a striking contrast and happy relief to the other, and using the knife only for the purpose above indicated, and the shortening back of the lesser to the greater shoots when they have done flowering. In conclusion, I may add, that as these *Tacsonias* are rapid growers, and especially when the roots are growing (as in my case) in a somewhat limited space, they require—and amply repay—liberal treatment at the roots, frequent and thorough supplies of liquid manure when in full growth. *H. W. W.*

Celery.—If all one hears and reads be true the medicinal properties of the Celery must be extraordinary. I notice that one of your correspondents mentions it as a preventive of rheumatism; and this morning, for the first time in my life, I have been told that it is equally good for gout or any affection of the heart. Should this catch the eye of any medical authority, they would, I feel sure, earn the thanks of a great many of your readers if they would oblige us with their opinion. *J. Horsefield.* [The opinion would probably be—put not your trust in Celery. *Eds.*]

Root-Pruning Fruit Trees.—I entirely agree with Mr. Baines, "that but for our inability to see that what is the best practice under one set of conditions may be the reverse under another, there would be little discussion," because what follows is a case in point. Twitting me about being sentimental for the benefit of posterity, he asks whether I would do this, that, and the other if I had a new garden, &c. Well, it is not quite a quarter of a century since, but just ten years—the very time Mr. Baines mentions—when I sought to think about root-pruning to get some fruit for myself, that I planted here about 100 Apple and Pear trees, then two years worked. I planted to get some fruit for self, some for posterity, and also to make a break for the sweeping south-west winds. The latter object has been well obtained. The trees are full of health and vigour, and posterity may have abundant reason to hold me in hallowed remembrance for this forethought that regards to-morrow as well as to-day. Without waiting the weary quarter of a century—nay, not even the ten years—I have had fruit, have fruit, and next year, without a root being cut afresh, a very heavy crop of fruit. Thus it is evident that had Mr. Baines known the conditions here he would not have written what he did. This now very wordy discussion has evoked one unquestioned fact. It is that root-pruning is only needful when trees are planted in soil that is too rich for their requirements, or when it is desired to obtain dwarfed or literally stunted trees. The first case may be avoided by not planting fruit trees in rich, highly cultivated kitchen gardens, where the strongly manured soil provokes both root and branch growth far in excess of healthy requirements, but rather planting in special fruit quarters with bush and other fruits, and bringing the culture more into consonance with the production, not of excessive sappy growth but of fruit. The latter case is but such as I have before shown by the use of trees worked on the dwarfing stocks. There has been on the part of the professional teachers a little too much of the old rut in these matters. The planting of fruit trees in new kitchen gardens is a huge mistake, and one that at least young gardeners will do well to avoid unless they, too, are anxious to root-prune. *A. D.*

—I have already replied to "A. D.'s" strictures. His model branches are no proofs against root-pruning—more probably its direct product. For unless he is prepared to prove that the seeds of the trees that he now points to as models of fertility were sown on the spot where he found them, how can we know but what these same trees were

so severely root-pruned in their growths as to need no more of it? All this was in fact fully explained in previous papers, so that "A. D.'s" live branches are just as weak as his strong affirmation to either undermine the theory or discredit the practice of root-pruning. To root-prune a tree already in the most fertile state would be to equal the folly of the surgeon—if such an one could be found—who would deliberately break a bone afresh to be able to note how Nature could heal the fracture. No; having established fertility let us therewith be content. To root-prune without cause, or after it has been already done, by natural or other means, such as the character of the soil, transplantation, &c., would equal the unwisdom of those who would refuse to prune the roots when very strong sterile twigs or branches invite a free use of the knife upon them. What "A. D." has to prove before he can discredit our practice is, that the root-pruning of sterile trees fails to make them fertile. If he does this I, at least, will be prepared to listen to him. Meanwhile I brush away his living branches and strong assertions as being alike irrelevant to the main question, which lies in a nutshell, as already stated. Further, in all root-prunings the condition of the tree above, and the produce we demand of it, must be our guide. No one in his senses would advocate the root-pruning of trees grown for their timber, and the converse ought to be equally true, unless indeed fertility has already been reached through other means, such as restrictive stocks, double grafting, &c. *D. T. Fish.*

Cattleya labiata.—In reference to your note at p. 658 respecting the fine specimen of the above *Cattleya* at Bothwell Castle, permit me to mention that for the past month there have been two plants of the same variety in bloom at Oxtou Hall, near Tadcaster. The individual flowers on one plant were very nearly 8 inches across; one spike had five such flowers on it. Like the plant at Bothwell, the plants in question have not had any special treatment beyond the ordinary attention given to a small, well-grown collection of stove plants, amongst which they have been grown for the past fifteen years. In the same house are good plants of *Lælia purpurata*, *Cattleya Skinneri* and speciosissima, *Oncidium Lanceanum* and *Papilio*, and a few other species of Orchids; thus proving that it is quite possible, with ordinary culture and attention, to grow a fairly good selection of Orchids without having a special house for them. *H. J. Clayton, Grimston Gardens, Tadcaster.*

Fowls for a Garden.—For the information of "Moorland Willie" (p. 703), who desires to learn which are the best fowls to keep near a garden, kindly allow me to say that, as far as my experience goes, Brahmas and buff Cochins undoubtedly; of the two, I think he will find Brahmas by far the best, for not only are they good layers if well fed, but they are also awfully lazy, and on this account will answer his purpose admirably. Should "Moorland Willie" at any future time feel inclined to "go in" for fowls of an opposite character he cannot do better than keep dark Dorkings; their wandering and marauding propensities, which are two of their chief characteristics, enable them to live and get fat where some kinds of fowls would starve. For turning in quickly, i.e., becoming fit for a Sunday's dinner, I certainly prefer them to such big-boned sorts as Brahmas, Cochins, and Langshangs, and would recommend them to all such persons who are responsible for a Dr. and Cr. account. *J. Horsefield, The Gardens, Hayesbury, Wilts.*

—I find the Brahma Pootra breed the least destructive, as they do not scrape one-third as much as other kinds of fowls do, and have one great point, that is, that they may be kept within a limited space by a length of common wire netting, 3 feet high, which other fowls would fly over. They are useful hardy fowls, good layers of fair-sized eggs, and good sitters and mothers. If "Moorland Willie" will communicate with me I shall be pleased to give him any information he may require concerning poultry and their habits. *C. M. Ennot, The Elms, Guernsey.*

Late Swallows.—Having observed the remarks in the *Gardeners' Chronicle* upon the protracted migration of those birds this autumn, and the dates on which they were last seen—viz., near Carlisle on October 30, and on November 12 at Dunrobin Castle—it may probably interest some of your readers who take a delight in noticing the arrival and departure of these summer visitors to learn that three of them were seen at Gordon Castle by James Ogg, cattleman, on Wednesday, November 17. When first observed they were flying round the clock tower of the home farm buildings in the midst of a snowstorm, apparently wanting a place of shelter. Late as the period is for these birds it falls short by fully a fortnight of the date on which the writer saw one in the South of England, where he was then residing. At the time I saw it, I was walking along a jutting portion

of the Southdown hills above Bognor, and about 7 miles distant from the sea. This was on December 1, in the year 1840 or 1841. The swallow flew close past me, and was seemingly perfectly strong and healthy. Its flight was in the usual way, zigzag and low, as if searching for flies or insects, the day being soft and balmy with some sunshine. The lateness of the period for this solitary bird, and the time of day when seen, conveyed to my mind the impression that it would probably be about the same hour, when the sun was in the meridian, that a general exodus takes place. I have frequently since, during my residence here, noticed the flights of fieldfares and redwings in large numbers, about the same time of day, flying northwards on their return, about the end of March and beginning of April, from the south, to their breeding haunts in Norway and Sweden. It may be also worthy of remark that the first swallow seen here by myself was on April 17 of this year, as was noticed in the *Elgin Courant* of that week. This is the earliest recorded as being noticed here during the last thirty years. The nearest to it was on April 21, 1851, after a winter during which no ice could be got, and vessels had to be sent to Norway to procure it for salmon fishing stations on the Spey! *John Webster, Gordon Castle Gardens, Nov. 27.*

Vanda cœrulea at Crewe Hall.—The other day, while visiting the well-kept gardens of Lord Crewe, at Crewe Hall, I was very much struck with two grand plants of *Vanda cœrulea* in flower. The best of the two plants has two spikes, with eighteen flowers on the one and fourteen on the other; the other plant has also two spikes, with fourteen flowers on the one and ten on the other. The plants are comparatively young, but in fine vigour. *Andrew Roche, Betley Hall, Staffordshire.*

The First Crocus.—On going round the garden on the 24th inst. we observed a tuft of light mauve looking attractively fresh. On inspection it proved to be *Crocus serotinus*. Is not this very early for this bulb to appear? It was in a warm sheltered bed, but it rather seems to be forestalling the pleasures of the new year. *H. M. E., November 27.*

Salvia Hoveyi.—There is some confusion about this plant, and the sooner it is cleared up the better. In the early summer of the present year I received a plant of *S. Hoveyi* from Mr. Gumbleton, of Belgrove, who had procured it from Mr. Cannell, of Swanley. I planted it out in the border by the side of a plant of the old *S. ianthina*, which I had received from Mr. C. Green, of Pendell Court. Both plants grew and flowered well in the autumn. They were precisely identical in every point—there was not the slightest point or shade of difference. *S. ianthina* was introduced as far back as 1850, and is, I believe, a native of Peru. That the so-called *S. Hoveyi* was ever a sport from *S. splendens* I cannot bring myself to believe, and am convinced that, unintentionally of course, some mistake has been made. I may add that this summer I grew a plant of *S. Bethellii* with one of the old *S. involucrata*, and proved them to be one and the same thing. Let me whilst talking of summer bedding *Salvias* advise every one to grow *S. confertiflora*, with long narrow close spikes of orange-red flowers, and *S. caliceifolia*, which has lax spikes of a lovely blue. *H. Harpur-Crewe, Drayton-Beauchamp Rectory, Tring, Nov. 27.* [The *Salvia Hoveyi* is certainly like the *S. ianthina* figured in vol. ix. of *Flore des Serres*. Eds.]

Florists' Flowers.

CHRYSANTHEMUMS AT MR. TURNER'S.—For a number of years there has been an exhibition of the above in the Royal Nurseries, Slough. The long house that used in the old days to cover the Tulip beds has been set apart for them, and there is sufficient space to have a border on each side and a narrow path down the centre of the house. The plants are now at their best, and it is by far the best display that we have ever seen at Slough, or anywhere else this year. There are 1400 plants in all the best varieties, and the largest proportion of the blooms are quite up to the exhibition form. The old varieties are well to the front both in the large-flowered and the Japanese classes. We do get new varieties of the Japanese type in new colours and different forms, but the large-flowered section is comparatively stationary, except in so far as we are indebted to the sportive character of the plant itself, when a white variety will give us a primrose form, and that again will throw a bright yellow, or a lilac variety will sometimes give us a brown. There is even a more eccentric sport than either in Mr. Turner's collection, where at present can be seen the Mrs. Dixon form of Mrs. Rundle, with a flower half white and half yellow, and, what

is also very curious, the petals are all very much larger on the white side.

The very best of the large-flowered section is Enamel; it is usually rather thin, here it is large and full, nearly white. Countess of Granville is well worthy of culture for its lateness; it opens pinky, but changes to white. Orphée, reddish-bronze, flowers of good size. Sanguineum, deep red; the half-opened flowers are in form like Princess Teck; it is also very late. Comte de Morny, deep purple flowers of medium size. Mrs. W. Shipman, the bronze sport from Lady Hardinge, was here very fine indeed. Princess of Teck, where it had been forced, was of a pretty pink colour, while the flowers opened in the cool-house were pure white. Annie Salter is really well worthy of extended cultivation; it is the very best of the reflexed varieties. Here was also to be seen the old Cloth of Gold, which I had not seen for twenty-five years: it is rather a weak grower, but a good flower. Golden Hermine, large full yellow, with pinky-tipped petals. Cassandra, seldom very good, was here in its best form. Vesta was also very good; as shown here it is a good incurved white. Golden Empress, Princess Teck, Mrs. Rundle and its variations, with all the popular varieties, were in the best possible condition. Progne, the delightfully Violet-scented purple hybrid, and Sœur Melaine, the pure white, should be in every garden.

The Japanese varieties add very greatly to the interest and beauty of the collection. Mons. Charles Hubert has red flowers tipped with gold; Bouquet Fait, large pale pink variety with reflexed narrow petals. Soleil Levant very showy, has large yellow flowers. Abd el Kadir, deep blood-crimson and yellow centre. La Nympe, dwarf, free-flowering, very pretty, and useful for bouquets. Laciniatum, peculiar narrow petals, a unique flower. Nuit d'Hiver, yellow bronze centre, large broad petals. La Frisure, dwarf plant with singular light pink flowers. Ethel, a very desirable late flowering white variety. The Daimio, Baron de Prailly, Fulton, Peter the Great, Fair Maid of Guernsey, &c., are all very fine. One characteristic of the collection is the healthy character of the leaves; the plants are well furnished, and there is no apparent trace of mildew amongst them. The bedded out plants of Fair Maid of Guernsey and Princess of Teck, in their hundreds to produce cut blooms, are a sight worth going a long way to see. The strength and health of the plants are remarkable. The lot is merely protected with glass lights and mats at the sides to break the force of the wind. These will be of great value at Christmas, and it is worth knowing that they can be obtained at so little expense. *J. Douglas, Ilford.*

Reports of Societies.

Richmond Horticultural. Nov. 23 and 24.—Though last amongst the metropolitan suburban autumn exhibitions, yet the one held at Richmond was so far from being the least that we may perhaps class it in its general aspects as one of the best of the whole lot. Although primarily a show of Chrysanthemums, yet the schedule includes many other classes of plants, and also fruits and vegetables, so that the one prominent feature does not swamp all the rest. Very prominent, indeed, in the first of the splendid rooms of the Castle Hotel was the table of fruit, the collections of four dishes of Apples including as fine samples as could be found perhaps in any autumn show this year. Mr. W. Fanning, of The Convent, Roehampton, took 1st place, with superb examples of Lord Nelson, Blenheim, Ribston and King Pippins; Mr. F. R. Kinghorn, of Richmond, was 2d, with very fine Warner's King, Wellington, and Blenheim and King Pippins; Mr. Hudson, of The Gardens, Gunnersbury House, was 3d, with capital fruits of Alfriston and Wellington, and the Blenheim and King Pippins. In the class for four dishes of Pears there were some remarkably fine fruits, but here the judges, untrammelled by conditions, gave the highest place to collections that included large stewing kinds. The 1st prize was given to Mr. T. A. Benson, Canterbury House Gardens, Kingston, who had fine fruits of Uvedale's St. Germain, Triomphe de Jodoigne, Beurré Bosc, and Beurré Diel; 2d came Mr. Coomber, gr. to Lady Meux, East Sheen, with Catillac, Vicar of Winkfield, Beurré Superfin, and Marie Louise; whilst Mr. C. Davis, who was placed 3d, had Catillac, Uvedale's St. Germain, Beurré Clairgeau, and Beurré Rance. There was a large competition in the fruit collections of six kinds, Mr. Hudson coming 1st, with a superior lot that included Black Alicante and Muscat of Alexandria Grapes, superbly finished, a good Smooth Cayenne Pine, Beurré Clairgeau and Thompson's Pears, and a very fine, highly coloured dish of Winter Pearmain Apples. Mr. W. Bates, gr. to Mr. Meek, Poulett Lodge, Twickenham, was 2d, with the same collection mentioned in the report of the Kingston show, and Mr. Hepper, of The Elms, Acton, was 3d. In the class for two bunches of black Grapes Mr. Hudson was 1st, with medium-sized but

superbly finished. Alicantes; and Mr. Morrell, gr. to J. Rutter, Esq., Richmond, with larger but somewhat rubbed bunches of the same Grape. Mr. E. Beckett, gr. to J. P. Currie, Esq., of Esher, was 3d, also with Alicantes. In the white Grape class Mr. Hudson was again 1st, with very handsome Muscat of Alexandria; Mr. Bates 2d, with the same kind; and Mr. Morrell 3d, with Golden Queen that had become discoloured.

A large ante-room was specially devoted to the vegetable classes, of which there was an excellent show. Mr. Hepper was 1st, with good James' Keeping Onions, Excelsior Tomatoes, Autumn Giant Cauliflowers, Magnum Bonum Potatoes, Brussels Sprouts, and Clarke's Red Celery. Mr. Hudson had some Potatoes and Cauliflowers, with Brussels Sprouts and White Spanish Onions, Early Nantes Carrots and Criterion Tomatoes, and was placed 2d; Mr. Tigwell, of Mortlake, being 3d. Some very attractive features were added to the show in the plant groups, those in competition for the Duke of Buccleuch's special prize being arranged in the usual semicircular fashion in the large inner room. Mr. Herbst, of the Kew Road Nursery, who had much more space than his opponents, took 1st place, with an arrangement that was regarded as both effective and pleasing, and was composed chiefly of foliage plants with a big clump of the double white Primula in the centre. Mr. Ramsay, gr. to Lady John Chichester, Twickenham, who was 2d, had the disadvantage of position and less room, but exhibited far more light and colour. It was, as groups go, a very pretty one.

In another room some large groups of similar build, sent by Mr. F. R. Kinghorn, Richmond, and Mr. Laing, of Twickenham, attracted much notice. In these, whilst foliage plants of the usual decorative character prevailed, there were interspersed many plants of the charming winter Heaths—*gracilis* and *hymalis*—certainly some of the most useful winter-blooming plants we have. The groups of naturally-grown Chrysanthemums were of the familiar kind. The plants are, even under the most natural conditions of culture, stiff and formal, and the flowers, except where there is a good sprinkling of the Japanese kind, give little pleasing variety. A customary requirement in the schedule, that quality will be considered, naturally led to the blooms being much thinned, and thus the fine heads or masses of flower that natural culture should give are wanting. This feature was particularly marked in the group shown by Mr. Harding of Putney, whose plants were full of foliage and vigour, and the individual flowers remarkably good, but general effect was impossible. Having regard to the prizes offered for trained plants and cut blooms so abundantly, committees may well consider whether in the groups natural effects might not exclude all other conditions. The 2d prize group, shown by Mr. Bond, gr. to Mrs. Beckford, Oxford House, Ham, was a perfect mass of flowers, with great variety of colours, mostly produced by too much crowding the plants. Mr. Davenport, gr. to Captain Webb, Riverdale, Twickenham, had a very good group also. There was but one competitor in the class for six trained specimens—Mr. Beckett, of Esher, who had well-bloomed dwarf plants of Mrs. Haliburton, Prince Alfred, Julie Lagravère, General Bainbridge, Mrs. Dixon, and Lady Talfourd, and was 1st in the class for three specimen plants, with Faust, Mrs. G. Rundle, and Lady Hardinge; also 1st in single specimens with a capital plant of Mr. G. Glenn having a hundred good blooms. In the class for large-flowered standards Mr. Beckett was also 1st, with good plants, but much too severely cut down. Pompon classes were indifferently filled. Cut blooms were in strong force, though, perhaps, just a little past their best. For eighteen incurved kinds Mr. H. West, gr. to H. Hoskins, Esq., Putney, was 1st, with fairly good blooms. Mr. Berry, gr. to the Countess of Severn, 2d; and Mr. Beckett 3d. For twelve similar kinds Mr. R. Strong, Kenwood House, Virginia Water, was 1st, with a capital lot, having in excellent form Golden Empress, John Salter, Empress of India, and Barbara. Mr. Hill, of Chertsey, was 2d, and Mr. West 3d. Mr. Beckett followed up his deserved success with Japanese blooms at Kingston by taking 1st place at Richmond with eighteen superb flowers; Mr. Strong, who was 2d, also had good blooms. There was a fine lot of flowers staged in the other Japanese, reflexed, and Anemone-flowered classes, all the best kinds in those sections being freely represented.

Table plants made an interesting feature. Mr. Herbst, who was 1st in this class, had two Cocos Weddelliana, two dwarf Chinese Citrons, in good fruit, and two small *Raphis humilis*. Mr. Ramsay, who was placed 2d, had very pretty plants of *Dracena recurva*, *Areca crinita*, *Cocos Weddelliana*, *Croton picturatus*, finely coloured, and *Pandanus Veitchii*. In point of elegance this latter collection was a long way the best. There was a large display of Chinese Primulas, many fine, well-flowered plants being staged. It was difficult to coincide with the judgment that placed the two very good lots of double whites shown by Mr. Herbst and Mr. Wells, gr. to C. W. Selwyn, Esq., before the fine and various coloured singles shown, as variety ought to be a strong feature with Chinese Primroses. Mr. Ramsay was placed 1st with some small but admirably berried *Solanums*. The best *Cyclamens* came from Mr. Warren, Holly Lodge, Isleworth—good plants of the true market style, Messrs. Hooper & Co. having the next best lot. Some collections staged having the flower-stalks staked presented a rather ludicrous appearance.

Mr. Hudson had the best bouquet; Mr. W. Brown, of St. Mary's Nursery, Richmond, the best table stand, and a pretty arrangement with foliage and berries. Messrs. Page & Son, of Teddington, put up richly coloured groups of Pelargoniums, and white and coloured cut flowers.

Liverpool Horticultural Association: Nov. 23 and 24.—The 1st autumn exhibition of this Society was held in St. George's Hall. It is a pity that the Manchester show should have been held on the same date, as it doubtless kept many from exhibiting. The weather, too, was very unfavourable. 17th frost, with snow at intervals, and blowing a gale, was the state of weather the night before, but fortunately it became a little brighter, and the attendance was tolerably good. This Society is flourishing in a very satisfactory manner; it has a thoroughly good working committee, which includes the best practical gardeners of the district, and they certainly have done themselves great credit by producing the best flower shows ever held in Liverpool. This district has long been famed for the growth of the Chrysanthemum—the reputation of the neighbourhood being well represented by Mr. Leywood going south and bringing away the beautiful Challenge Vase the other day, although in cut flowers he was not represented here. He figured well, however, with his specimen plants. The honours of the show fell to Mr. F. Faulkner, gr. to F. R. Leyland, Esq., of Woolton, whose twenty-four and twelve incurved varieties, and eighteen Japanese, were such as are seldom seen. The specimen plants shown by the various exhibitors were quite up to the average, as were also the Orchids, stove and greenhouse plants, &c. The show of fruit was excellent, Grapes, especially the blacks—the honours principally falling to Mr. John Wallis, gr. to the Rev. W. Sneyd, Keele Hall. Apples and Pears were shown in great number, and the quality was good; and the competition for Pines very strong.

The show of bouquets was an excellent one, and brought some spirited competition, some really first-class examples being shown. The various nurserymen contributed some very excellent groups of plants not for competition. Messrs. Kerr & Sons showed a fine miscellaneous group, comprising many novelties. Mr. Cowan, of the Vineyard, Garston, showed a collection of stove and greenhouse foliage and flowering plants, beautifully arranged, and containing many novelties, as well as some good flowering Ericas. Messrs. Turner & Brothers also exhibited a nice collection, as well as some good bouquets and wreaths, for which they have so long been noted. I must not forget to mention the grand pans of Roman Hyacinths; they were superbly done, and reflect great credit on the growers.

Table plants brought out a strong competition, and some excellent plants well adapted for that purpose were staged. Mr. Cannell, of Swanley, showed some superb cut flowers of Zonal Pelargoniums, double and single, which were much admired. (From a Correspondent.)

The Birmingham and Midland Counties Chrysanthemum, &c., Exhibition: Nov. 22 to 25.—The spacious Town Hall at Birmingham proved inadequate to furnish accommodation for the many subjects brought to this show, and the large gallery had to be utilised for the many specimen Chrysanthemums, and here they were so much crowded that the judges had considerable difficulty in inspecting the collections. The superintendents did their very best, but if the exhibits continue to grow in extent the committee must turn their attention to Bingley Hall, or cut out some of the classes from the schedule. It would, however, be a great pity to take any course that would diminish in any way the interest Birmingham takes in its annual autumn show. As soon as the public are admitted the hall is crowded, and those who attend do not appear to go there so much to see and be seen as to exhibit a genuine interest in the subjects competing. The prosperity that has attended the promoters has induced them to arrange for a spring show in April next, and there is no doubt this will be liberally supported.

The largest and best specimens of large flowering Chrysanthemums were staged in lines of three deep on a sloping stage on either side of the hall, flanked at each end by groups of foliage and other plants. Many of the plants were of large size and superbly bloomed, and in not a few cases remarkably well grown, but trained to a convex shape of a severe type. Here and there a plant had been permitted to grow with something of its natural freedom, and in almost every case they were remarkably good. The larger specimens averaged from 60 and 70 to 120 flowers, generally of large size and finely incurved.

The leading class was for nine varieties, and here F. Osler, Esq., Edgbaston (Mr. G. Stacey, gr.), was to the fore with plants of great merit, the varieties being Empress of India, Mrs. Dixon, Guernsey Nugget, Mrs. G. Rundle, Bronze Jardin des Plantes, John Salter, George Glenn, and Ariadne, a pretty pink variety. The plants averaged 4½ to 5 feet across, and consequently occupied a considerable space. 2d, W. Milward, Esq., Edgbaston (Mr. J. Crook, gr.), who had very good plants of Prince of Wales, Lady Hardinge, Prince Alfred, Guernsey Nugget, Lady Slade, and John Salter; 3d, J. Jaffray, Esq., Bristol Road (Mr. E. Denny, gr.). Mr. Stacey also had the best six plants, consisting of Mrs. George Rundle, Lord Derby, Mrs. Dixon, John Salter, George Glenn, and Ariadne. T. W. Webley, Esq., Selly Oak (gr., Mr. W. H. Dyer), was 2d, his best plants being Mrs. Dixon, John Salter, and Fingal. In the classes for three plants, and also for a single specimen, there was a decided falling off in the matter of quality. Mr. Milward staged the best three, and Mr. Denny the best single specimen.

The Pompon varieties were very large plants, densely flowered. Mr. Stacey had the best three and the best six also. The leading varieties were the white, lilac, and yellow Cedo Nulli, Bob, St. Michael, Model of Perfection, &c. Mr. Denny had the best single specimen. Really the plants were too big, and the committee would do well to restrict their size in some degree, for they

occupy an immense deal of room. The specimen Japanese Chrysanthemums were almost all of Elaine, and they fell far behind the incurved varieties in point of merit.

Some of the best cut blooms we have ever seen in Birmingham were staged on this occasion, but they were associated with others of smaller size and rough appearance, which imparted an uneven look to the stands. E. Tonks, Esq., Harborne (Mr. Shingler, gr.) was 1st with eighteen incurved varieties; and R. C. Bradley, Esq., Handsworth (Mr. Palmer, gr.), 2d. In the class for twelve blooms, G. A. Everill, Esq., Knowle Hall (Mr. Comfort, gr.), was 1st; and Mr. Shingler 2d. There was a class for twelve blooms from growers within 12 miles of Stephenson Place; and Mr. Shingler came in 1st, with J. Marigold, Esq. (Mr. Gullier, gr.), 2d. The blooms of Empress of India and Hereward were particularly noticeable in regard to their size and symmetry. Some of the exhibitors appeared to sail pretty close to the wind in the matter of distinctness, and put up flowers surprisingly alike though differently named. There is now such a large selection of fine named Chrysanthemums that a grower for exhibition has no excuse for needlessly exciting suspicion. The varieties shown were similar to those given in previous reports of Chrysanthemum shows.

It is scarcely possible to meet with finer Chinese Primroses than those seen at Birmingham. They are finely grown and grandly bloomed, and the flowers, considering the number on a large plant, were remarkably good. In the nurserymen's class Mr. W. Tomkins, of Sparkbrook, distanced all the other competitors by the superb beauty of his flowers. Mr. Tomkins has done more than any other living man to perfect the Primula: he has imparted to it size, massiveness, and rare novelty of colour. Mr. Tomkins was also 1st with six plants, and Messrs. Pope & Son, Birmingham, 2d in both classes. The twelves and sixes by gentlemen's gardeners were also very good—Mr. S. Eaton, Harborne, being 1st in the large, and Mr. W. Madeley 1st in the smaller class. Mr. W. Matthews was 2d in both classes. The double-flowered varieties were good also, but inferior to the single sorts as exhibition plants; the Fern-leaved varieties, too, made a good display. There were special prizes for the best twelve and six Primulas, Mr. W. Madeley being 1st in the former, and Mr. W. Matthews in the latter. Very fine growth characterised most of the plants.

The classes for nine and six miscellaneous plants are useful ones, as they are the means of bringing in some fine examples of great value in a large hall. Mr. W. H. Dyer was awarded the 1st prize, having a splendid example of *Eucharis amazonica*, a fine *Echeveria metallica*, good Palms, *Dracenas*, &c. 2d, T. Hall, Esq. (W. Home, gr.), with a fine lot, only just inferior, the pretty Plumbago rosea being very attractive. Mr. J. E. Wilson was 1st with six excellent plants, comprising *Croton majesticus*, *Weismanni*, and *Andreanus*, and *Dieffenbachia Bausei* in fine condition; 2d, Mr. Grice, Harborne. There were also Poinsettias, made-up specimens, consisting of not less than five heads, but which were very showy; *Epacris*, *Mignonette*, *Epiphyllum truncatum*, *Cyclamens*, *Solanums*, and *Eucharis amazonica*. Some special prizes, offered for Zonal Pelargoniums in flower, brought a fair representation of this useful winter-flowering plant. There were also special prizes for plants suitable for table decoration, which brought a great lot. This is never a very satisfactory class, as the principles by which they are judged vary so much, according to the fancies of individuals. It would be better to strike this class out of schedules, and substitute for it handsome-foliaged decorative plants grown in pots restricted to size.

Some very good bouquets were shown by nurserymen and gardeners. In the former class Mr. Hans Niemand, Royal Nurseries (Mr. W. Spinks manager, formerly Felton & Sons), was 1st, and Messrs. Pope & Son 2d. Mr. J. E. Wilson had the best bouquet in the gardeners' class, Mr. C. E. Matthews being 2d. The bouquets were a considerable source of interest.

In the way of miscellaneous objects Mr. R. H. Ver-tegans, Chad Valley Nurseries, had Bouvardias, Tuberoses, double Primulas, Zonal Pelargoniums, Azaleas, &c., grouped in large round baskets. Mr. H. Cannell, Swanley, Kent, had a very fine lot of trusses of Zonal Pelargoniums, double and single, that astonished the visitors by the size of the pips and richness of tone. Mr. Spinks had some artistic vases for plants, &c., that were nicely furnished by the exhibitor. There were also some cut Orchids from some one whose name did not transpire, and, as usual, a fine lot of skeleton leaves from a local exhibitor.

FRUIT made a very interesting display, considering the time of the year and the small amount of prizes offered. The collections of six dishes brought several exhibitors. J. Cartland, Esq., King's Heath (Mr. Crawford, gr.), was 1st with Lady Downe's and White Tokay Grapes, Prickly Cayenne Pine, Autumn Bergamot Pears, a small late purple Plum, called Late Blue, and Blenheim Orange Apples. W. Foster, Esq., Tenby (Mr. Willis, gr.), was 2d in the class for four dishes, for growers residing within three miles of Stephenson Place. Mr. Stacey was 1st with Kempsey Alicante and Muscat of Alexandria Grapes, Pitnastock Duchess Pears, very fine indeed; and Lord Suffield Apples. 2d, J. Jaffray, Esq. (Mr. Jinks, gr.). The best three bunches of black Grapes were represented by Alicante in good condition, and they came from G. A. Everill, Esq., Knowle Hall (Mr. W. Comfort, gr.). T. W. Webley, Esq., Selly Oak (Mr. W. H. Dyer, gr.), came in 2d with capital examples of the same variety. In the class for thirty-six Mr. Stacey was 1st with small but well finished bunches of Muscat of Alexandria, Mr. Comfort being 2d with White Nice. In the class for white Grapes (Muscats excluded) Mr. Cartland was 1st with Trebbiano. Mr. Comfort was 1st

with a single bunch of black Grapes, staging a fine example of Gros Guillaume, Mr. Rawbone being 2d with Alicante. In the class for a single bunch of white Grapes, Mr. Stacey again took honours with Muscat of Alexandria, Mr. G. Stone being 2d with Syrian.

Apples were shown in twelve and six dishes, and some good well coloured fruit were staged. The best twelve were shown by Mr. J. E. Wilson, Mr. W. Foster being 2d. In the class for six dishes E. Tonks, Esq., was 1st, and Mr. Wilson was 2d. Pears were not so numerous shown as Apples—Mr. W. Foster carrying off the leading prizes in both classes. The best dish of kitchen Apples was Warner's King, from Mr. E. Chadwick, Kenilworth, Blenheim Orange being placed 2d, and Dumelow's Seedling 3d—all being very good. The best dessert Apple was Ribston Pippin, from Mr. J. Ashman, Summer Queen and Golden Pippin following in order. The best dish of dessert Pears was Beurre Diel; Marie Louise and others were well shown. Cucumbers and Mushrooms were also present. The Birmingham show is fortunate in being officered by a band of zealous workers, who pull well together. Messrs. Latham, Spinks, Stacey, and the indefatigable secretary, Mr. Redfern, are a host in themselves; and their successful administration is a good example for many a struggling society whose greatest misfortune it is to be badly managed.

Bingley Hall Potato Exhibition.—Some 302 dishes, the largest number which has yet at any time been staged, greeted the eyes of the judges at Bingley Hall, Birmingham, on Saturday last. The Potato prizes, as is well known, are offered in conjunction with the Midland Counties exhibition of fat cattle, poultry, roots, &c., and Mr. E. W. Badger is the steward of the Potato department. The place of staging is a long inclined shelf, projecting over the gallery balustrade, and this is divided throughout into shallow bins, two deep, into which the tubers are laid. An important improvement has been made by the introduction of a quantity of white sawdust into these bins, thus making a soft bed for the tubers to lie on securely, as also serving to elevate them above the level of the wooden divisions. The average quality of the samples staged presents a marked advance on what was seen some six years since. Some of our Southern growers, however, then exhibited and took most of the prizes, and the lesson then taught the agricultural grower has not been lost. The first three classes of the schedule, viz., for twelve, eight, and six kinds respectively, are for some reason or other intended by the Council to be limited to farmers, stewards, amateurs, or gardeners, the object of the condition being to exclude seedsmen or the "trade." On the present occasion considerable soreness has been created amongst other exhibitors who come strictly within the classes named, because Mr. Wm. Kerr, of Dumfries, not only entered in the classes, but took in the two 1st and one 2d prizes, that individual being a seedsmen, and a member of the firm of Kerr & Fotheringham, seedsmen, of the northern burgh. Naturally objections have been raised, and the objectors, it is alleged, could point to the remarkable fact in support of their objections, that whilst Mr. Kerr was competing in the Potato classes as a private individual he was also exhibiting Potatoes in a stand under the title of the firm of Messrs. Kerr & Fotheringham. The managers of the show should be asked to refute or explain this occurrence.

The class for twelve varieties, twelve tubers each, had added to a 1st prize of £5 a Silver Cup, given by Messrs. Sutton & Sons, of Reading. Eight collections were staged, Mr. Kerr coming 1st, with good samples of Pride of America, Mammoth Pearl, Beauty of Hebron, Trophy, Triumph, Climax, Schoolmaster, Vicar of Laleham, Magnum Bonum, Salmon Kidney, Porter's Excelsior, and Grampian. Mr. C. W. Howard, of Canterbury, took 2d place, with good Vicar of Laleham, Schoolmaster, Snowflake, Magnum Bonum, Porter's Excelsior, &c. Mr. J. Perry, Acton Pigott, Shropshire, was 3d, having in his collection good International, Radstock Beauty, Lady Pigott, American Purple, &c. In the class for eight kinds, to the 1st prize of £3 George Wise, Esq., one of the Council, adding a handsome Silver Cup: Mr. P. McKinlay, of Penze, was a good 1st, out of twelve collections, having handsome Vicar of Laleham, Triumph, Schoolmaster, Breadfruit, Magnum Bonum, Grampian, Beauty of Hebron, and Porter's Excelsior; Mr. Kerr was 2d, and Mr. Perry 3d. For six kinds Mr. Kerr was again 1st, with Schoolmaster, Grampian, Oneida, Salmon Kidney, Bresee's Prolific, and Magnum Bonum; Mr. Howard was 2d, with Edgemoor Seedling, Woodstock Kidney, Grampian, Porter's Excelsior, Schoolmaster, and Purple Ashleaf; Mr. J. Bickworth, of Loughborough, was placed 3d.

There were six competitors in the class for two kinds, Mr. Perry coming 1st, with Woodstock Kidney and Early Vermont; Mr. Kerr was 2d, with Triumph and Schoolmaster; and Mr. Howard 3d, with Superior and Edgemoor Seedling. The other three collections were poor. As might have been expected, the prizes for a single dish of twelve Ashleaf kidneys brought a poor competition, only five very moderate lots being staged. Mr. J. C. Cauce, of Winmarleigh, Lancashire, was 1st, and Mr. Perry 2d. In the Lapstone class there were only four lots, the 1st place being taken by Mr. Pickworth with good samples, Mr. George Dunckley, Northampton, and Mr. Cauce coming in the order named with indifferent tubers. Only four lots competed in the class for twelve white Regents, and these were of very moderate quality, the prizes going to Mr. Kerr, Mr. Cartwright, Fife, and Mr. Pickworth, as placed. Of Scotch Champions there were nine exhibitors, the samples generally rather coarse and ugly. Curiously enough Southern growers in Messrs. Howard and Perry were 1st and 2d, and Mr. Kerr 3d.

There were seven lots in competition for the best dish of Schoolmaster, Messrs. Kerr and Howard having good samples, but the rest were poor. For twelve tubers of any white kidney Mr. Kerr was 1st, Mr. McKinlay 2d with Pride of America, a tuber that bears a close resemblance to Snowflake. In a similar class for coloured kidney, Mr. Kerr came first with Trophy, and Mr. McKinlay 2d with Mr. Bresee. For any white round Mr. Kerr was 1st with Porter's Excelsior, and Mr. McKinlay 2d with Breadfruit. For any coloured round Mr. McKinlay took 1st place with the Grampian, Mr. Kerr coming next with Vicar of Laleham. Finally, for any American kind the two Gaels again contended, Mr. Kerr coming 1st with Mammoth Pearl, and Mr. McKinlay 2d with Matchless. As it is specially stated with the four preceding classes that they are for kinds not otherwise provided for in the schedule, and as this last is a special class for American sorts, it seems hard to understand how Americans could be admitted to win in the white and coloured kidney classes. By this admission, and having a special class, the Council really favour American kinds over those home raised. A Silver Medal, value two guineas, given by Mr. Ottley, of Birmingham, for the best dish of Potatoes in the show was won by Mr. McKinlay, with Schoolmaster.

York Ancient Florists' Chrysanthemum Show.

—The above Society, which has been in existence for 120 years, and has from time to time done good service in encouraging the growth of florists' flowers, has this year for the first time ventured to hold a Chrysanthemum show, which on the whole must be considered to have been a success. The schedule of prizes was not at all extravagant in regard to money value, yet the gentlemen and gardeners of York and the vicinity came forward well, thus proving that there are some people who do not look upon large money prizes as a necessary part of their exhibiting programme. The show took place in the large building erected for the Fine Art Exhibition that was so successfully held in York last year, and which was admirably adapted for the purpose. There are a quantity of Fine Art subjects still on view, especially some fine statuary, which latter made fine centres for tastefully arranged groups of flowering and foliage plants which, in addition to Chrysanthemums, the committee wisely decided to offer prizes for. The 1st prize for a group to cover 8 ft square feet was awarded to T. H. Hingston, Esq., Clifton (Mr. McIntosh, gr.), for a very nicely arranged group, the principal features in which were some good Poinsettias and Primulas, with a nice margin of Panicum variegatum and Isolepis gracilis; 2d, Messrs. Lazenby & Sons, nurserymen, York. For a group to cover 36 square feet the 1st prize was awarded to Mrs. Cowl, Burton Lane, York. There was good competition for nine specimen Chrysanthemums, large-flowered varieties: 1st Mr. Smith, Layerthorpe, York; 2d, H. Newton, Esq., Grove Lodge, York. For six ditto Mr. Smith was again 1st. The plants in both his collections were not quite so full of flower as some of those in the other collections, but the individual blooms were fresh, and the plants were not so stiffly trained. There was not quite so good a competition in the Pompon classes, though some very good plants were shown. In the class for four Japanese varieties Mr. Smith was again 1st, with clean, well bloomed plants of Hero of Magdala, Fulgore, Orphée, and Elaine; Mr. Newton was a good 2d. For one Japanese Mr. Bleasdale, York, was 1st, with a fine plant, well flowered, of Fair Maid of Guernsey.

In the cut flower classes there were some very fine blooms exhibited, especially in the three 1st prize stands for eighteen, twelve, and six large-flowering varieties. H. Craven, Esq., Leeds (gr., Mr. Hemming), was 1st in the three classes. There were also some nice stands of Pompons and Japanese varieties.

For six Primulas T. H. Hingston, Esq., Clifton, was 1st, with remarkably good plants. Messrs. Lazenby & Sons had some good Cyclamens, which came in 1st in the Cyclamen class. There were three collections of table plants shown, all nice healthy plants. In the class for eight British Ferns there were also three nice collections. 1st, D. W. R. Robinson, Esq., York; 2d, J. Buckle, Esq., York; 3d, Mr. Jamieson, York. Prizes were offered for stands of cut Camellias, hand bouquets, and also twelve coat bouquets, in all of which classes there was considerable competition.

There were, moreover, prizes for fruit. In the class for two bunches of black Grapes, also one bunch, Messrs. Noble & Ridsdale, nurserymen, Boston Spa, were well 1st, with some very fine bunches, well coloured and finished, of Black Alicante. The same firm were awarded 1st in the class for two bunches of white Grapes for large bunches of Waltham Cross, with fine berries. For twelve baking Apples Captain Darnell, Dringhouse, York, was 1st, with splendid fruit of Warner's King. Mr. Key, nurseryman, York, was 1st for twelve dessert Pears, with fine fruit of Beurre Diel. There were several fine trays of vegetables shown. Messrs. Backhouse, of York, sent some fine stems of what was called "Hind's Selection" of Brussels Sprouts, which the judges considered were worth a special prize. Just inside the exhibition building there was a splendid circular group of choice Conifers, variegated Hollies, variegated Box, and other choice shrubs, sent by Messrs. James Backhouse & Sons, of Holgate Nurseries, York. *H. J. C.*

PUBLICATIONS RECEIVED.—*Peruvian Bark.* By Clement R. Markham, C.B., F.R.S. (Murray.)—*The Seventh Christmas Number of the Illustrated Sporting and Dramatic News.* (148, Strand.)—*European Ferns.* (Casell.)—*Familiar Wild Flowers.* (Casell.)

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, DEC. 1, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.					HYGROMETRICAL DEDUCTIONS FROM GLASHEATH'S TABLES, 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 10 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure from Average of 60 years.	Dew Point.	Degrees of Humidity.		
Nov. In.	In.										
25	30.56	-0.13	55.1	41.5	13.6	48.2	+6.6	43.6	85	WSW	0.17
26	29.49	-0.21	54.9	40.1	14.8	49.2	+7.4	43.6	81	S.S.W.	0.16
27	29.98	+0.28	52.0	41.0	11.0	46.2	+4.7	39.5	78	WSW	0.00
28	30.22	+0.51	51.5	40.0	11.5	46.1	+4.7	41.4	84	S.S.W.	0.00
29	30.25	+0.54	51.0	41.2	9.8	46.1	+4.1	40.7	83	S.W.	0.00
30	30.21	+0.4	46.0	36.2	9.8	41.0	-0.7	37.6	88	S.W.	0.00
Dec. 1	29.95	+0.22	49.8	40.8	9.0	46.0	+4.4	42.8	90	S.S.W.	0.01
Mean	29.95	+0.24	51.5	40.1	11.4	46.1	+4.5	41.3	84	S.W.	0.04

Nov. 25.—Fine till 1 P.M. dull with heavy showers of hail and rain till 3 P.M. Fine afterwards and cloudless after 6 P.M. Thunder and lightning at 2.50 P.M. A strong wind. Mild.
— 26.—Dull and cloudy till 5 P.M., fine afterwards. Strong wind. Rain in morning. Mild.
— 27.—A very fine, bright clear day. Mild. Windy.
— 28.—A fine day, occasional bright sunshine. Mild, strong wind.
— 29.—A very fine bright day. Clear sky throughout.
— 30.—A fine bright day. Partially cloudy. Cool. Overcast at night.
Dec. 1.—Overcast till 2.30 P.M., fine till 6 P.M. Dull after. Mild. Thin rain at night.

LONDON: Barometer.—During the week ending Saturday, November 27, in the suburbs of London the readings of the barometer at the level of the sea increased from 30.42 inches at the beginning of the week to 30.43 inches by the morning of the 21st, decreased to 29.64 inches by the morning of the 25th, increased to 29.97 inches by the evening of the same day, decreased to 29.61 inches by mid-day on the 26th, and increased to 30.31 inches by the end of the week. The mean reading for the week at sea level was 29.94 inches, being 0.54 inch above that of the preceding week, and 0.07 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 55° on the 25th to 35° on the 22d; the mean value for the week was 47½°. The lowest temperatures of the air observed by night varied from 25° on the 22d to 41½° both on the 24th and 25th; the mean value for the week was 35½°. The mean daily range of temperature in the week was 12°, the greatest range in the day being 15½° on the 23d, and the least 8½° on the 21st.

The mean daily temperature of the air and the departures from their respective averages were as follows:—21st, 32°.5; 22d, 29°.4; 23d, 36°.8; 24th, 47°.6; 25th, 48°.2; 26th, 49°.2; 27th, 40°.3; 28th, 47°.7. The mean temperature of the air for the week was 41°.4, being 0°.2 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 95° on the 21st, 92° on the 25th, and 91° on the 27th; on the 23d, 24th, and 26th, the readings did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 17½° on the 21st, 18½° on the 22d, and 26° on the 23d; the mean of the seven lowest readings was 29½°.

Wind.—The direction of the wind was S.W., and its strength gentle at the beginning of the week, but very strong afterwards, and particularly so on the 25th and 26th. The weather during the week was mostly fine, but the sky cloudy. It was very cold on the first three days of the week, but mild afterwards. Thunder was heard and lightning seen, and a gale of wind prevailed on the 25th. A little snow fell on the 21st.

Rain.—Rain fell on four days, the amount measured was 0.41 inch.

ENGLAND: Temperature.—During the week ending Saturday, November 27, the highest temperatures of the air observed by day were above 57° at Truro, Cambridge and Norwich, and below 54° at Wolverhampton, Liverpool and Sunderland; the mean value from all stations was 55½°. The lowest temperatures of the air observed by night were below 20° at Leicester, Wolverhampton, Nottingham and Sheffield,

and above 29° at Truro and Plymouth; the mean value from all places was 23°. The extreme range of temperature in the week was more than 38° at Leicester and Cambridge; and less than 28° at Truro, Plymouth and Brighton; the mean range of temperature from all stations was 32½°.

The mean of the seven high day temperatures was above 49½° at Truro and Plymouth, and below 46° at Wolverhampton, Nottingham, Hull, Bradford, and Sunderland; the mean from all places was 47°. The mean of the seven low night temperatures was below 33° at Wolverhampton, Nottingham, Sheffield, and Hull, and above 40° at Truro and Plymouth; the general mean from all stations was 35°. The mean daily range of temperature was more than 14° at Bristol, Wolverhampton, Nottingham, and less than 11° at Plymouth, Brighton, Norwich, Liverpool, and Bradford; the mean daily range of temperature from all places was 12°.

The mean temperature of the air for the week from all stations was 40½°, being 5¼° higher than the value for the corresponding week in 1879. The mean temperature was above 44° at Truro and Plymouth, and below 39° at Wolverhampton, Nottingham, and Hull.

Rain.—Rain fell generally on five or six days during the week; the heaviest falls were at Plymouth, 1.54 inch; Truro, 1.43 inch; and Bristol, 1.29 inch; and the least falls were at Cambridge, 0.19 inch; and Leicester, 0.28 inch. The average fall over the country was 0.63 inch.

During the first three days of the week the weather was very cold and wintry, with snow at several places; fine mild weather prevailed afterwards.

SCOTLAND: Temperature.—During the week ending Saturday, November 27, the highest temperatures of the air varied from 53½° at Glasgow to 50° at Perth; the general mean from all places was 52½°. The lowest temperatures of the air observed by night varied from 11° at Perth, 12° at Glasgow, 15° at Aberdeen, and 17° at Dundee, to 23° at Greenock; the mean value from all stations was 17°. The mean range of temperature from all places was 35¼°.

The mean temperature of the air for the week from all stations was 37½°, being ½° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 39° at Aberdeen and Leith, and below 34° at Perth.

Rain.—The amounts of rain were the heaviest at Glasgow and Greenock (one inch and nine-tenths), and the least at Aberdeen and Leith (four-tenths of an inch); the average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 55½°, the lowest 21¼°, the extreme range 34¼°, the mean 43½°, and the fall of rain 0.48 inch.

JAMES GLAISHER, F.R.S.

Obituary.

WE regret to record the death, last week, of Dr. LAUDER LINDSAY, the lichenologist, at the age of 52. Dr. Lindsay about a year ago resigned the office of Medical Superintendent to the Murray Institute for Lunatics, Perth, on the pension list, after a service of over twenty years, and had been trying by travel and rest to recruit a shattered system. Though weak there were no manifest indications of the end which was so near: he had been out of the house the day previous. As a schoolboy Lindsay displayed to the full that enthusiastic love of knowledge and foreign travel, as well as that facility with the pen and pencil, which distinguished his after years. The venerable emeritus Professor of Botany at Edinburgh has now to add another to that list of pupils, including Murchison and Thomas Anderson, who, inspired by his enthusiasm for work, have made their mark ere passing into the silent land. Lindsay found the study of lichens so entrancing as to compel laborious research, carried on in the intervals of a harassing professional career, enough to have exhausted the energies of an ordinary man. As he used to say, though fully tied to the harness, he had been an invalid for the last twenty years, and he sighed for some quiet scientific position where he might uninterruptedly pursue his bents. The popular *History of British Lichens*, published by Lovell Reeve, is well known to the general reader, and his illustrated papers, one of which obtained the Neill Prize from the Royal Society of Edinburgh, form a thick quarto volume, illustrated by some hundred careful and beautiful figures. In one of the long vacations kindly given him by his directors, Lindsay visited New Zealand, then in the full blush of the gold discoveries. Another quarto, *Contributions to New Zealand Botany*, lies before us as the result of this tour; besides other papers on plant

acclimatisation, or gold distribution, sufficient to fill two large octavos. Not content with such bye-walks in natural science Dr. Lindsay was also a voluminous author in his special department of medicine. Whatever may be thought of the merits of his last book *On Mind in the Lower Animals* it is also a monument of unwearied zeal and enthusiasm. He was curiously collecting all the adverse reviews from the leading periodicals on either side of the Atlantic, confident that truth, as he thought he had it, would ultimately triumph.

— The announcement of the death, on the 28th ult., at an advanced age, of Mrs. CHATFIELD, at the house of her grandson, Sir Charles Dilke, M.P., Sloane Street, will be received with sympathy by those who were associated with the late Sir Wentworth Dilke in his numerous labours on behalf of science and art.

— We have also to record the death, on November 15, of Mr. G. W. YAPP, an occasional contributor to this and many other journals, of information on a great variety of subjects gained in Paris. His letters from that city, during the siege, to the *Food Journal* are well remembered.

Variorum.

A BEE-FARM IN NEW SOUTH WALES.—Although, besides the several varieties of *Melipones* indigenous to the country, the European hive-bee has been introduced into New South Wales, and thrives and multiplies there, and although there is no lack, but an unusual abundance, of flowering plants on which the insects may feed, no serious attempt at bee-culture has until lately been made in any part of the colony. An undertaking of this nature, however, on a considerable scale, has recently been started by Mr. William Dunn, of Sydney, who has devoted a large area on the banks of the Cook's River, near Enfield, to the erection of all the appliances necessary for a bee-farm. The surrounding country is generally pretty thickly clothed with the ordinary forest and scrub—Tea trees and Eucalypti, with many kinds of under-shrubs, the whole affording abundant "pasturage" for the bees during the greater part of the year; while within bee-flight are numerous gardens, orchards, and farms, which will also afford pasture for the valuable insects. These neighbouring orchards and farms will, in return for the honey which they will afford their industrious visitors, derive considerable benefit from the unconscious labours of the bees in fertilising the flowers visited by them. Mr. Dunn has several rows of hives protected from the rain and sun by light sheds, and between each row are planted a number of dwarf Orange trees, which form an important feature of the farm. The farm has been in full operation for about two years, and about 150 colonies of bees have been established. The honey produced has been of good quality, averaging 100 lb. from each hive; but it is hoped to improve the results, both as to quantity and quality, by careful cultivation of the bees, and by importing new stock. So far Mr. Dunn has not suffered from the ravages of the wax-moth, which has so seriously interfered with the attempts to establish bee-culture in Queensland. This immunity is attributed in great measure to the superior construction of the hives, which offer no facilities for the breeding of this pest. No doubt many similar undertakings will result from this success, and certainly few countries offer greater advantages to the apiculturist than the flowery plains of New South Wales. *The Colonies and India*.

Enquiries.

He that questioneth much shall learn much.—BACON.

PEAT FOR FUEL.—*J. H.* would be much obliged to any correspondent for information as to where he can get "Fuel Peat."

Answers to Correspondents.

APPETENCIBS: *John Thomas*. Buy a Dictionary, and present it to the mistress of the Board School, or report her for incompetency.

BORDER FOR CORDON PEAR AND APPLE TREES: *C. M. Emmet*. Trench it some 2 or 3 feet deep, and plant.

MENTHA PULEGIUM: *J. J. S. Madras*. The apparent exceptions to the rules you mention are thus explained:—*Pulegium* is a name used by Pliny, and adopted by Tournefort and ante-Linnean botanists. Linnaeus recognised it or adopted it for the Pennyroyal, which he called *Mentha Pulegium*, the use of the capital P indicating the fact that the plant so denominated was—or was supposed to be—the old *Pulegium*. It is therefore a noun substantive, not an adjective, as you suppose, and being merely apposed,

need not agree with the preceding substantive. The use of a capital letter to a specific name, therefore, indicates to a botanist the fact that the second name was once used in a generic sense. *Mentha Pulegium* may be taken to mean that the plant so designated was once called, say, *Pulegium officinale*. We give this illustration of a common practice without at the moment being able to verify its accuracy in this particular instance; but in any case the principle is correct, and its utility consists in the historical information given to the botanist at a glance. As to the third name, we agree with you that it would be better to write it in the feminine, thus—*Mentha Pulegium gibraltaria*: the feminine termination agreeing with that of the now adopted genus and with the word *varietas* understood. These matters are all regulated by botanical usage, and by the suggestions contained in such works as Linnaeus' *Philosophia*, De Candolle's *Thorie*, and A. de Candolle's *Lois de Nomenclature Végétale*.

NAMES OF FRUITS: *J. D. P., Temple*. 1, Winter Nells; 2, Comte de Lany; 3, Marie Louise; 4, Easter Beurré. — *G. Owens*. 1, Golden Noble; 2, Court of Wick; 3, Zépherin Grégoire; 4, Maréchal de la Cour.

NAMES OF PLANTS: *S., Bournemouth*. The plant known as the "Jerusalem Cowslip," and of which you send leaves, is *Pulmonaria officinalis*. It has, of course, nothing to do with Jerusalem, nor is it a Cowslip. You will find it recorded in Prior's *Popular Names of British Plants*.—*D. Walker*. 1, *Limnolobos rosea*; 2, *Calanthe Veitchii*.—*T. W. S.* 2, *Gymnogramma Mertensii*; 3, *Blechnum occidentale*; 4, *Doodia caudata*; 5, *Lastrea decomposita*.—*A. J. B.* Not a Fern, but one of the Mosses (*Bryum ligulatum*).—*Gayton*. *Heterocentron multiflorum*.—*W. H. C.* 1, we do not recognise; 2, *Thuiopsis dolabrata*; 3, *Festuca glauca*.

PLANTING VINES: *J. R. M.* Now is a very good time to prepare your Vine border, and then to plant the Vines any time between now and February. Gros Maroc is not so good a keeping Grape as Lady Downe's, but is of much better quality than Gros Colmar. We should prefer it.

POINSETTIA: *Novice*. The head of bracts on a well grown plant frequently measures upwards of a foot across—12 to 16 inches.—*J. S. Gray*. The variety sent appears to be the same as *P. p. rosea*, the soft carmine tint of which forms a pleasant contrast with the scarlet of the original type.

RHODODENDRON GRAFTING: *J. R. H.* will find an illustrated paper on "Grafting Rhododendrons," by the late Mr. John Standish, in our number for March 11, 1871.

VINE BORDERS: *C. M. Emmet*. To answer your question fully would occupy too much of our space. A Vine border should be about 2½ feet deep, and with about 2 feet of rubble for drainage; soil good fresh loam, mixed with old lime or brick rubbish, to give it porosity according as it may be more or less clayey, with burnt ashes, and, say, a half bushel of ground bones to every square yard—very little other manure.

CATALOGUES RECEIVED.—Friedrich Spittel (Arnstadt near Erfurt), Trade Catalogue of German Flower Seeds.—The Lawson Seed and Nursery Company (Edinburgh and London), Catalogue of Forest and Ornamental Trees, Shrubs, &c.—H. & F. Sharpe (Wisbech), Special List of Seed Potatoes.—James Bird (Downham Market), Trade List of Nursery Stock.

COMMUNICATIONS RECEIVED.—*J. S.*—*T. Smith* (received, but crowded out).—*W. K.*—*J. V. & Sons*.—*S. & S.*—*J. P.*—*E. P.*—*C. F.*—*W. M.*—*G. M.*—*J. C. M.*—*T. M.*—*D. Morris*.—*J. B.*—*Dr. Thwaites*.—*C. S. J.*—*J. D.*—*A. O.*

Markets.

COVENT GARDEN, December 2.

American Apples are still arriving in large quantities, but in bad condition, prices generally being low; a few good samples sell at improved rates. Hothouse Grapes are in better demand, at increased values. Trade quiet. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	.. 2 0 5 0	Lemons, per 100	.. 6 0-10 0
Cobs, per lb.	.. 1 9-2 0	Pears, per dozen	.. 1 6-5 0
Grapes, per lb.	.. 1 0-4 0	Pine-apples, per lb.	1 0-2 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe, per doz.	.. 3 0-6 0	Horse Radish, p. bun.	4 0-..
Asparagus, Fr. bncl.	1 6-2 0	Lettuces, Cabbage, per doz.	.. 0 6-1 6
Beans, French, p. lb.	0 0-..	Mint, green, bunch.	.. 0 4-..
Beet, per doz.	.. 1 6-2 6	Mushrooms, p. basket	1 6-2 0
Cabbages, per doz.	.. 1 0-2 0	Onions, per bushel	5 0-..
Carrots, per bunch.	0 4-0 6	— Spring, per bun.	0 6-..
Cauliflowers, Eng.	.. 0 3-0 6	Parsley, per bunch.	0 4-..
— lish, each	.. 0 3-0 6	Radishes, per bun.	0 2-..
Celery, per bundle	1 6-2 0	Seakale, per basket	3 6-..
Chilis, per 100	.. 3 0-..	Small saladng, pun.	0 4-..
Cucumbers, per doz.	6 0-9 0	Squash, per bushel	4 0-..
Endive, per doz.	.. 1 0-1 6	Tomatoes, per lb.	0 9-1 0
Garlic, per lb.	.. 1 0-..	Turnips, new, bunch.	0 4-..
Herbs, per bunch	0 2-0 4		

POTATOS:—Kent Regents, 8s. to 10s.; Champions, 6s. to 8s.; Best Regents, 12s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Begonias, per doz. 6-12 0	Evergreens, in var., per dozen 4-10 0
Bouvardias, per doz. 12-24 0	Ferns, in variety, doz. 4-10 0
Chrysanth., per dozen 6-12 0	Ficus elasticus, each 1-6 7 6
Cyclamen, per doz. 12-18 0	Foliage Plants, various, each 2-10 6
Cyperus, per dozen 6-12 0	Fuchsias, per dozen 9-12 0
Dracena terminalis 30-60 0	Hyacin., Rom., doz. 15-18 0
— viridis, per doz. 12-24 0	Myrtles, per doz. 0-12 0
Epiphyllum, per dozen 18-30 0	Palms in var., each 2-21 0
Erica gracilis, dozen 9-18 0	Primula, single, per dozen 5-6 0
— calif., per doz. 8-12 0	Solanums, per dozen 0-13 0
— hyemalis, 12-36 0	Tulips, 12 pots 12-0 0
Eutonymus, various, per dozen 6-18 0	

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.
Abutilon, 12 blooms 0-3-0 6	Marguerites, 12 blms. 0-4-0 9
Arum Lilies, 12 blms. 6-9 0	Mignonette, 12 bun. 4-9 0
Asters, 12 bunches 9-12 0	Narcissus, Paper-White, 12 sprays 3-4 0
Bouvardias, per bun. 1-3 0	Pelargoniums, 12 sprays 0-9-1 6
Camellias, per dozen 3-0 0	— zonal, 12 sprays 6-9 0
Carnations, 12 blms. 1-2 0	Primula, double, per bunch 1-0-1 6
Chrysanth., 12 bun. 3-9 0	— single, 12 sprs. 0-9-1 6
— 12 blooms 0-3-0 6	Roses (indoor), doz. 2-6 0
Cyclamen, 12 blms. 0-3-0 6	Stephanotis, 12 spr. 9-15 0
Epiphyllum, 12 blms. 1-0-1 6	Tropaeolum, 12 bun. 1-6 0
Eucharis, per doz. 4-0 0	Tuberose, per dozen 1-6 0
Gardenias, 12 blms. 0-18 0	Violets, 12 bunches 1-6-2 6
Heliotropes, 12 spr. 0-6-1 0	— Neapolitan, Fr., per bunch 3-6-5 0
Hyacinth, Roman, 12 sprays 2-0-3 6	— Crar, Fr., bunch 2-0-10 0
Lapageria, white, 12 blooms 4-6 0	
— red, 12 blooms 1-6 0	
Lilac, Fr., per bunch 8-10 0	

SEEDS.

LONDON: Dec. 1.—The market to-day was thinly attended, and not much business was transacted. Owing to the unsatisfactory quality of nearly all the new red Clover seed which offers, increasing attention is devoted to fine yearling samples, and for these holders continue to raise their demand. A good trade has been doing this week in Trefoil, and an advance is noted in value of fully 1s. per hundredweight. No interest for the moment is manifested either in Alsike or white Clover. For Italian Rye-grass £1 per ton more money is asked. The dealings in bird seeds, as usual towards Christmas, are now very small. There is no quotable variation in Haricot Beans or boiling Peas. Split Lentils are now exceedingly cheap. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CATTLE.

At the Metropolitan Market on Monday the average quality of both English and foreign beasts was very middling, consequently there was not a large reduction in the price of choice ones. The supply of sheep was far in excess of the demand, so that prices were lower and a clearance could not be made. Trade was dull for calves, at lower rates. Quotations:—Beasts, 4s. 4d. to 4s. 8d., and 5s. to 5s. 10d.; calves, 4s. 6d. to 5s. 10d.; sheep, 5s. to 5s. 8d., and 6s. 2d. to 6s. 10d.—On Thursday trade was quiet. Supplies were short, but sufficient for the demand, both beasts and sheep moving off slowly at about Monday's rates. Calves were dull.

HAY.

Tuesday's Whitechapel Market report states that the supply of fodder was large, but trade dull at the following quotations:—Prime Clover, 100s. to 120s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 100s.; inferior, 30s. to 70s.; and straw, 30s. to 40s. per load.—On Thursday there was a large supply of hay and straw on sale. Trade was dull, except for best Clover, but prices were without alteration.—Cumberland Market quotations:—Superior meadow hay, 90s. to 100s.; inferior, 45s. to 80s.; superior Clover, 110s. to 120s.; inferior, 70s. to 92s.; and straw, 36s. to 42s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that large supplies are offering. About an average business has been doing, at the following quotations:—Scotch Regents, 100s. to 110s. per ton; ditto Champions, 80s. to 90s.; Essex Regents, 90s.; ditto Champions, 80s.; Victorias, 100s.; German Reds, 4s. to 5s. per bag; Belgian Kidneys, 4s. per bag.—The imports into London last week were:—62,730 bags from Hamburg; Antwerp, 5,744 bags 120 tons; Bordeaux, 2938; Rotterdam, 440; Boulogne, 1000; Rouen, 98 bags 302 tons; Stettin, 26,655; Bremen, 6009 bags 3 barrels; St. Nazaire, 195 sacks; Dunkirk, 72 tons; Ostend, 30 bags; Amsterdam, 8; Harlingen, 5; Roscoff, 48 tons.

COALS.

The prices current at market during the week were as follows:—Bebe Widest Hartley, 14s. 9d.; East Wylam, 16s. 6d.; Walls End—Hetton, 18s.; Hetton Lyons, 16s. 6d.; Lambton, 17s. 6d.; Wear, 16s. 6d.; Tees, 17s. 9d.; Hawthorns, 16s. 9d.; South Hetton, 18s.; Radford Navigation, 16s.

Government Stock.—The closing prices of Consols on Monday were, for delivery, 100½ to 100½, and 100½ to 100½ for the account. On Tuesday the final quotations were, for delivery, 100½ to 100½, and 100½ to 100½ for the account. Wednesday's closing figures were, for delivery, 98½ to 98½ ex div., and for the account, 99 to 99½ ex div.; and those of Thursday were 98½ to 99 ex div., for delivery, and 99½ to 99½ ex div. for the account.

NEW RASPBERRY,

BAUMFORTH'S SEEDLING.

This splendid new and distinct variety was raised from a batch of Northumberland Fillbasket Seedlings, and has been exhibited for several seasons against all the best and approved sorts—always carrying off the 1st prize. It received a First-class Certificate at the Leeds Horticultural Exhibition this year, as well as the Judges' Commendation at many of the leading shows.

The fruit is of an immense size and fine quality, in shape more round and larger, of a darker crimson colour, and the seed pits considerably more developed and prominent than the parent. It is of vigorous growth, with large dark green foliage, and from its strong and prolific constitution frequently throws out a second crop from the season's young wood.

Price, 10s. 6d. per Dozen Canes.

EDMUND PHILIP DIXON, HULL.

The following Firms have already received a supply of above:—

BACKHOUSE, JAS. & SON	York.
BRADLEY, SAM'L	Littledale.
BULL, WM.	Chelsea.
BUNYARD, G. & Co.	Maidstone.
CRIPPS, THOS. & SON	Tunbridge Wells.
CANNELL, HY.	Swanley.
CANNON NURSERY & SEED CO. (Limited)	Hereford.
DICKSON, JAS. & SONS	Newton Nursery, Chester.
DICKSONS & Co.	Edinburgh.
DIXON, JNO. E.	Gainsborough.
DOWNIE & LAIRD	Edinburgh.
EWING & CO.	Norwich.
FISHER, SON & SIBBAY	Handsworth Nursery.
FRASER, J.	Lea Bridge Road.
FORBES, MR.	Esbank Nursery.
GOLDING, J.	Croft Nursery.
HOLMES, EDWD.	Whittington Nursery.
HARTLEY, SAM'L	Headingley.
JEFFERIES, J., & SONS	Cirencester.
IRELAND & THOMSON	Edinburgh.
LAING, JOHN, & Co.	Forest Hill.
LOW, HUGH, & Co.	Clapton Nursery.
LANE, H., & SON	Berkhamstead.
LEE, CHAS., & SON	Hounslow.
MORRISON BROS.	Hammersmith.
NELSON, JOHN	Forbesfield Nursery.
OSBORN & SONS	Thorne Bank Nursery.
ORMISTON & RENWICK	Fulham.
PAUL & SON	Melrose.
RIVERS, THOS., & SONS	Cheshunt.
SAUNDERS, M., & SONS	Sawbridgeworth.
SHALE, W. B.	Cork.
SHAW, HIRAM	Torquay.
SUTTON & SONS	Richmond Hill Nursery.
STUART & MEIN	Reading.
SMITH, WM., & SON	Kelso.
WALTERS, J.	Kintore.
	Abergavenny.

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JOHNSTONE'S ST. MARTIN'S RHUBARB.—Earliest and best in cultivation, forces well. Strong Roots 1s. each, 9s. per dozen. Trade price on application. Priced Trade CATALOGUE of Seedling and Transplanted Forest Trees, &c. free on application. W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

ASPARAGUS.—ASPARAGUS.—Extra strong forcing roots. Also SEAKALE. For price apply to OSBORN AND SONS, The Fulham Nurseries, London, S.W.

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SPRUCE FIRS, 1½ to 2 feet, 4s. per 100; 30s. per 1000. 2 to 3½ feet, 7s. per 100; 50s. per 1000. JOHN PERKINS AND SON, 52, Market Square, Northampton.

Seed Catalogue.

V. SCHERTZER AND SONS, SEEDSMEN and FLORISTS, Haarlem, Holland, beg to announce that their Wholesale LIST of Garden Seeds is now ready, and may be had post-free on application.

Roses.—Torquay.

CURTIS, SANFORD AND CO., of the Devon Roseries, adjoining the Railway, have this season to send out an unusually fine stock of STANDARD and DWARF ROSES, well ripened trees. Best Standards from £7 10s. to £10 per 100. DWARFS of the finest leading varieties of Perpetuals, a very choice collection of Thirty for 1 Guinea, our own best selection. Larger collections as above in orders of not less than 100, strong DWARFS, at 50s. per 100. LISTS sent free on application. Plants added gratis for carriage.

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POPLAR, Black	SVCAMORE, Purple
LABURNUM, Purple	THORN, Scarlet
MAPLE, Norway	— Paul's
OAK, Scarlet	ELM, Common
LIMES	— English
ASH	— American
CHESTNUT, Horse	— Variegated
— Scarlet	SERVICE TREE
Standard APPLES and PEARS	
COB NUTS, Webb's, 3 to 5 feet	RHODODENDRONS, various, 2 to 6 feet
Standard RHODODENDRONS.	

It is believed no Establishment in Europe can show such a Stock of the above as CHARLES NOBLE'S Nursery, Bagshot, Surrey.

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Quickwood, Ornamental Trees, &c. MARTIN AND SON, Hull and Cottingham, offer as under:—

LIMES, 8 to 10 feet, 30s. per 100. CHESTNUT, Horse, 8 to 10 feet, 30s. per 100. POPLAR, Black Italian, 10 to 12 feet, 20s. per 100. ELM, 8 to 10 feet, 30s. per 100. ASH, Mountain, 10 to 12 feet, 30s. per 100. BEECH, 5 to 6 feet, 20s. per 100. SYCAMORE, 8 to 10 feet, 25s. per 100. ALDER, 6 to 8 feet, 12s. per 100. HAZEL, bushy, 6 to 8 feet, 30s. per 100. MIXED ORNAMENTAL TREES, 10 to 12 feet, 30s. per 100. QUICKWOOD, 1½ to 2 feet, 14s. per 1000. 2 to 2½ feet, 17s. 6d. per 1000.

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COCOA-NUT FIBRE REFUSE, 3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each. **LIGHT BROWN FIBROUS PEAT,** 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton. **BLACK FIBROUS PEAT,** 5s. per sack, 5 sacks 25s.; 12 for 40s., or 34s. per ton; sacks, 4d. each. **COARSE SILVER SAND,** 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each. **YELLOW FIBROUS LOAM, FEAT MOULD, and LEAF MOULD,** 1s. per bushel. **SPHAGNUM MOSS,** 8s. 6d. per sack. Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for FREE PRICE LIST. H. G. SMYTH, 17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

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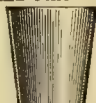
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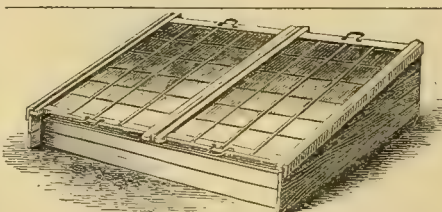
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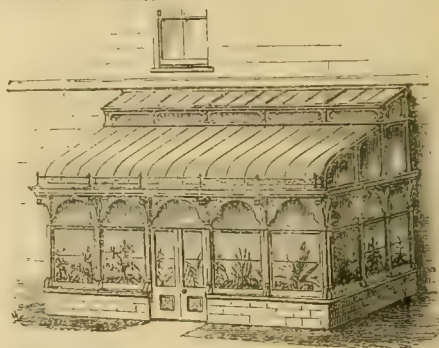
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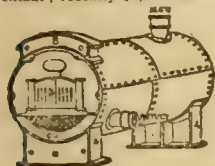
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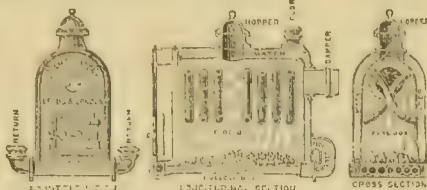
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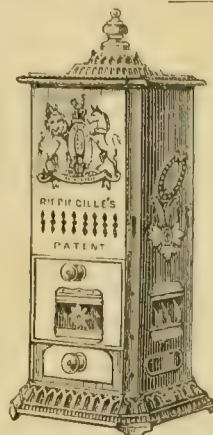
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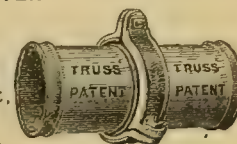
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GARDENER (HEAD).—Age 35, married; steady, energetic, and trustworthy. Well experienced in all branches of Gardening. Excellent references. —C. B., Mr. John James, Mantle Street, Wellington, Somerset.

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and as the safest Aperient for Delicate Constitutions, Ladies,

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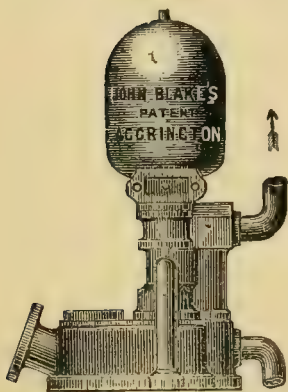
JOHN BLAKE'S PATENT SELF-ACTING HYDRAULIC RAMS,

*For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions,
Fountains, Farms.*

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 ft.

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From the Right Honourable the EARL of GRANARD, *Castle Forbes, March 1, 1880.*—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of the tower, 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

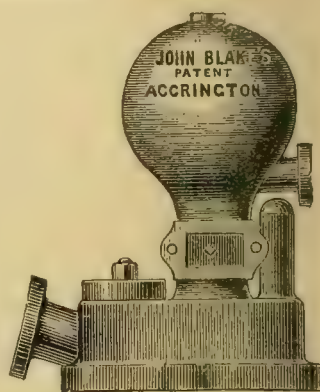
From Sir ROBERT MENZIES, Bart., of Menzies, *Rannoch Lodge, Rannoch, August 20, 1880.*—"The Hydraulic Ram you fixed for me to supply water to Rannoch Lodge and Camerich, two houses three-quarters of a mile apart, is a complete success. The extreme distance the water is carried is a mile and a quarter, and though the elevation of the two houses are different, there is a regular supply of seven quarts per minute to each house, which has never ceased since the Ram was set going, about three months ago. Your Ram took the place of one previously tried on the same spot, and which did not succeed, and was in fact a complete failure."

From Capt. GANDY, *Castle Bank, Appleby, February 11, 1880.*—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

BLAKE'S HYDRAULIC RAMS

have been supplied to the following amongst others:—

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| The Right Hon. the Earl of Derby. | S. S. White, Esq., Manor House, Wethersfield, Essex. |
| The Right Hon. the Earl of Ilchester. | The Corporation of Blackburn. |
| The Right Hon. the Earl of Romney. | J. Barnes, Esq., Contractor, Chatburn and Hellefield Railway. |
| The Right Hon. the Earl of Granard. | The Executors of John Hargreaves, Esq., Burnley. |
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This Ram, for deep working falls, will force up one-third of the water passing through it.

RECENT TESTIMONIALS.

From J. SPENDER CLAY, Esq., *Ford Manor, Lingfield, Surrey, August 9, 1880.*—"In reply to your letter of inquiry I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6120 gallons per twenty-four hours, being 120 gallons above the quantity you guaranteed."

From the Right Honourable the EARL of ROMNEY, *56, Eaton Place, S.W., June 12, 1880.*—"Sir,—In reply to your inquiry, I have pleasure in stating that the Hydraulic Ram which you erected for me at Cayton does its work remarkably well, and is a great success. I think the work is especially creditable to you on account of the very small fall of but 3 feet with which you had to deal, and I shall always be glad to recommend you.—Yours faithfully, ROMNEY."

From JOHN ROWE BENNION, Esq., *Nursted House, Northampton, July 9, 1880.*—"I have much pleasure in saying that the two Hydraulic Rams you put down for me, and which are supplied from a spring now yielding in this dry season only 3 gallons per minute, are sending up an ample supply of water to my house and the home farm, distributing the supply through more than 2000 feet of pipes and to an elevation of 137 feet. Of this result I think you have as much reason to be proud as I have to be satisfied."

From EDWARD SINGLETON, Esq., *Preston Deanery, Northampton, July 9, 1880.*—"The Hydraulic Ram you fixed here for me is very successful. It sends up more than sufficient water for a hundred head of cattle, besides horses, also feeds a steam engine, and during two severe winters we have not had a pipe go wrong with frost as I quite expected they would do. No farmer who requires abundance of water should be without one."

From Col. TREMAYNE, *Perran-ar-Worthal, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons per day to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

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THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 363.—VOL. XIV. { NEW SERIES. } SATURDAY, DECEMBER 11, 1880.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific, at 1 o'clock; GENERAL MEETING for Election of Fellows, &c., at 3 P.M., on TUESDAY NEXT, December 12. Admission 1s.
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W. CALE, 4, Tavistock Row, Covent Garden, W.C.
Moderate commission.

SPECIAL TERMS to large Consignors of CUT FLOWERS, CHOICE FRUITS, &c.—WISE AND RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

To Nurserymen and Gardeners.

WANTED, Four to Six large well-grown FUCHSIAS, different, for show purposes.—Apply, stating size and price, to
A. B., *Gardeners' Chronicle* Office, W.C.

WANTED, 20,000 DOG ROSE (Rosa canina), 2-yr. Seedlings, or 20,000 MANETTI, 1-yr. Seedlings. Sample and cash price to
THOS. HORSMAN, Nurseryman, Ilkley, Leeds.

WANTED, 500 Standard GLOIRE DE DIJON, or a less quantity; good stuff. Prompt cash.
CARTER PAGE AND CO., 53, London Wall, London, E.C.

WANTED, MANETTI STOCKS. Price, per 1000, to
PHILIP HY. SHAW, Nurseryman and Seed Merchant, Tenby, South Wales.

WANTED, stout transplanted SCOTCH FIRS, 3 to 4 feet. Quote price per 100.
JNO. JEFFERIES AND SONS, Cirencester.

WANTED, ENGLISH OAKS, 4 feet. Apply, stating quantity and price, to
THOMAS METHVEN AND SONS, Nurserymen, Edinburgh.

WANTED, stout transplanted AUSTRIAN FIRS, CORSICAN FIRS, SCOTCH FIRS, and ENGLISH OAKS, 2 to 3 feet. Say when last transplanted, quantity to offer, with lowest price.
JNO. JEFFERIES AND SONS, Royal Nurseries, Cirencester.

WANTED, LAUREL, CAUCASICA and ROTUNDIFOLIA, about 2 feet; RETINOSPORAS, of sorts, 1 foot; Standard ROSES. State lowest cash price per 1000.
W. AND J. BROWN, Stamford.

WANTED, Dwarf-trained PEACHES and NECTARINES—large trees, in a bearing state. Please state sorts, size, and price, to
FISHER, SON AND SIBRAY, Handsworth Nurseries, Sheffield.

CAMELLIAS, INDIAN AZALEAS, PALMS, FERNS, Dracena terminalis, cannaefolia, and others for table and general decoration; SPIRÆAS, TUBEROUS BEGONIAS and GLOXINIAS by thousands, &c.; the whole, as usual, at very moderate prices.
Special offer on application.

A. VAN GEERT, Continental Nurseries, Ghent, Belgium.

Araucaria imbricata.

MAULE AND SONS offer twenty Plants of this noble tree for Avenues and Ornamental Planting, 5 to 6 feet, safe to transplant from suitable sized pots, at 21s. each.
WELLINGTONIAS, CEDRUS DEODARA, 8 to 10 feet, 10s. 6d. each. The Nurseries, Bristol.

White Thorn.

B. BARKWAY, East Dereham Nursery, Norfolk, has a quantity of the above to offer. Size and price on application.

LARCH AND QUICKWOOD PLANTS for Sale.—2,000,000 Larch, 1 to 2 and 2 to 3 feet; 2,000,000 Quickwood, 1 to 2 and 2 to 3 feet; also a quantity of SPRUCE, SCOTCH FIR, and BEECH, all transplanted, at greatly reduced prices. For particulars apply to
FRANCIS BELL, Nurseryman, Easingwold.

Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.

MESSRS. LEVAVASSEUR AND SON, NURSERMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.
JAMES DICKSON & SONS, NEWTON Nurseries, CHESTER.

DOUBLE WHITE PRIMULAS, just coming into flower, 12s. and 15s. per dozen.
HEATH AND SON, Florists, Cheltenham.

Bulbs, Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

FOR ABSOLUTE SALE, having to give up the land, strong transplanted Deciduous TREES, up to 10 and 12 feet, 4s. to 6s. per dozen; Standard APPLES, from 6 to 8 feet, 6s. to 9s. per dozen, or from 45s. per 100; other Nursery Stock correspondingly cheap. For LIST apply to
T. L. MAYOS, Nurseryman, Hereford.

Fruit Trees, Roses, and General Nursery Stock.
W. B. ROWE AND CO. (Limited) offer a large and very extensive collection of the above, in fine condition, well rooted for removal. Inspection solicited.
Barbours Nurseries, Worcester.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

FRUIT TREES for Sale.—About 250 Standard and Pyramid Pear, Apple, and Plum. Good sorts, about 6 to 8 feet high. Have been established seven or eight years, within a mile of Sutton Station, Surrey.—Apply to
J. CLAMP, 60, Park Road, Clapham, S.W.

LARGE PEACH TREES for SALE.—Four superb, Standard-trained Peach Trees, on 5 feet stems, the branches extending 12 feet in width and 8 feet in depth. Full of fruit buds. Apply to
GEO. THOMPSON, Gardener, High Street, Hounslow.

Dwarf Maiden Apricots.

HUGH LOW AND CO. can offer a few hundreds of the above, principally Moor Park. Also, good Dwarf-trained MORELLO CHERRIES.
Clapton Nursery, London, E.

New Japanese Apple.

MAULE AND SONS can supply 2-yr. old Seedlings of this most hardy and delicious preserving fruit, at 10s. per 100 (post-free); all hybridized and selected from the finest fruit. The Original Stock, 5s., 7s. 6d. and 21s. each.
The Nurseries, Bristol.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

ASPARAGUS.—ASPARAGUS.—Extra strong forcing roots. Also SEAKALE, For price apply to
OSBORN AND SONS, The Fulham Nurseries, London, S.W.

RHUBARB for SALE.—Extra strong Roots, for Forcing and Planting. Price, per dozen, 100, or 1000, of
S. BIDE, Alma Nursery, Farnham, Surrey.

RHUBARB, Victoria and Albert, 16s. pe 100. Cask and packing included.
T. EVES, Gravesend Nurseries.—Established 1810.

SALES BY AUCTION.

Monday Next.

GREAT UNRESERVED SALE OF DUTCH BULBS. MESSRS. PROTHEROE AND MORRIS will sell, at the Mart, Tokenhouse Yard, opposite the Bank, E.C., on MONDAY NEXT, at half-past 11 o'clock precisely, 900 lots of First-class HYACINTHS, TULIPS, CROCUS, NARCISSUS, and other Roots from Holland, including a Surplus Stock of a large London Seedsman. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Horsell Nursery, near Woking.

About 1 mile from Woking Station.

IMPORTANT UNRESERVED SALE of well-grown NURSERY STOCK, in capital condition for removal.

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, on the Premises as above, on TUESDAY, December 14, at 12 o'clock punctually, 13,000 HOLLIES, consisting of 1500 fine variegated Hollies, 2 to 7 feet; 1500 green Hollies, 3 to 10 feet; and 10,000 smaller Hollies; 2500 bushy AUCUBAS, 1 to 4 feet; 1000 Portugal LAURELS, 1000 English YEWs, ROSES, and other Stock.

May be viewed. Catalogues had of Mr. KNOWLES, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Hornsey Lane, N.—Clearance Sale.

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, on the Premises, Harborton, Hornsey Lane, N., near Crouch End Station, and close to Highgate Archway, on THURSDAY, December 16, at 12 o'clock, by order of Mr. Gunning, E. G., who is leaving the whole of the STOVE and GREENHOUSE PLANTS, comprising several very fine specimens of Davallia elegans and others, Crotons in variety, a quantity of specimen Palms, a very fine specimen Pandanus Veitchii, Miscellaneous Plants, &c.

View day prior to the Sale. Catalogues on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Final Sale.—Woking, Surrey.—Without the slightest RESERVE.

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, on the Premises, Mr. W. Trigg's Nursery, Hook Hill, Woking, on THURSDAY NEXT, December 16, at 12 o'clock punctually, the remaining NURSERY STOCK, including 2000 Green Hollies, 1 to 3 feet, several thousands of small and specimen Conifers and Evergreen Shrubs, Ornamental Trees, 40,000 Forest Trees, 10,000 Fruit Stocks, 2000 Maiden Apples, Cart Mare, Cart, and other effects.

May be viewed. Catalogues on the Premises, and at the Auctioneers' Offices, 98, Gracechurch Street, E.C., and Leytonstone, E.

Friday Next.

LILIUM AURATUM and IRIS from JAPAN.

MESSRS. PROTHEROE AND MORRIS will sell at the Mart, Tokenhouse Yard, E.C., on FRIDAY NEXT, December 17, at half-past 11 o'clock precisely, an extensive Consignment of LILIUM AURATUM and twenty-five cases of rare and beautiful IRIS KEMPFFERI, in various shades and colours, just arrived from Japan; also a splendid assortment of English-grown LILIES and Hardy BULBS, LILY of the VALLEY, SPIRÆAS, GLADIOLUS, &c. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Friday Next.

Four hundred CAMELLIAS and AZALEAS, all named, and other plants from Ghent; and 200 lots of HYACINTHS, TULIPS, CROCUS, NARCISSUS, and other roots from Holland.

MESSRS. PROTHEROE AND MORRIS will sell the above, at the Mart, Tokenhouse Yard, opposite the Bank, E.C., on FRIDAY NEXT, December 17, at half-past 11 o'clock precisely.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

The Clapham Road Nursery, Stockwell, S.W.

MESSRS. PROTHEROE AND MORRIS have received instructions to offer for SALE by AUCTION, in FEBRUARY NEXT (unless previously disposed of by private contract), in consequence of the continued failing health of the proprietor, the BENEFICIAL INTEREST in the LEASE of the above NURSERY, which has been established forty years, together with the GOODWILL, STOCK, and UTENSILS, as a going concern, doing a good Furnishing, Cut Flower and Jobbing Trade. The property fronts the main road, and is well situated; the business comprises nearly an acre of ground with about 14,000 feet of glass, all Heated by Hot-water Piping; Stabling, Sheds, &c. Particulars and terms of Private Sale on application to the Auctioneers, 98, Gracechurch Street, E.C.

4000 LILIUM auratum from Japan, in Fine Condition.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, December 13, at half-past 12 o'clock precisely, an importation of 4000 LILIUM AURATUM, just received from Japan, in fine condition; also fine English-grown Bulbs of LILIUM NEILGERRENSE, L. BROWNII, L. WASHINGTONIANUM, L. PARDALINUM, and other choice LILIES; also some fine Plants of a new hardy Bamboo, THAMNOCALAMUS SPATHIFLORES; the new Japanese Rose, ROSA RUGOSA, recently figured in the Garden; ANTERICUM LILIASTRUM MAJOR: this is one of the finest hardy plants in cultivation, and far superior to any ordinary variety; Consignment of GLADIOLI from America; fine flowering Bulbs of CALOCHORTIS, the wonderful Butterfly Tulip; and Consignment of PLANTS and BULBS, from Germany, and a great variety of BULBS from Holland.

On view morning of Sale, and Catalogues had.

Roses, Fruit Trees, Bulbs, &c.—(Sale No. 5753.)

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, December 15, at half-past 12 o'clock precisely, choice named standard ROSES of sorts; pyramid and dwarf trained FRUIT TREES, ORNAMENTAL STOVE and GREENHOUSE PLANTS, a quantity of HARDY HERBACEOUS PLANTS, 1000 fine clumps of LILY of the VALLEY, SPIRÆA JAPONICA, &c., a great variety of BULBS from Holland, RUSTIC GARDEN WORK, &c.

On view morning of Sale, and Catalogues had.

Angræcum Ellisii.—(Sale No. 5754.)

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 16, at half-past 12 o'clock precisely, by order of Messrs. Hugh Low & Co., imported plants of the rare and lovely ANGRÆCUM ELLISII, brought home by the Collector in excellent condition, with green healthy leaves, some showing young flower-spikes; imported plants in fine condition of CYPRIPEDIUM STONEI, C. LOWII, C. LAWRENCEANUM, DENDROBIUM LOWII, ANGRÆCUM SEQUIPEDALE, 2 to 3 feet long; A. EBURNÆUM SUPERBUM, amongst them fine specimens; and GRAMMATOPHYLLUM ELLISII. At the same time will be offered established plants of DENDROBIUM COBIANUM, from the Philippine Islands, and other choice ORCHIDS.

On view morning of Sale, and Catalogues had.

Very Rare Orchids.—(Sale No. 5757.)

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, December 20, at half-past 12 o'clock precisely, very rare MADAGASCAR ORCHIDS, consisting of Angræcum articulatum, the giant form of Angræcum Ellisii, and no doubt the rarest Orchid extant: only three plants of it arrived in good condition; PHAUS HUMBOLDTII, a magnificent new species, flowers rosy-white, and spotted unlike other Phaui, the habit is compact, and the leaves resemble those of small Cattleya Skinneri leaves; CALANTHE SYLVATICA, a beautiful new species, flowers rosy-lilac and white, violet striped; CYMBIDIUM LOISE CHAUVIERI, EULOPHIA RAMOSTACHYA, CYMBIDIUM RHODOPHARIS; magnificent masses of CATTELYA LABIATA in splendid condition; the largest masses yet offered of ONCIDIUM PHYMATOCILIUM, AERANTHES GRANDIFLORUS, ANGRÆCUM SEQUIPEDALE; together with other importations of ORCHIDS, particulars of which will appear in next week's *Gardeners' Chronicle*.

On view morning of Sale, and Catalogues had.

Victoria Nurseries, Springbourne, Bournemouth.

About ten minutes' walk from the East Railway Station.

IMPORTANT SALE of Valuable SURPLUS NURSERY STOCK.

MR. ALFRED H. JOLLIFFE has been favoured with instructions from Mr. E. White to sell by PUBLIC AUCTION, as above, on MONDAY, December 20, and following day (if necessary), commencing at 12 o'clock, a portion of the valuable NURSERY STOCK of Ornamental and Flowering SHRUBS, FOREST TREES, EVERGREENS, &c., including the following choice and other varieties:—

10,000 Scotch Firs	20,000 Common Laurel
1,000 Horse Chestnut	2,000 Sycamore
1,500 Beech	5,000 Privet
800 Cupressus Lawsoniana	1,000 Cupressus macrocarpa,
500 Portugal Laurel	in pots
400 American Arbor-vitæ	1,000 Lavender
400 Chinese Arbor-vitæ	200 English Yews
200 Thuja compacta, Berberis Darwini, Poplar and Snowberry	500 Rhododendron ponticum
500 Ribes	1,000 Pinaster
	Laurustinus, Sweet Bay, &c.

The Auctioneer invites the special attention of Gentlemen, Builders, and Landscape Gardeners now planning to the fact of the stock being in splendid condition having been shifted within the last eighteen months, it is now thoroughly well rooted, healthy and thriving.

Catalogues may be obtained at the Bournemouth Nurseries, Holdenhurst Road; also at the Offices of the Auctioneer, Bournemouth and Poole.

TO BE SOLD, a good NURSERY, SEED and LANDSCAPE GARDENING BUSINESS. Satisfactory reasons given.—Apply WALTER DAWSON, Coventry.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are Eight and a Half Acres of deep, rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business.—For particulars, Apply to J. WATSON, 38, Crown Street, Bury St. Edmunds.

TO BE LET, a good NURSERY, FLORIST, and SEED BUSINESS, in the centre of a good Agricultural district. The Premises comprise a large convenient Dwelling-house, over 6000 feet of Glass, with good Stabling, Sheds, and other Outbuildings, with 12 Acres of good Heavy and Light Sandy Soil. Has this year taken over seventy Prizes at the principal shows in Yorkshire.—Apply to R. HUTCHINSON, Stonefall Nursery, near Knaresborough.

RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30s. per 1000; samples of 100 for 4s., free in London, no change of rail. Also 200,000 FASTOLF, price 15s. per 1000; samples of 200 for 2s., free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to A. AND E. BATH, Colgate Farm, Sevenoaks, Kent.

POTATOS—POTATOS. Special Offer to the Trade. 200 tons SCOTCH CHAMPIONS, excellent sample and quality, 4s. 10s. per ton, 5s. per cwt. 100 tons SUTTON'S MAGNUM EUPHON (true), 4s. 10s. per ton, 5s. per cwt. 20 tons IMPROVED ASHLEAF, 4s. 10s. per ton, 5s. 6d. per cwt. 30 tons MYATT'S PROLIFIC, 4s. 10s. per ton, 5s. 6d. per cwt. A large stock of other varieties to offer, including READING ABBEY, SCHOOLMASTER, BEAUTY of HEBRON, &c. Prices on application. Post-office Orders or Cheques payable to C. FIDLER, Friar Street, Reading.

Fruiting Bush Apples on the Paradise Stock. THOMAS RIVERS and SON have a large Stock of these fruitful little bushes to offer. LIST of sorts and prices forwarded on application. The Nurseries, Sawbridgeworth, Herts.

SPANISH CHESTNUT, HAZEL, ASH, LARCH, SCOTCH, BIRCH, ALDER, WILLOW and THORN QUICK, all stout, well rooted, transplanted. A large quantity to be sold.—Mr. GEORGE CHORLEY, Coster's Nursery, Midhurst, Sussex.

TO GENTLEMEN SEEKING A PLEASANT HEALTHY OCCUPATION.

To Nurserymen wishing to Enlarge their Business.

To Gentlemen's Gardeners with Means.

THE DIRECTION of the SUNNINGDALE NURSERY, established and successfully conducted by CHARLES NOBLE, must now, owing to the age and failing health of the Proprietor (who has no son to succeed him), be delegated to more robust hands, and he is prepared to entertain proposals for importing into the business new energies, either wholly or in part. The Grounds are extensive, over two-thirds being Freehold, and one-third Leasehold, to run some time, with little chance of objection to renewal. The situation is one of the very best in England (only a few minutes' walk from a railway station); it contains within itself every kind of soil, from heavy loam to peat and pure sand; and the neighbourhood is admitted on the highest authority to be one of the most healthy positions in Great Britain. The owner is prepared to consider any *bona fide* proposal, either from one or more persons, and every reasonable facility will be given to persons of moderate means. Skill and enterprise will be taken into account, and as favourably considered as mere money value. The business is capable of extension, or can be limited at pleasure, and contains within itself several specialities of undoubted value.

Bagshot, Nov., 1880

Notice to the Nursery and Seed Trade.

THE BUSINESS hitherto carried on by Messrs. FOWLER and CO., 18, Finsbury Street, London, E.C. is now AMALGAMATED with that of CORRY and SOPER, of Shad Thames, London, S.E., under the name and style of CORRY, SOPER, FOWLER and CO. (Limited), HORTICULTURAL SUNDRIESMEN, MERCHANTS and MANUFACTURERS. A CATALOGUE has been posted to the Trade generally, but a second copy will be forwarded to any Firm that may not have received one. December 8, 1880.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing houses, &c. Descriptive Price LIST on application. RICHARD SMITH and CO., Nurserymen, Worcester.

DOUBLE WHITE CAMELLIA BLOOM and MAIDENHAIR FERN, a constant supply. CHARLES BUTLER, The Nurseries, Wellington, Salop.

BRIER STOCKS.—For Sale, several thousands, very superior, fine, straight, strong Stocks. Price 12s. per 100. Apply to WM. FELL and CO., Nurserymen, Hexham.

DWARF ROSES.—Splendid grown stuff on Manetti. Best named varieties, 30s. per 100. HEATH and SON, Exotic Nurseries, Cheltenham.

DWARF TRAINED APPLES, splendid stuff, 5 feet high, 5 feet through, best varieties, 24s. per dozen, 49s. 10s. per 100. HEATH and SON, Florists, Cheltenham.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale. THOMAS RIVERS and SON, Sawbridgeworth, Herts.

LILY of the VALLEY.—For Sale, a quantity of clumps, at 21s. per 100. For making permanent beds, they are a chance seldom to be met with, it being the best Dutch variety.—W. F. BOFF, 203, Upper Street, Islington, N.

LARCH for SALE.—8000 to 10,000, from 3 to 4 feet, extra strong. Sample and price sent upon application to RUSSEL and SON, Estate Agents, Brockley, and Parsons Street, Banbury.

Hardy Rhododendrons and Azaleas.

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds. Knap Hill Nursery, Woking, Surrey.

QUICKS, extra fine, 2 to 3 feet, 17s. per 1000. SCOTCH FIR, 1½ to 2 feet, 14s. per 1000. PEAR STOCKS, strong, 30s. per 1000. MUSSEL PLUM STOCKS, 30s. per 1000. W. JACKSON, Blakedown, near Kidderminster.

PYRAMIDAL FRUIT TREES.—Very finely grown Trees, with Fruit Buds, of the best APPLES and PEARS, are offered by GEORGE BUNYARD and CO., Maidstone.

HANDSOME CHRISTMAS TREES, 4 feet, 6s.; 5 feet, 8s.; 6 to 7 feet, 12s. per dozen, cheaper by the 100. Cash or satisfactory reference from unknown correspondents. W. WRIGHT, Nurseryman, Reiford, Notts.

DICKSONIA ANTARCTICA, for Sale: trunk, 2 feet 9 inches; circumference of trunk at root, 3 feet; at fronds, 2 feet 9 inches; diameter of head, 14 feet number of fronds, 65; in perfect health. For price apply to JAS. DUNN, Gardener, Farlington, Leeds.

LILIUM AURATUM, splendid sound Bulbs, just arrived from Japan, measuring from 3 to 10 inches round, 10s., 15s., and 20s. per dozen. If not approved of to be returned. Special low offer to the Trade on application. GEORGE REID, Seed and Bulb Merchant, 20, Castle Street, Long Acre, London, W.C.

CHRISTMAS TREES, nicely formed and well furnished. Heights, 2 to 3 feet, 3 to 4 feet, 5 to 6 feet, 6 to 8 feet, 8 to 12 feet. Prices for cash on application to ROBT. T. VEITCH, Exotic Nursery, Exeter.

ASPARAGUS PLANTS, Giant, for forcing, 8s. per 100; Connover's Colossal, 10s. per 100; 1-yrt. Connover's Colossal, 2s. 6d. per 100, 20s. per 1000. Each sort in any quantities. Packages gratis. Cash only. CHRISTMAS QUINCY, Fulney, Spalding.

AN UNUSUAL OPPORTUNITY.—Large, frequently transplanted Trees, from 6 to 15 feet high, all perfect specimens, are offered as under:—

POPLAR, Black
LABURNUM, Purple
MAPLE, Norway
OAK, Scarlet
LIMES
ASH
CHESTNUT, Horse
" Scarlet
Standard APPLES and PEARS
COB NUTS, Webb's, 3 to 5 feet
Standard RHODODENDRONS.
It is believed no Establishment in Europe can show such a Stock of the above as
CHARLES NOBLE'S Nursery, Bagshot, Surrey.

Roses.—Torquay.

CURTIS, SANFORD AND CO., of the Devon Roseries, adjoining the Railway, have this season to send out an unusually fine stock of STANDARD and DWARF ROSES, well ripened trees. Best Standards from 47 to 50 p. 100. DWARFS of the finest leading varieties of Perpetuals, a very choice collection of Thirty for 1 Guinea, our own best selection. Larger collections as above in orders of not less than 100, strong Dwarfs, at 50s. per 100. LISTS sent free on application. Plants added gratis for carriage.

Seed Catalogue.

V. SCHERTZER AND SONS, SEEDSMEN and FLORISTS, Haarlem, Holland, beg to announce that their Wholesale LIST of Garden Seeds is now ready, and may be had post-free on application.

SPRUCE FIRS!—SPRUCE FIRS!

For Christmas Trees.
SPRUCE FIRS, 1½ to 2 feet, 4s. per 100; 30s. per 1000.
2 to 3½ feet, 7s. per 100; 50s. per 1000.
JOHN PERKINS AND SON, 52, Market Square, Northampton.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.

HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.

" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.

" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.

" Silver, 4, 5, 6 to 10 feet high.

WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.

CHINESE JUNIERS, 6, 7, 8 and 10 feet high: hundreds.

PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high: hundreds.

CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.

PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high: hundreds.

PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.

CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.

" ARGENTEA, 4 and 5 feet.

LIBODRUS DECURRENS, 4, 5, 6 and 7 feet.

PINUS CEMBRA, 4, 5, 6 and 7 feet.

RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet: hundreds.

THUIOPSIS BOREALIS, 4, 5 to 10 feet.

DOLABRATA, 3, 4 and 5 feet.

THUJA AUREA, 2, 3 and 4 feet high.

SEMPER-AUREA, 2 to 2½ feet high.

RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.

STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.

HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently transplanted.

Knap Hill Nursery, Woking, Surrey.

LIST of all the EVERGREEN FIR TRIBE

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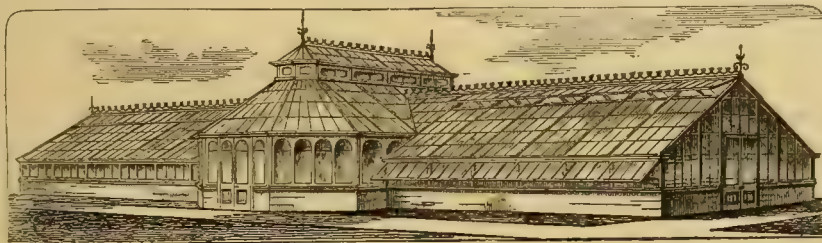
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FOR

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For 1881.

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Duke of Connaught.—Rich purplish-crimson, flowers of unusually large size and substance, a grand flower. Awarded a First-class Certificate by the Royal Botanic Society.

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Bright gold bars with dark velvety petals.

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THE

Gardeners' Chronicle.

SATURDAY, DECEMBER 11, 1880.

LINLEY.

IN a remote corner of Shropshire, close to the Welsh border, and accessible only at infrequent intervals by a primitive railway, lies one of the seats of the old family of More, now represented by Mr. R. Jasper More. How long the Mores have been known in this part of the world is a matter of uncertainty. There are records of them as far back as the time of Henry II., and what position they held may be gleaned from the fact that the lord of the manor of More was constable of the King's host, and was called on, in acknowledgment of his tenure, to provide 200 men-at-arms whenever the King marched across the border into Wales, to place himself at their head, and to bear with his own hand in the vanguard of the army the Royal standard. There are no architectural relics to serve the purpose of records, the existing mansion having been built by Inigo Jones; but there are in the woods hard by Oaks whose rugged boles show that they may have witnessed the gathering of the men-at-arms, and the unfurling of the King's standard prior to the short march over the border. There are, too, tenants on the estate who have farmed the same holdings for 400 years, son succeeding to father in direct descent for all this lengthened period. But we are not concerned here with the general history of the family, its allegiance to the king in one century, nor its resistance to Royal authority in Cromwellian times. Suffice it to say, we have in it one of those links which bind into one continuous sequence the times and personages of the Norman era with those of the nineteenth century. We might go further back still, for on a hill but a few miles away, forming part of the More estates, the Romans dug for lead, leaving their successors of this century the task of digging deep into the bowels of the earth for ore which originally was found near to the surface. It is interesting and suggestive to see in the hall at Linley two Roman spades and a pig of lead bearing in good bold relief the name of the Emperor Hadrian. The spades, the ore, the "pig," the hill-side, the miners even, do not tell of much change since the second century. It is steam which has effected the great difference between the lead-mining, Hadrian being Emperor, and the lead-mining as practised in the time of Victoria, Queen of Great Britain and Ireland, Empress of India. It should be added that the process of extracting the ore and separating it from the quartz in which it is embedded is in essence the same as in Roman times, but modern ingenuity has improved upon it without essentially altering its character. The smelting—the pig-making that is—is now done far away, at Swansea. We presume in Roman times it was done on the spot, and if so it is not improbable that the bare hill-sides owe their denuded appearance to the need there was for fuel.

It is a long leap from Hadrian to Dillenius and Linnaeus, yet as both have been more or less connected with Linley, and both have contributed in a degree to make it what it is, we may be excused for being a little discursive. Dillenius, the German Professor o.

Botany at Oxford, must himself, or vicariously, have searched the Linley woods for mosses, as the locality is mentioned in many places in his celebrated *Historia Muscorum*. Linnaeus, when a young man, it is well known, visited Dillenius at Oxford in 1736, but there is no trace, so far as we know, of his having penetrated into Shropshire. Be this as it may, it is certain that among the "externi" who betook themselves to Sweden "ut Linnæum audirent" was, in "1751, More Robert, Esq., Soc. Reg. Angl. Socius," as may be seen from the Egerton MSS. in the British Museum, n. 2037, f. 41. This was the beginning of a friendship between the great Swedish naturalist and the then head of the More family, Robert More.* This gentleman, after having served in Parliament as a member for Shrewsbury, betook himself to Spain, where his researches were so highly thought of that the Government offered him an escort for his greater safety and comfort. From Spain Mr. More is said to have introduced to this country the seeds of the Musk Rose, or *Rosa moschata sempervirens*, *Rosa hispanica*, and other plants, which he sent to Philip Miller, as detailed in his *Gardeners' Dictionary*. Botany was not in a very forward state in Spain in that time, and some remarks to that effect made by Linnaeus seem to have stimulated the Spanish Government to take some means for its improvement. The Government was still further influenced, as it appears, by Mr. More, who, dining on one occasion with the Prime Minister, Don Joseph de Carravajal, took occasion to confirm the statement of Linnaeus. The consequence was that, much to his surprise, the learned Swede was shortly after applied to by the Spanish Government to recommend a botanist to undertake a Flora of that country, and it is on record that Lœffing visited Spain in 1751, at the instigation of his teacher.

It has already been stated that the Musk Rose was introduced from Spain by Mr. More. As he was a correspondent of Philip Miller, and, like him, a Fellow of the Royal Society, it is probable, nay, it is known for a fact, that other plants were introduced into this country by his agency. In the course of his travels More contributed various notes to the Royal Society, some of which were published in the *Philosophical Transactions*. Among them is a note on the method of gathering manna at Naples (*Phil. Trans.* 1750, vol. x.). In this paper Mr. More identifies the tree producing the manna with "what our gardeners call the flowering Ash; the complexion of the bark and bud agrees with one of them he had in his garden at Lindley." This tree, it is supposed, still exists at Linley. But what specially concerns us now is his connection with the Larch. A great many towns, we are told, contended for the honour of having given birth to Homer. In like manner the credit of introducing the Larch has been claimed for numerous planters, and it is now difficult, if not impossible, to assign to any one person the priority. The Larch was grown in greenhouses in this country years before it was planted as a forest tree.

The Larch is mentioned by Gerard in the first edition of his *Herball*, p. 1182, where a figure of it is also given. It is also mentioned by Parkinson in his *Paradisus* (1629). Evelyn speaks of it in 1664, and Rea in 1665 mentions it as "seldom seen."

In 1730 it is described and figured in the *Catalogue of Trees and Shrubs* issued by a society of gardeners, of whom Philip Miller was the leading spirit, and it is there spoken of as "pretty common in English gardens."

In 1759 Miller, in his *Dictionary*, says that it had become plentiful in English nurseries, and that of late years great numbers of the tree had been planted.

* The Linnæan papers contain references to Robertus More Salopiensis as staying in Sweden with Linnæus.

The Dunkeld Larches, sometimes known as the "parent Larches," and of which we gave an illustration in our number for February 12, 1876, p. 209, were planted in 1738, some being planted at the same time at Blair Athole and at Monzie; but it is supposed that the tree was introduced prior to that period to a garden on the banks of the Clyde.

In Loudon's *Arboretum*, vol. iv., p. 2355, and in the *Trees and Shrubs of Fife and Kinross*, by J. Jeffrey and C. Howie, we are told that the Dunkeld Larches were not planted till six years after some that were planted at Dawick, near Stobo, N.B., from seed sent from Tyrol in 1725.

Loudon, as before cited, gives many details as to the early planting of the Larch in Scotland and elsewhere, but he nowhere mentions Linley. Nevertheless, it is certain, both from the appearance of the trees now existing and from the tradition of workmen on the estate, that some of the very earliest planted Larches, if not the earliest, are at Linley. On one tree that had been blown down Mr. Boscawen tells us that he counted 120 rings, and these did not represent the full age of the tree. There is a fine specimen on the lawn with, as usual in Larches of that age, one or more of its principal branches much larger than the rest, and abruptly bent upwards. This tree in particular has the local reputation of being the first Larch planted in England. Moreover, in the plantations to be presently mentioned, a group of fine Larches may be seen which may well be contemporary with those at Dunkeld: there is a tradition indeed that they were really planted about the same time. The Duke of Athole and Mr. More were fellow members of the Council of the Royal Society, and the story runs that More planted them the week before those at Dunkeld, and that hence the Linley Larches and those at Dunkeld came from the same batch.

Linley has other associations; it is in the heart of "Siluria," and the historian of that geological kingdom, Sir Roderick Murchison, passed some time here, and, it is stated, wrote some portions of his famous book here, within sight of the Styper stones.

But it is time to speak of Linley as it is.

The approach is by means of an avenue of Oaks a mile or more in length, the Oaks being planted in double or even in triple line. The mansion, a solid Italian structure built by Inigo Jones, is at present unfinished as to adornment, but by the completion of the parapet and balustrade, and the formation of a terrace garden along one front, its appearance will be greatly improved. The flower garden and ornamental shrubberies have for the most part to be made or reconstructed, the special feature of the place consisting in a long valley, which recalls the Trosachs, and through which brawls a noisy trout stream flanked on either side by dense woods, and terminated by a noble heather-clad hill, which in Scotland would certainly be called Ben More were it not that that appellation is preoccupied. It might not inappropriately be so designated in Shropshire! The woods on either side of this charming valley consist principally of Oaks, British and scarlet, and Beech, and white-barked Birch, with an admixture of Larch, Scotch and Silver Fir and Spruce. The admixture of the towering spires of dark-leaved Conifers amid the Oaks is very beautiful, and when, as when we saw them, the branches of the Oaks were picked out by the silver film of lightly fallen snow, illumined by a glorious sun, and set in a background of azure sky, the effect was specially beautiful. Among these woods there are some trees whose stately form and noble proportions demand special notice—in particular a Silver Fir, whose giant bole, straight as a dart, and relatively short lateral

branches, recalls the pictures of the Californian Sequoias when full grown. There is also a Spruce of noble proportions and beautiful symmetry. Scotch Firs exist in abundance, their richly-coloured bark and spreading black tops giving them a most characteristic appearance. But the most surprising feature, perhaps, is the clump of Larches before referred to, of about the same size and age as the famous Larches of Dunkeld. The planting of this beautiful valley was evidently done by a man of knowledge, judgment, and taste, the groups being placed with a view to effect. Monotony of form and colour has been avoided by the disposition of the masses, and the admixture of deciduous with Coniferous trees. Where, owing to the lie of the land, a long, straight line was inevitable, the uniformity has been broken up by an isolated tree, judiciously placed to vary the line and convey a sense of distance.

The plantations have been more or less neglected in the course of years, so that many of its finer features have been allowed to be overgrown and concealed. This is being remedied under the superintendence of Mr. Boscawen, whose excellent taste, knowledge of trees and their requirements, and experienced judgment are called into play in the removal of old useless timber which has been allowed to block up the finer features of the original design and which it is his aim once more to bring into view.

Climbing the hill on one side of the valley, getting fine views as we ascend of the neighbouring hills, we come to a long avenue of Beech running along the hill-side and doubling back along its crest. The trees are of considerable age and at some time or other have been pollarded. Near one end of this avenue a tax-gatherer was murdered and the money taken from him hidden beneath a bush hard by. The murderers were in due course hanged on a gibbet not far off, but—whether by accident or design we know not—they were not immediately killed by the act of the hangman, but remained suspended in a living state and were kept alive for a time by an old woman from a neighbouring village, who ministered to them at night and fed them with candle ends! We tell the tale as we heard it, and fear that in any case the sympathy was not with the tax-gatherer. From this avenue the road descends to the public road which crosses the Oak avenue not far from the front of the house.

New Garden Plants.

DENDROCHILUM COBBIANUM, n. sp.*

A curious new *Dendrochilum* with bulbs and leaves like those of *Dendrochilum latifolium*, but with a very singular zigzag inflorescence. The flowers have light sulphur-coloured sepals and petals, a flabellate orange-coloured lip with very small bristle, like antebasilar side lacinia, a green column with the borders of the fovea and anther (wings and cucullus) white. Will it always produce zigzag inflorescence? I believe so. The first flowers came out in the collection of Mr. Walter Cobb, Silberdale Lodge, Sydenham, S.E., to whom it is dedicated with pleasure. The species was discovered by Mr. Boxall in the Philippines, and was introduced by Mr. Stuart Low. *H. G. Rehb. f.*

DENDROBIUM BOSTRYCHODES, n. sp.†

This appears to be unusually fine, (1) by its being a large-flowered member of the esteemed "nigro-hirsuta" group; (2) by its wavy petals and anterior lip in the way of a *Methonica* flower. The spur of the chin exceeds an inch in length, and the flower itself reaches two-thirds of those of a *Dendrobium* formosum of the smaller varieties, or of a *D. infundibulum*. The flowers are white, with numerous red warts on the lip and three red blotches on the base of the column. It was lately discovered by Mr. Boxall

* *Dendrochilum Cobbianum*, n. sp. — Pseudobulbo ac folio Dendrochil. latifolii: racemo flexuoso; bracteis naviculari lanceis ovaria pedicellata bene sequantibus; sepalis tepalisque oblongo triangularibus; labello cuneato flabellato antice retusiusculo bilobulo cum apiculo interjecto, callis geminis depressis abruptis semiblongis contiguis in basi; columna apice albis semilanceis, cucullo elongata emarginato. Ins. Philippinis. Det. Boxall, imp. S. Low, ff. dom. Cobb. *H. G. Rehb. f.*

† *Dendrobium bostrychodes*, n. sp. — (Nigro-hirsuta). Aff. *D. xanthophlebium*, Lindl. (marginato, Bat., *S. Mag.* 5454); fl. m. jori, pseudocalcar, ovario pedicellato elongato paulo breviori; sepalis triangularibus apicem versus extus carinatis; tepalis cuneato-oblongis undulato-crispis; labello pandurato, lacinia lateralibus semiblongis, planis, lateralibus multibulbulo-asperis; lacinia antica transverse oblonga multicristata ac undulata; carinis tenuis elevatis carinosis a basi in discum lacinia anticae, ramulis lateralibus nervosis a tuberculis minutis (rubris) asperis. Borneo seu adj. insul., Boxall! ded. cl. S. Low *H. G. Rehb. f.*

in Borneo or adjacent islands, and sent to Mr. Low, who may show it to his countrymen on the next anniversary of Napoleon III.'s *coup d'état*! H. G. Rehb. J.

THE DRAGON TREE OF AJUDA.

We are indebted to our colleague, Señor Juarte d'Oliveira, the Editor of the *Portuguese Journal of Practical Horticulture*, for the opportunity of figuring the remarkable Dragon-tree in the Royal Gardens of Ajuda, Portugal, of which we gave an account in our number for January 10 of the present year. The dimensions of the tree are 6 metres in height, and 36 metres in circumference, the girth of the principal trunk being 4.65 m. (a metre=3 feet 3 inches). For further particulars as to this tree, and the attempt on the part of an eccentric British Admiral to become its possessor, we refer the reader to our previous article, p. 42, vol. xiii.

fore, to expose and pulverise clay, in hot sunny weather, and to mix this with the gravel in the proportion of one-sixth. This, after a time, became tolerably consolidated, though it was always liable to kick up and get loose in long spells of dry weather, and it also grew to be extremely weedy, it being almost impossible to keep down the grass that was always appearing in it.

In a great port like Liverpool there necessarily comes, in the shape of ballast, a great variety of road and walk material. Very rarely, however, is the latter of good binding quality, and still more rarely is it satisfactory in colour. We have limestone chippings, which are of a purely white or a dull brownish-white tint, and Derbyshire spar, which is still whiter and more glaring. Both are alike objectionable as not harmonising in colour with anything that belongs to a garden. The great desideratum was something that would really bind properly and yet be of a warm brownish-yellow hue, like the well known Kensington, Croydon, or Wimbledon

Fourthly, it does not retain its bright original colour, though the extent to which it fades need not be urged as an objection, and is applicable chiefly to the darker kinds.

There are two principal varieties current here, obtained, as I am informed, from two different districts in Jersey. The one is reddish-brown at first, dying away with usage to brownish-yellow. The other is light yellowish-brown, and keeps its colour tolerably well. The first is known as "red," and the other as "yellow." Of the latter there is a very bad sub-variety, which has a large admixture of a clayey element, and is a most dreadful infliction on those who are unfortunate enough to procure it, as the walks on which it is placed are in a perpetual state of mud whenever there is the slightest rainfall. As a rule, however, the "yellow" sort is the hardest, and is therefore more durable; while the colour of the "red" kinds is warmer and more pleasing.

It is a singular circumstance that Jersey gravel should have so decidedly degenerated of late years,



FIG. 144.—*DRACENA DRACO* AT AJUDA.

JERSEY GRAVEL.

THIS is the name by which the material described in the *Gardeners' Chronicle* for November 20 last (p. 663), under the heading of "A New Covering for Paths and Roads," is commonly known here. It is not, of course, a proper gravel, but a rotten stone, which is either naturally or artificially broken down to serve the purpose of gravel. It was introduced to Liverpool about, I should think, twenty-five years ago; and as I was one of the first to use it, and have been largely instrumental in increasing its importation, I may perhaps be permitted to give my experience of it, and correct some misapprehensions which are likely to be fostered by the article in question.

This neighbourhood is unfortunately deficient in anything like a native supply of really good gravel. When our park was formed, about thirty-seven years ago, we were obliged to content ourselves with using, for our many miles of walks, a gravel obtained from the bed of the River Dee. This was of a muddy and disagreeable colour, and of a very pebbly nature, wholly without binding properties. We had, there-

gravel. And the Jersey gravel (so-called) made the nearest approach to this perfection of anything we had received here. Hence, I at once took to it, and have employed it extensively ever since. In this park alone we lay down from 150 to 200 tons of it every year; and I have used several thousands of tons in the Anfield Cemetery, Liverpool, the Stanley Park, Liverpool, and the Birkenhead Cemetery, besides other private places. Still, I must confess, that I accept it in default of something better, for which I am always on the look-out; and I must strongly demur to some of the claims put forward on p. 663. First, it is not lasting, with ordinary attrition and the action of rain, wind, and the gardener's broom a great quantity of the fine particles gets carried away; and lately we have found that a coating of 2 inches is entirely worn out and removed every five or six years. Secondly, though it is nearly perfect as a fair-weather gravel, making the most delightfully smooth and pleasant paths in summer, it is as bad as it is possible to be in very wet weather, or during a thaw after frost. Thirdly, it has no immunity as regards weeds wherever I have seen it.

in respect to hardness and consequent durability. At one time it required to be broken with iron hammers, and the cost of so reducing it to a useable state was looked upon as a serious addition to its cost. More recently, however, its larger lumps have been easily broken by the foot, or even crumbled in the hand, and hence its more fugitive character. Whether the supply of the harder layers is exhausted, I have no means of knowing.

The subject of suitable gravel is one that must interest every possessor of a garden. What is actually wanted is something that shall produce a dry firm walk, and be of a satisfactory colour, in all weathers. Some gravels are good in wet weather, and some in dry; but the gravel that is entirely smooth in dry weather, and that does not become muddy during a wet time or after frost, would be invaluable, if at the same time it were of the proper colour.

In some of the London parks I saw, several years ago, a material of a fairly good colour, though, apparently, a little loose in texture, that looked like fragments of pulverised or decayed shells. If some of your correspondents would state how this wears,

what is its behaviour in wet weather, whence it is obtained, and at what cost, I feel sure such information would be generally appreciated. *Edward Kemp, Birkenhead Park, Dec. 6.*

THE VEGETATIVE STRUCTURE OF ORCHIDS.

[WHILE much attention has been paid to the conformation of the flowers of Orchids, their wonderful beauty and diversity in form and colour, their adaptation to insect visitors, and so forth, comparatively little has been written on the appearances presented by the vegetative as contrasted with the floral organs. Orchid growers and nursery foremen often possess a power of discriminating species from imported pseudobulbs and mere fragments, but they are seldom able to make known by word of mouth to others what they have themselves acquired by long experience and constant practice. Knowing that Professor Pfitzer, of Heidelberg, was engaged in the critical study of the stems and leaves of Orchids, we applied to him for information, with the result that he has kindly furnished us with the following synopsis, showing the principal variations in the mode of growth of the axis (stem, shoots and branches including the pseudobulbs when present), the leaves, and the inflorescence or flower-stems. Though necessarily technical the synopsis will be found valuable to young gardeners and others interested in the mode of growth of these plants, and it will be so suggestive to the practical cultivator as well to repay the trouble of careful study. A few terms may be explained. The "axis" includes the stem, shoots, branches and pseudobulbs. The "inflorescence" includes the flower-spike and its branches, but not the flowers themselves. A "monopodial" stem or axis is one which grows at the point without alteration of direction, so that when growth begins again after the resting stage is over it goes on in the same direction as before. Contrasted with this is the "sympodial" mode of growth, in which the "axis" grows at the point for a time and then ceases. After the resting period, when growth begins again, it is by means of a side shoot, originating beneath the original point. "Vernation" includes the various manners in which the young leaves are folded or rolled up before expansion. "Nodes" are the points whence the leaves spring from the axis—"internodes" are the spaces on the axis between the nodes. "Conduplicate" is a term applied when a leaf is folded straight down the middle as a sheet of note-paper is. With these explanations Professor Pfitzer's table may be understood by those who are not professed botanists. EDS.]

The following table is only intended to represent the main results of my investigations. A more detailed account, embracing the development of the embryo, germination, position of the leaves, roots, lateral branches, flower shoots, &c., will appear at the end of this year. The plants named below were selected as typical examples:—

I. Monopodial Orchids (i.e., main axis growing indefinitely at the point); inflorescences lateral.

A. With leaves.

a. Vernation conduplicate (young leaves folded in halves).

α. Leaves flat, at right angles to the axis.

1. Internodes (spaces between the leaves) much elongated; plant climbing: *Bomarea* (Vanda) *Catheartii*, Rehb.

2. Internodes short; plant erect.

aa. Leaves numerous, narrow, with parallel margins: *Vanda tricolor*, Lindl.

bb. Leaves few, broad, oval: *Phalenopsis Schilleriana*, Rehb.

cc. Leaves widening from a narrow base upward to the deeply cleft tip: *Angreum alcyonae*, Lindl.

β. Leaves flat, surface, through twisting, parallel to the axis.

1. Internodes and leaves elongated: *Aeranthus gladiifolius*, Rehb.

2. Internodes elongated, leaves short, crowded; habit resembling a Liverwort: *Dichaea echinocarpa*, Lindl.

3. Internodes short; leaves elongated: *Saccolabium obliquum*, Lindl.

γ. Leaves equitant, with vertical surface, both sides alike.

1. Stem elongated; leaves numerous, small, short: *Aeranthus distichus*, Rehb.

2. Stem short; leaves relatively large; habit of Iridæ: *Thricospermum (Sarcocollum) montanum*, H. K.

ε. Leaves cylindrical, more or less channelled above.

1. Internodes elongated: *Vanda teres*, Lindl.

2. Internodes quite short: *Aerides nitratum*, Rehb.

b. Vernation convolute (i.e., young leaves rolled up): *Vanilla planifolia*, Andr.

B. Without leaves, which are replaced by scales.

a. Internodes elongated; whole plant green: *Vanilla aphylla*, Bl.

b. Internodes shortened; scales crowded, forming a bulb-like body: *Aeranthus funalis*, Rehb.

II. Sympodial Orchids. Each axis is definite, and its point ceases growing (usually after one period of growth), further development being made by a side shoot which grows in the same manner as the primary shoot.

A. Inflorescences lateral, the vegetative axes definite only by cessation of growth.

a. With leaves.

α. Internodes uniform. (Homoblastæ).

1. Vernation folded; midrib only strongly developed.

aa. Inflorescences from the axils of the upper leaves; leaves proportionally short: *Dendrobium-group*.

αα. Leaves flat, with two surfaces.

o. Stem slender, cylindrical, bearing numerous leaves: *Dendrobium fimbriatum*, Hook.

p. Internodes thin, nodes fleshy and swollen: *D. crassinode*, Rehb.

q. Stems thickened in the middle from a slender base, and tapering again to the tip: *D. cremenatum*, Lindl.

r. Stems club-shaped, bearing a few contiguous leaves near the thick tip: *D. densiflorum*, Wall.

s. As in r., but the stems flattened: *D. sulcatum*, Lindl.

t. Like the last, but the leaf-shoot springs from the middle of the stems, which are connected and form a rhizome: *Eria ornata*, Lindl.

u. Stems taking the form of elongated pseudobulbs, bearing a few leaves at the apex: *D. speciosum*, Sm.

v. Pseudobulbs almost spherical, sometimes formed of only one internode, otherwise like the foregoing: *Eria myristiciformis*, Hook.

w. Pseudobulbs depressed, flat, sometimes irregular in outline: *Eria bracteata*, Lindl.; *Agaveanthus marchantioides*, Wight?

x. A single leaf at the end of a slender stem, looking like a continuation of the latter: *Eria pleurothalis*, Lindl.

y. Similar, but having a swollen stem: *Dendrobium Jenkinsii*, Wall.

z. Stems diverse, the sterile ones swollen, and bearing one leaf, the flower-bearing ones slender: *D. nitidissimum*, Rehb.

ββ. Leaves thick, fleshy, solitary at the ends of the branches.

o. Leaves flattened: *D. linguiforme*, Sw.

p. Leaves Gherkin-like, warty: *D. cucumerinum*, MacLear.

γγ. Leaves cylindrical, with a more or less prominent furrow above.

o. Stem slim, cylindrical, many-leaved: *Eria panacea*, Lindl.

p. Stem swollen below, slender above, many-leaved: *D. junceum*, Lindl.

q. Stem slender, with only one leaf at the end of each branch: *D. teretifolium*, R. Br.

δδ. Leaves equitant, upright, with flat sides.

o. Internodes short; leaves relatively large, habit of Iridæ: *Eria hemiophylla*, Rehb. (? *Oncidium pusillum*, Rehb. ?)

p. Internodes elongated; leaves short: *D. anceps*, Roxb. (*Lockhartia*).

bb. Inflorescences from the axils of the lower leaves, but springing from above the new shoots; leaves long and narrow with almost parallel margins: *Cymbidium-group*.

αα. Stem tall, Vanda-like in habit: *Grammatophyllum speciosum*, Bl.

ββ. Stem short, slim: *Cymbidium Masteri*, Griff.

γγ. Stem short, thick: *C. giganteum*, Wall.

δδ. Stem short, dwarf, plant resembling a tuft of grass: *Phymatidium delicatum*, Lindl.

αα. Stem swollen, consisting of only a few internodes, and bearing a few leaves at the tip of the pseudobulb: *Grammangia Ellisi*, Rehb.

55. Stem of only one bulbous internode, otherwise similar: *C. Huttoni*, Hook.

cc. Inflorescence as in the foregoing; leaves thin, short and broad: *Bacca-group*.

αα. Stem tall, Vanda-like in habit: *Warlesia* (? *Batemannia*) *Melzeri*, Hook.

ββ. Stem short: *Bolletia caulescens*, Rehb.

2. Vernation convolute; lateral ribs nearly as prominent as the midrib: *Phajus-group*.

aa. Stems slender, cylindrical: *Limnolobos gracilis*, Bl.

bb. Stems club-shaped, from a slender base: *Chysis aurea*, Lindl.

cc. Stems taking the form of long, egg-shaped pseudobulbs: *Mormodes laxatum*, Lindl.

dd. Stems similar to the foregoing, tapering upwards, constricted: *Limnolobos rosea*, Lindl.

ee. Stems taking the form of flat, broad half-underground pseudobulbs: *Bletia florida*, R. Br.

ff. Pseudobulbs almost reduced to a single internode: *Preptanthe vestita*, Rehb.

β. One internode only normally developing into a pseudobulb, the others thin, cylindrical or compressed. (Heteroblastæ).

1. Vernation conduplicate.

aa. Inflorescence typically from the axil of the uppermost leaf beneath the pseudobulb, sometimes succeeded by a number of other inflorescences from above downward. Leaf-shoots springing from the axils of the leaves below the inflorescences: *Oncidium-group*.

αα. Leaves flat, dorsiventral.

o. Scale leaves beneath the pseudobulbs with a gradually larger blade (continuous leaf-succession): *Odontoglossum crispum*, Lindl.

p. Only bladeless scale-leaves beneath the pseudobulbs (interrupted leaf-succession): *Oncidium Papilio*, Lindl.

q. Pseudobulb small, the solitary leaf thick and fleshy: *Oncidium Caven-dishianum*, Batem.

ββ. Leaves terete, furrowed, seated on the reduced pseudobulbs: *Oncidium Cebollata*, Sw.

γγ. Equitant, vertical leaves, with equal sides on the pseudobulbs: *Trizoxis falcata*, Lindl.

δδ. Leaves on the pseudobulbs reduced, or wanting: *Lonopsis paniculata*, Lindl.

bb. The solitary inflorescence from the axil of the second leaf below the bulb, occasionally supplemented by others from the axil of the leaf above, and some of those below. Leaf-shoots springing from below the inflorescences. Interrupted leaf succession: *Trichopilia-group*.

αα. Leaves leathery, broad: *T. tortilis*, Lindl.

ββ. Leaves fleshy, almost semicircular in cross section: *T. hymenantha*, Rehb.

cc. Inflorescence sometimes close to the bulb, sometimes distant on the nodes of the rhizome; leaf-shoots sometimes from above the bulb, sometimes from below. Interrupted leaf-succession: *Bolbophyllum-group*; *B. Lobbi*, Rehb.

dd. Leaf-shoots close under the pseudobulbs in the axil of the uppermost leaf; inflorescences proceeding from the axils of the lower leaves: *Maxillaria-group*.

αα. Leaves flat, dorsiventral; leaf-succession gradual: *B. tenuifolia*, Lindl.

ββ. The same, but with interrupted leaf-succession: *M. pectus*, Hook.

γγ. Leaves terete: *M. Cepula*, Rehb.

2. Vernation convolute.

aa. Gradual leaf-succession; inflorescence proceeding from a leaf-axil above those from which the shoots are produced: *Zygopetalum-group*; *Z. Mackenzii*, Hook.

bb. Gradual leaf-succession; shoots springing from the uppermost leaf-axil beneath the bulb; inflorescence originating lower: *Laestegia-group*; *L. Skinneri*, Lindl.

cc. Interrupted leaf-succession: *Stanhopea-group*; *S. oculata*, Lindl.

b. Without leaves: *Bolbophyllum minutissimum*, F. Müll.?

B. Inflorescences terminating the leaf-bearing axes.

a. With leaves, roots not tuberculate.

α. Internodes uniform.

1. Vernation conduplicate.

aa. Leaves flat, dorsiventral.

αα. Internodes developed.

α. *Epidendrum-group*.

o. Stem slender, most of the nodes leafy: *E. paniculatum*, Ruiz et Pav.

AN AMATEUR GARDENER'S
EXPERIENCES.—VI.

ONE of the pleasantest ways of gaining information available to the gardener is to visit, as opportunity offers, as many of the great gardens and the leading nurseries as he can gain access to. I know of no other plan which compares with this for the combination of pleasure and profit. I have passed many holidays in this manner, and I do not remember one with which delightful remembrances are not associated; and I do not think either of those days was without its distinct addition of actual knowledge. The first really good garden I visited was situated midway between Worcester and Ludlow, and there I first saw outdoor fruit growing successfully carried on. It is a good many years ago, but I got lessons from that garden which I have never forgotten, and they have had an effect on my own gardening life which, at least to myself, has been of considerable importance.

My first visit to a nursery was made a year or two later; it was situated near a pleasant old-world village in the neighbourhood of a famous city in Warwickshire; its owner, a renowned Strawberry grower, was also one of the earliest to cultivate Roses for sale extensively, and it was to see his collection that I made my visit. It was in consequence of what I saw then that I commenced Rose growing, which has been a dearly-loved pursuit ever since—a pursuit begun years before the first Rose show in London was held. Since which these annual *fêtes* of the Queen of Flowers have become popular and are now so numerous. A few years later my love of Roses brought me acquainted with the late Charles J. Perry, of Castle Bromwich, and ever after my first visit to his lovely garden I was a welcome visitor—a privilege I availed myself of two or three times every year until his busy life came to an untimely end. My last visit to my friend's house was on the day of his funeral, when I helped to carry him to the grave, and had the mournful privilege of placing on his coffin the loveliest wreath of Magnolias I ever saw, sent by his life-long friend, Charles Turner, of Slough. It is sad to think what a gap that death caused in the horticultural ranks of Warwickshire—a gap which long years passed since have not seen filled up. On the other hand, it is a source of great pleasure to recall some of the many visits I made to The Cedars during Mr. Perry's life, for there was always something new or interesting to see, and it was a real delight to host and visitor to make the round of the houses and grounds, and compare notes. It was there I made acquaintance with many new Roses, since grown old and forgotten, and first saw how much skill and attention has to do with growing Roses and every other kind of plant and flower successfully. It was there I first learned to love many of our most beautiful Conifers.

Who that remembers the huge plantation of Wellingtonias which Mr. Perry made, will ever forget them; and who that has not seen them, or a similar collection (if such there be), can have any idea of their varied forms and habits of growth. Then what delight attaches to the remembrances of the yearly visits to see the seedling Verbenas, grown there in thousands, as they came into bloom for the first time; and how is it possible to forget the man who gave year after year so many beautiful varieties to the world, and which no one, I think, ever grew better, or has exhibited so well. Dahlias, too, were admirably cultivated there, and many excellent kinds first saw the light in that garden. As one looks back to what was learned at Castle Bromwich, one thing remains very distinct, and that is the lesson of doing with all one's might whatever is undertaken. Charley Perry carried into his horticultural pursuits a great capacity for taking pains, which was ever kept alert by an enthusiasm for everything beautiful in Nature up to the last even, though the sad malady which killed him had deprived him of his eyesight. A first-rate business-man, he carried into the loved occupation of his leisure all the qualities which insure success in the ordinary affairs of life. He never trusted to chance; he was patient and painstaking; he studied his plants and supplied their needs; he did nothing haphazard, but laid plans with forethought and carried them out to completion; he converted a common-place country garden into a garden famous for miles around, which was visited by hundreds of the best known horticulturists with pleasure, and by not a few with profit, not because it was

in common phrase a "show place," but because every plant it contained gave evidence of skilful cultivation, and of studious consideration of its requirements. Even the commonest vegetables were grown there better than in most places; and as for the Strawberries, who ever saw any to surpass them?

It was my good fortune to become acquainted with the late John Standish some ten years ago, and the acquaintanceship soon ripened into friendship. How could it be otherwise, unless the fault had been mine? for surely no kinder heart ever existed in the breast of man than John Standish's. Soon after our acquaintance began I was invited to pay a visit to the Royal Nurseries at Ascot. The well-known grey pony and its equally well-known attendant awaited my arrival at the railway station, and conveyed me to John Standish's house, where he and Mrs. Standish gave me the kindest of receptions. How many of my readers have had the same hearty welcome to that hospitable hearth!—and surely not one of them but regrets as something personal the loss of that best of hosts. We were soon out in the nursery, among the trees and plants loved so well by John Standish. Not one of them but had its history; every peculiarity was known to him; question as one would, the answer, giving solid information, was ready. Never can I forget the interest of that visit, or cease to feel the benefit I derived from my companion's vast stores of knowledge, gained by the most thoughtful observation, and which were unreservedly placed at my disposal. When I left Ascot I felt I had gained an experience in matters horticultural of great value, and I am bound to add that my estimation of horticultural worthies was heightened, and deservedly so.

I could add many other instances. I could tell of visits to Cliveden and Dropmore, to the Royal Gardens at Frogmore and to the world-famous nurseries at Slough; of many pleasant and instructive visits to the Royal Horticultural Gardens at Chiswick, and delightful conversations with Mr. Barron, but the sum and substance of all would be to convey this advice to gardeners of all kinds and degrees: Visit every good garden and nursery within your reach, and use eyes and ears while you are there. *Philanthes*.

THE DURDHAM DOWN
NURSERIES.

THE Durdham Down Nurseries of Messrs. Garaway & Co., situated at Clifton, a fashionable suburb of the city of Bristol, occupy a commanding position at a considerable elevation above the level of the surrounding district, which, in addition to securing a hardy nursery stock, cannot fail to charm the visitor, whose eye may travel over a wide expanse of picturesque country varied by dense woods and sparkling green pastures, and dotted at intervals by the residences of the nobility and gentry of the neighbourhood. I dare say upon a dull foggy morning a different picture—and a true picture, too—could be portrayed from the same spot where the writer stood on that clear November morning when the sun illumined the broad landscape with his brilliant rays, and made every object in the distance roseate and bright to look upon. The nurseries are easily reached by omnibus or car from the city, the distance being but a short drive from its centre, from which there is a capital service of all kinds of conveyances to suit the different tastes and requirements of the age.

Upon entering the nurseries I find there is no pretensions to the usual exhibition of ornamental planting so frequently to be met with in provincial nurseries; but there is a roomy approach leading to the houses and packing-sheds margined by grass, and there is a rather curious example of rockwork a short distance from the houses in grotto form, having an arched entrance clad with Ivy, and a few hardy aquatics (*Nymphaeas*) are growing in a small sheet of water in the centre. Owing to the rapid development of the city, what was once a pleasant suburban retreat is now swallowed up for building purposes, and I believe the Messrs. Garaway's nurseries have been encroached upon, in common with their neighbours, so that special attention and concentrated energy is now given to the propagation and raising of those plants that find most favour with the gardening public. These comprise alpine and herbaceous plants, Carnations, Roses, &c. The nursery—or rather that part of it where the outdoor stock is grown—lies on the breast of a gentle elevation, which of course yields hardy stubby plants that will

- p. Stem slender, leafy at the end only: *E. (Cattapa) amethystoglossum*, Rehb.
- q. Stem club-shaped upwards, otherwise like p.: *Bletia* (*Schemdingia*) *repens*, Rehb.
- r. Stem club-shaped, but flattened upwards, having only one leaf: *B. (Lilia) purpurata*, Rehb.
- s. Two kinds of shoots, vegetative club-shaped and leafy at the end, flowering slender and furnished with scale-leaves only: *F. Stam-patiensis*, Batem.
- t. Stem taking the form of an egg-shaped bulb, thickest in the lower part: *Bletia* (*Lilia*) *autumnalis*, Rehb.
- u. Bulb almost spherical: *Bletia* *peruviana*, HBK. (*Lilia*) *magica*, Lindl.
- v. Bulb formed almost entirely from one internode: *E. Candollei*, Lindl. (*E. capensis*, Hook.).
- ww. *Pleuronothallis*-group.
- o. Stem slender, most of the nodes leafy: *P. caulescens*, Lindl.
- p. Stem slender, bearing only one leaf: *P. cordata*, Lindl.
- q. Stem slender, the greater portion of each shoot forming a creeping rhizome: *Stelis scansor*, Rehb.
- r. Stem short, bearing only one leaf, looking like a continuation of it; growth turf-like: *Masdevallia polytricha*, Rehb.
- s. As in the last, but so intricately branched that it looks like a stem furnished with distichous leaves: *Lepanthes nummularia*, Rehb.
- ff. Internodes undeveloped, except in the inflorescence: *Cypripedium* group: *C. insignis*, Wall.
- bb. Leaves terete, furrowed above.
 - aa. Having numerous leaves: *Epidendrum teres*, Rehb.
 - ff. Only one leaf at the end of each shoot; creeping: *Bletia* (*Drasaceta*) *caerulea*, Rehb.
 - yy. Only one leaf at the end of each shoot; turf-like: *Masdevallia triaristella*, Rehb.
- cc. Leaves equitant, vertical, with equal sides.
 - aa. Internodes developed; stem slender: *Epidendrum equitans*, Rehb.
 - ff. Internodes short; leaves large; habit of *Iridace*: *Malaxis* (*Oberonia*) *tridifolia*, Rehb.
- 2. Veneration convolute.
 - aa. Leaves narrow, smooth: *Phunia Bensonia*, Rehb.
 - bb. Leaves broad, smooth, reticulated: *Anacochilus javanicus*, Bl.
 - cc. Leaves plicate, folded like a fan: *Sobralia macrantha*, Lindl.
 - dd. Leaves solitary, roundish, or lobed: *Pogonia neriella*, Bl.
- ff. One internode normally bulbous, the remainder cylindrical.
 - 1. Veneration conduplicate.
 - aa. Leaf-shoots only appearing from below the bulbous internode: *Liparis longipes*, Lindl.
 - bb. Leaf-shoots also produced above the bulbous internode: *Poneria violacea*, Rehb.
 - 2. Veneration convolute.
 - aa. Leaf-shoots normally only from below the bulbs.
 - aa. Leaves folded: *Celogyne* (*Plione*) *Wallichiana*, Griff.
 - ff. Leaves even.
 - m. All the shoots alike: *Dendrochilum glumaceum*, Lindl.
 - n. Flower-shoots leafless: *Celogyne cristata*, Lindl.
 - bb. Leaf-shoots from near the top of the pseudobulbs: *Celogyne* (*Otocilus*) *articulata*, Rehb.
- b. With leaves and tuberculate roots: *Orchis latifolia*, R.
- c. Without leaves, with true roots.
 - a. Climbing: *Galeola altissima*, Rehb.
 - ff. Erect: *Neottia Nidusavis*, L.
- d. Without either true leaves or roots: *Epipogon Gmelini*, Rehb.

Although the foregoing table is by no means complete, it is sufficient to show the extraordinary diversity of the structure of Orchids independently of their flowers. *E. Pfitzer, Heidelberg*.

INSTITUTION OF SURVEYORS.—The next meeting will be held on Monday evening at 8 P.M., when a discussion will be opened by Mr. Daniel Watney with a short paper, entitled, "The Land Question in 1880."

bear removal and exposure with impunity. The little alpines, perched on stones, looked as happy as it was possible to expect to see any living plant, and everything I observed was legibly named in distinct bold letters, as all novelties should be. But in the dreary month of November it is more comfortable, as well as interesting, to inspect those subjects that are grown under glass.

Before entering the houses proper I noticed several pits filled with hundreds of Mignonette and Richardias in small pots, and bedding plants in variety in large numbers. The first house I entered was a large one filled entirely with bedding Pelargoniums, and the adjoining compartment is a plant-stove, in which a useful collection of plants is grown, of the type usually found in private gardens, such as *Grevillea robusta*, *Begonia insignis*, *Centropogon Lucyanus*, *Sericographis Ghiesbreghtiana*, *Bouvardias*, Ferns for cutting and for baskets, and a number of Ferns in small pots suitable for general furnishing purposes. The next house I was directed to was a span-roofed structure containing Azaleas, Camellias, and Oranges, in small pots, which renders them suitable ornaments for adorning the dinner-table. A large batch of *Azalea amneca Caldwellii* is also in a healthy state in small pots, and smothered with flowering buds. Another structure is filled chiefly with red-and-white Primulas, a very good strain, and winter-flowering Carnations. Amongst the latter the principal favourites seemed to be *La Belle*, *Garibaldi*, *Miss Jolliffe*, *Annie Williams*, *Marchioness of Westminster*, *White Swan*, and *A. Aléatière*, a fine free-flowering scarlet variety, which is especially useful in winter. A pink *Salvia*, hailing from Cornwall, with the local appellation of *Reinmanni*, should be worth extensive cultivation in winter, being distinct in colour from all other varieties that I am acquainted with. I would advise the Messrs. Garaway to hunt up the pedigree of this plant, and submit it to the public for inspection.

In a long span-roofed forcing-house I came across an old favourite for winter flowering in a batch of *Tropæolum Ball of Fire*. The plants were grown in small pots, and tied loosely to a single upright stake, and they are no doubt useful subjects either for furnishing, or for supplying scarlet flowers for small glasses for the dinner-table, or for bouquets. The same house also contains an assortment of Cyclamens and stock Pelargoniums. Another pit, running parallel with this, was bright with Primulas, Cinerarias, Pelargoniums, and a fine stock of those fashionable plants, *Chrysanthemum frutescens* and *Etoile d'Or*. The collection of Palms, Dracenas, and Crotons consist of such kinds as are usually employed for furnishing, and a more select stock for growing on into specimens. The young plants for decorative purposes, I observe, are very judiciously kept at a lower temperature than those that are destined in future to become the permanent ornaments of the plant stove—a system that should be more generally adopted by the trade. The Palms comprise nice samples of *Areca lutescens*, *Cocos Weddelliana*, *Chamedorea elegantissima*, *Corypha australis*, *Euterpe edulis*, *Seaforthis elegans*, &c., and Crotons and Dracenas are also represented in many of the choicer kinds.

Of miscellaneous subjects that struck me as being particularly useful may be enumerated *Paulinia thalictrifolia*, *Reidia glaucescens*, *Rogiera gratissima*, *Cuculigo recurvata*, and *C. recurvata variegata*, *Luculia gratissima*, *Ardisia crenulata*, and the little berry-bearing *Rivina*, *R. humilis*—another species, *R. tinctoria*, having blood-red berries, being equally meritorious as an ornamental plant, and deserving a word of commendation. In the New Holland house there is an admirable variety of healthy young plants which, either from their habit or some other characteristic, are always interesting to look upon. Why these plants are not more cultivated than they are it is difficult to conceive. I suppose they are undergoing a "partial eclipse," and will appear upon the scene again at some future time. What can be more beautiful than a collection of *Chorozemas*, *Clianthus* (the Australian Pea), *Acacias*, *Cassia corymbosa*, *Polygalas*, *Genettillis tulipifera* and *fuchsoides*, *Pimeleas*, *Boronias*, including the sweet-scented *megastigma*, *Correas*, *Eriostemons*, *Acrophylum venosum*, *Witsenia corymbosa*, and many others, which even at this season attract a degree of interest different from any other class of greenhouse plants.

I took special note of a little plant, *Brunia superba*, which is so handsome in habit that it is likely to render good service to gardeners and others having a great demand for plants for general furnishing, such as

will bear a low temperature and at the same time produce a good effect, either alone or in conjunction with other plants. The show of *Chrysanthemums* in these nurseries is unquestionably the finest display, as regards quality, I have ever before seen by the trade. Large quantities of the finest exhibition varieties in cultivation are grown and arranged in a house by themselves, where they attract the attention of visitors to the nurseries for a period extending over several weeks. The plants are grown in 10-inch pots, with from three to four stems to each plant, each stem bearing a single flower which in point of quality it would be difficult to surpass. Amongst the incurved varieties I noticed that preference was given to selection rather than to mere numbers, and every plant is duly named. The Japanese and Anemone varieties are marvellously cultivated—in point of size, perhaps, if anything, rather overgrown. Many of the flowers were, however, faultless in form and substance, and were the centre of attraction at the exhibition which took place at the Victoria Rooms the same day. The notable Japanese varieties were *Magnum Bonum*, *Golden Dragon*, *Père Delaux*, *The Daimio*, *Bronze Dragon*, *Red Gauntlet*, *Sarnia*, *Gloire de Toulouse*, and *Daniel*—a rosy-pink variety of exceptionally conspicuous character. The finest Anemones were *Empress*, *Georges Sand*, *Lady Margaret*, *Prince of Anemones*, *Louis Bonamy*, *Fleur de Marie*, *Glück*, and *Acquisition*. *Visitor*.

LIETZIA BRASILIENSIS.

THIS plant was originally described and published by Dr. Regel in the *Gartenflora*, t. 1005, but for our present illustration of it (fig. 145) we are indebted to



FIG. 145 LIETZIA BRASILIENSIS.

Messrs. Haage & Schmidt. It is a Gesnerad with a tuberous rhizome, from which spring erect stems bearing opposite broadly lance-shaped, saw-toothed downy leaves, and terminal, many-flowered racemes of irregularly two-lipped greenish flowers, with a gaping throat spotted with brown, and long protruding stamens. It is a native of Brazil, where it was gathered by Herr Lietze on the banks of the River Doce. The tubers require to be kept dry in winter, potted in a warm house or frame in March, when bloom will be produced in the course of the summer.

PLANT PORTRAITS.

AGAVE HORRIDA, Lemaire, *Bot. Mag.*, t. 6511.—One of the smaller Agaves, with a distinct continuous border to the leaves. The flower-spike is tall, cylindrical, densely crowded with yellowish-green flowers. The specimen figured was one in Mr. Peacock's collection now on view at Kew.

BUCKLANDIA POPULNEA, R. Br., *Bot. Mag.*, t. 6507.—A beautiful Sikkim Himalayan tree, also found in the mountains of Sumatra. As a greenhouse shrub it is very effective, its bold, leathery, cordate leaves, pinkish when young, and large pink stipules, being very striking. Kew.

FIG. BROWN TURKEY, *Florist*, October.—The best Fig for general purposes in cultivation. It is also known under the name of Lee's Perpetual.

GRAPE, JAPANESE, YAMA-BOUTA, *Revue Horticole*, June 1.—A species (?) with small, black, Currant-like berries.

NICOTIANA ALATA, Leich., *Gartenflora*, t. 1010.—A South Brazilian annual species, 4–5 feet high, with a narrow base dilated into an ovate blade-base into a long stalk. Flowers white with a long, narrow, funnel-shaped tube and a flat limb, the five segments of which are unequal in size.

PELARGONIUM IVY-LEAVED GLOIRE D'ORLEANS, *Floral Mag.*, t. 424.—A double-flowered variety, with rosy-pink flowers in close globular trusses. Chiswick.

PESCATOREA FIMBRIATA, Regel, *Gartenflora*, t. 1008.—Pseudobulbs o. Peduncles one-flowered. Sepals whitish with a violet lip. Petals similar but smaller; lip stalked, with a three-lobed disc.

PICOTEEES, *Florist*, October.—The varieties figured are—1, Minnie; 2, Estelle.

ROSE CÉLINE FORESTIER.—The *Journal des Roses* gives the following history of this Rose. It was a seedling raised by M. Victor Trouillard, the foreman of the Rose department of M. André Leroy, of Angers, which firm "had the honour to sell, in 1860, this magnificent Rose to an Englishman, named John Standish." The honour to sell to an Englishman, named John Standish!—what will our business men think of the honour conferred on their late well-loved colleague?

STATICE KAUFMANNIANA, Regel, n. sp., *Gartenflora*, t. 996.—A tufted species, with lanceolate leaves with thickened crisped edges. Flowers pink, in a compound spike, well raised above the foliage. Eastern Turkestan. Dr. Albert Regel.

STENOMESON LUTEO-VIRIDE, Baker, *Bot. Mag.*, t. 6508.—Like *Coburgia trichroma* in form, as also in the culture it requires, but the flowers are yellowish-green, with deep green midribs to the segments. Introduced from the high Andes of Ecuador by Messrs. E. G. Henderson.

STEPHANOPHYSUM LONGIFOLIUM, Belg. Hort. 1880, t. iv.—A Brazilian Acanthaceous plant, with oblong stalked leaves, and loose inflorescence of irregular tubular red flowers, 1–1½ inch long, with open throat and obtuse segments. MM. Jacob-Makoy.

TILLANDSIA LINDENI GENUINA, *Floral Mag.*, t. 385.—The dwarf variety, with dense pink bracts and deep blue flowers.

TILLANDSIA MALZINEI, Baker, *Bot. Mag.*, t. 6495.—A broad-leaved species, destitute of mealy pubescence; flowers white, in elongated compact spikes, with yellow bracts edged with green. The *Vriesia Malzinei* of Morren is the same plant, but with red bracts. Native of Mexico. Kew.

TILLANDSIA MUSAICA, *Floral Mag.*, t. 397.—It is a pity that analyses were not given of the flowers of this species, as it is, we believe, the first time that the plant has flowered in cultivation. The flowers are borne in a dense terminal cluster, interspersed with orange-scarlet bracts, the petals apparently orange-coloured with white tips. Native of Columbia. Mr. W. Bull.

VERBENA LUSTROUS, *Floral Mag.*, t. 388.—Brilliant cerise-scarlet. Messrs. Keynes.

VRIESIA GUTTATA, André and Lind., Belg. Hort., 1880, t. i. to iii.—A Bromeliad with oblong obtuse shortly and abruptly acuminate leaves, green above, paler beneath, spotted on both surfaces with irregular purplish blotches; raceme stalked, long, pendulous; bracts boat-shaped, pinkish; corolla yellow. Brazil.

XIPHION KOLPAKOWSKIANUM, Baker, *Bot. Mag.*, t. 6489.—Nearly allied to the old *Iris reticulata*, but with globose bulbs, linear leaves, and paler flowers. Native of Turkestan. Trinity College Garden, Dublin.

YUCCA FILIFERA, Rev. Hort., Oct. 1, 1880.—Flowering and fruiting specimens.

JATROPHA URENS.

SOME time since Mr. Lynch, of the Cambridge Botanic Garden, favoured us with a flowering specimen of this Euphorbiaceous plant, a native of the West Indies and of tropical South America. Its foliage, as the illustration (fig. 146) will show, is handsome, bright shining green, but it is to be looked at rather than touched, for it is plentifully provided with long stinging hairs, bulbous at the base, and with a small globular reservoir at or near the top, as in the common Nettle. The virulence of the plant is such as to render caution necessary. In some of our colonies the negroes know the plant by the name of "Tread Softly." It is but rarely that it flowers in cultivation.

OPEN AIR GRAPES.

I HAVE read "F. W. B.'s" paper on this subject in your issue of November 20 with much interest. There is no doubt that Grapes were much more grown out-of-doors some forty or fifty years since than they are now; and there is no disputing the fact that they were grown, to some degree of perfection, on walls in the open air long before glasshouses were thought of. To speak from my own experience with Vines growing outside, I have no hesitation in saying that there are many favourable situations in this country, where the hardier varieties of our cultivated Grape might be grown advantageously in good seasons, if only the same amount of attention was paid to their cultivation that is given to that of other choice fruit.

attended to by some one having a proper knowledge of pruning, training, thinning, &c.

One portion of the outside of the Castle wall here, which is some 100 yards in length, and from 40 to 50 feet high, is covered with Vines from top to bottom—merely to hide the bare wall and give it a cheerful appearance during the summer months, as it faces one of the principal thoroughfares in the town. The varieties now (at one time more) are principally Royal Muscadine and Miller's Burgundy. Some of the former I had from France, under the name of Chasselas de Fontainebleau. The Vines are regularly pruned every autumn and trained to the trellis perpendicularly. The young shoots are stopped and tied in during the summer, as occasion requires, and they grow freely and produce fruit abundantly. Little attention, however, is taken of the fruit, as we have plenty of Grapes

No Vines could have looked more promising in the month of May, 1879, than they did at Castle Coch. The wood was thoroughly ripened, and the prunings looked like walking-sticks—canes 5 feet and more in length, with bark of a beautiful brown, indicating that they were ripened from top to bottom. The Vines broke well, each plant showed from six to eight bunches of Grapes, the picture of health, but the rain and cold weather which immediately followed, and continued till too late in the autumn, destroyed the crop, and prevented the proper ripening of the wood for another year, and the result is, as I have stated, two failures in succession. "F. W. B." in his remarks referring to the vineyard at Castle Coch writes, "I hope most earnestly that it is in Mr. Pettigrew's power to tell us that the venture is a successful one, or, in remembrance of the past fine

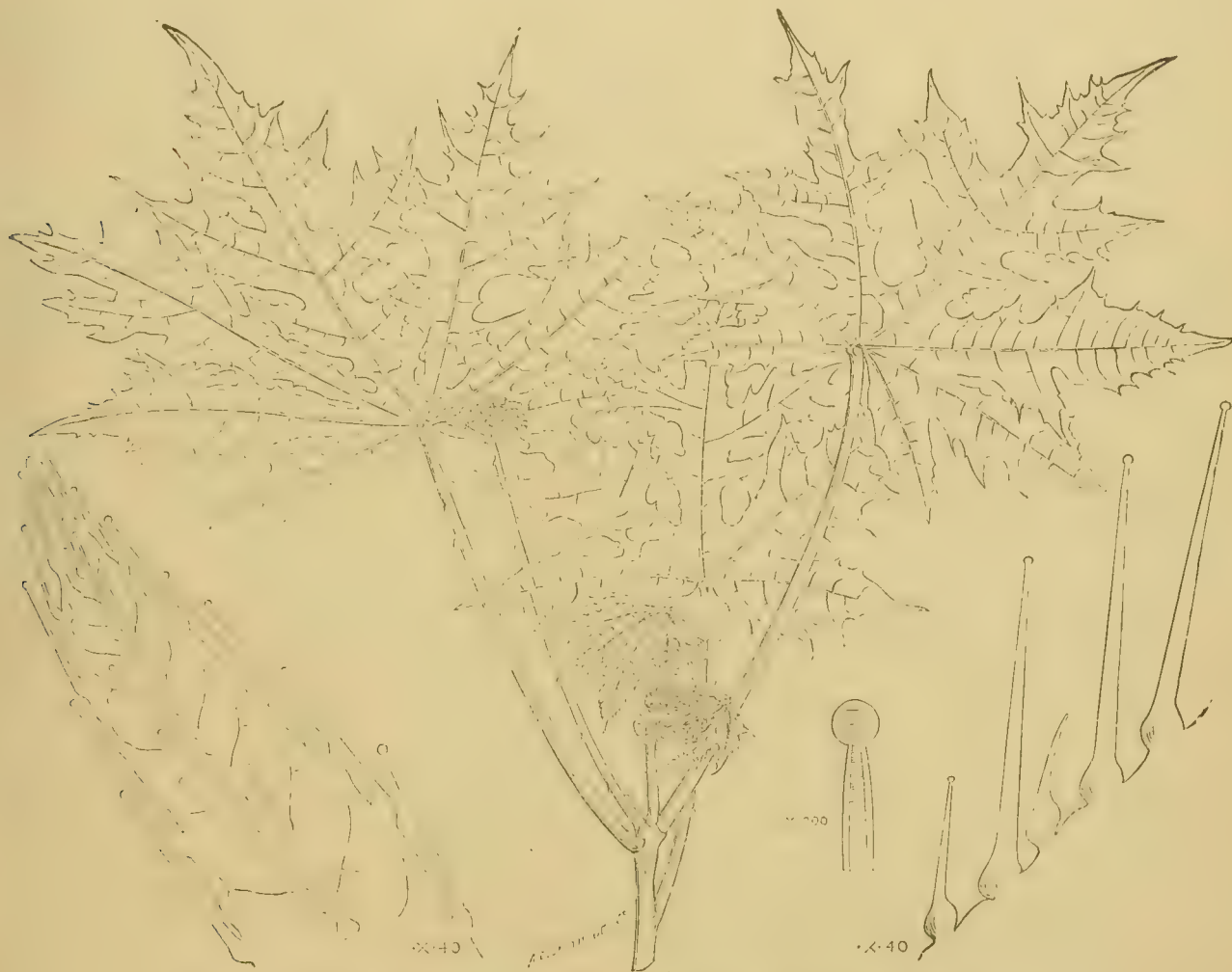


FIG. 146.—JATROPHA URFENS: FLOWERING BRANCH. THE STINGING HAIRS MAGNIFIED. (SEE P. 752.)

I know of several old Vines growing against houses in this and in other districts, covering large portions of the gable and side walls, which in good seasons produce heavy crops of ripe fruit—such as they are—and yet the owners of them know scarcely anything of how they should be treated. The Vines are generally pruned some time between the fall of the leaf and the month of March, by a person who knows, perhaps, as little about pruning as the happy possessor. And this is about all that is done to them during the seasons, except in cases when the owner has a knack for gardening, and thinks himself a little better informed on the subject than his man-of-all-trades, whom he endeavours to teach one lesson at least, by nearly denuding the Vine of all its leaves when the fruit is approaching maturity. This is done with the professed idea that it hastens the ripening of it. If Vines so treated produce fruit and ripen it in good seasons, how much better they would do so if properly

to supply all our demands from the vineries—and Royal Muscadine is not considered a good variety for wine making. But to illustrate what I have stated above, I have on several occasions paid particular attention to the thinning out of bunches, and also the berries in the bunches left on the Vine, stopping of laterals and tendrils as they appeared, mulching the borders and watering in dry weather; and the result of the extra attention bestowed was Grapes as good in quality, and as highly coloured as I have ever seen at the *table d'hôte* in France, and gentlemen who have seen them on the occasion I allude to, remarked, that they were as good as are generally seen on the Continent.

It must be borne in mind, however, that it is only in good seasons that such results can be obtained, and that, too, with the best of attention.

The Vines at Castle Coch were a complete failure in 1879, and they have been a failure this year also.

season that success is to be hoped for." I feel confident that in a succession of fairly good seasons, it will be a success, but it should never be forgotten that one bad season like 1879—as far as open-air Grape culture is concerned, no matter whether it is in France or England—means two years comparative failure. The Vines have made very good canes this season, which are fairly ripened, and if we have anything like a summer next year, I expect there will be a good crop at Castle Coch.

We all know that in France in 1879 the vintage was a great failure, and it is but natural to think that the vintage could not be so good this season with ill-matured canes to start with. A friend—a Vine proprietor in Burgundy—writing to me on the state of the vintage of last year, said, it was all but a complete failure in his district, and that the oldest man living had never seen such a cold wet summer. I have not heard from him since the vintage of this

year, but if I were to judge from the dessert Grapes to be seen every day at the *table d'hôte* during a ten days' visit to Paris in the beginning of October last, I should say it was not very good—at least, as far as quality was concerned. The bunches were small, badly flavoured and coloured, and hotel-keepers generally complained that the Grapes were not good this year. I have no doubt it will interest many of the readers of the *Gardeners' Chronicle*, besides "F. W. B.," to know that the wine made from the vineyard at Castle Coch in 1877 and 1878 has met with general approval from most of those persons who have tasted it. But the experiment is of too recent a date to pass a definite opinion of what the results will eventually be when the Vines get older. Gentlemen from many parts of the country have tasted it. Some of them say that it resembles this kind of wine, and some that, but all are of opinion that it is a good wholesome wine; and they said that if the monks of old made as good wine in this country they saw nothing to hinder them from getting jolly over it. *A. Pettigrew, Cardiff Castle.*

COLONIAL NOTES.

REPLANTING IN HONG KONG.—Now that public attention is awakened as to the importance of "afforesting" regions naturally barren or rendered so by the reckless greed of man, it may be of some interest to our readers to be made acquainted with what is being done in this outlying station of the British Empire to endow the island with forest vegetation. Forty years ago, before the British occupation, trees were almost entirely absent except in the "Happy Valley" on the northern side of the island, and in the little Hong Kong woods on the south side of the island. The present administration, under his Excellency Sir John Pope Hennessy, is greatly fostering the work, so that it may be anticipated that at no distant date the whole of the island and of the adjacent peninsula of Kowloon available for plantations will be planted with trees. From an official notice drawn up by Mr. Charles Ford, the able superintendent of the Botanical Gardens and Plantations, we extract the following particulars. To that gentleman we are also indebted for photographs, one of which is reproduced in fig. 147, p. 757, and which shows a plantation on the northern spur of Mount Gough, which was planted with Bamboos and Banian at the lower portion, Oaks (*Quercus Harlandi* and *Q. salicina*) in the middle, and four-year-old trees, about 6 feet high, of *Pinus sinensis* at the top. Trees 11 feet high of the latter have been successfully planted on the hills this season, and when established they grow 2—3 feet in height each year. From Mr. Ford's report we learn that there are ten Government nurseries situated in Hong Kong and on the Kowloon peninsula, which comprise about 20 acres of land, and contain about 150,000 two-year-old trees, and small seedlings raised this year to supply about 250,000 trees for planting in 1881.

The 150,000 two-year-old trees now in the nurseries will be nearly all planted during the next two months; 60,000 trees have already been planted this year, and sites sown on the hills, where the seedlings will remain, for 60,000 more, which will make a total for this year's work of 270,000 trees, covering an area of 245 acres.

In addition to *Pinus sinensis*, which has hitherto been chiefly used for the endowment of the hills with forest vegetation, seeds of several of the indigenous trees of other kinds, such as the Oaks, Tallow tree, &c., several species of Eucalypti, and other Australian trees, and the Japanese *Pinus Massoniana*, have been sown in the nurseries, so as to afford more variety to the future plantations, as probably many kinds of trees not yet used may be found to succeed, and render the plantations more valuable and beautiful in years to come.

If the experiment which is being tried of sowing the seeds *in situ* proves successful, which it promises well to do, the cost of afforestation of the island will be much reduced, and the operations greatly accelerated, as I estimate that about four or five times as large an area could be thus accomplished as by rearing trees in nurseries and transplanting.

The work of afforestation can, no doubt, be greatly advanced by the co-operation of Chinese, who would, if suitable encouragement be offered by the Government, undertake to plant large areas for the return of being allowed to use the thinnings of the trees under certain regulations, for a certain number of years, say fifteen, when the plantations might revert to the Government, or be leased for an extended period, under such a regulation, or modification of it, as clause No. 28 of the Mauritius Ordinance No. 12 of 1872. Three or four of the small market gardeners at Kowloon have expressed themselves willing to plant 100,000 trees next year under such an arrangement as the above, and one of the chief contractors

in Hong Kong says that he would like to plant trees if the benefit could be secured to him for fifty years.

BRITISH GUIANA.—The report of the Superintendent of the Botanic Garden, Mr. Jenman, shows that the winter rains were excessive and protracted, in December, 1879, no less than 20.85 inches of rain having fallen, the total amount for the rainy season being 78.47 inches. To show the rapidity of growth, Mr. Jenman notes that Roses imported from England grew in three months into bushes 6 to 7 feet high, and such things as *Coleus*, *Alternanthera*, *Iresine*, *Amaranthus*, &c., "appear to rush up to maturity in two or three weeks." *Malpighia glabra* (the common Cherry) is mentioned as the best hedge plant.

JAMAICA.—It is satisfactory to see that 100,000 economic plants, including Maghogany, Teak, and other timber trees, Mangos, Bananas, Sugar-canes, Coffee, Cloves, and other useful trees, are now ready for distribution at low rates from the public gardens in Jamaica. Special provisions are made for the dispersion of *Cinchona* seeds of the best varieties, and a valuable paper of suggestions as to the mode of raising the seeds and establishing *Cinchona* plantations has been issued.

CINCHONA IN JAMAICA.—From an elaborate memorandum recently drawn up by Mr. Morris, the Director of Public Gardens and Plantations in Jamaica, it appears that very satisfactory prices have been obtained for crown, red and yellow barks. Crown or grey bark, from *C. officinalis*, has proved to be a most valuable product.

At the sales of May last while the red bark (*C. succirubra*) consisting of 5327 lb., with an average price of 3s. 10d. per pound, realised £900 4s., the Crown or grey bark, consisting of 5517 lb., with an average price of 6s. 5½d. per pound, realised £1289 5s. 4d. Again, at the present sales 386½ lb. of red bark, with an average price of 3s. 9d. per pound, realised £726 0s. 9d., whereas 1299 lb. (about one-third) of crown bark, with an average of 6s. 10d. per pound, realised £464 18s. 6d., two-thirds of that obtained for the red bark. The greater value of the crown bark being thus established it only remains to point out that, while it is desirable only to plant the red bark at elevations (2500 to 4000 feet) where the crown bark will not grow, the latter may be cultivated in Jamaica over thousands of acres on the Blue Mountain slopes, on all elevations above 4000 feet.

At the sales of August 5 and 10 last, of which full particulars have been supplied by the brokers, it appears that an aggregate of 5226 lots were offered for sale. These consisted of 3920 bales of New Granadian, Carthagena, and South American barks; 81 bales of West Indian bark from the Government plantations, Jamaica; 1225 bales of Ceylon *Cinchona*, red and crown bark.

Of the South American barks little need be said except that for the most part they were bought in at various prices ranging from 2½d. to 6d., 1s. 6d., 3s. 6d., 5s. 6d., and 8s. per pound. The highest prices realised were 3s. 6d. and 4s. 2d. for good Carthagena bark. Being the produce of trees growing in their natural habitat, and probably of great age and size, these sales show that the valuable properties of the *Cinchona* trees are much improved under cultivation, and that the due and careful preparation of the bark is a most important element in obtaining good prices. With regard to the consignments from Ceylon, being the produce of trees under cultivation, and in some cases at least of the same age as those in Jamaica, a comparison of the relative prices obtained for Ceylon and Jamaica barks will no doubt, at the present juncture, be of great value. It may, in the first place, be pointed out that at former sales in competition with South American and East Indian barks the advantage as regards natural or unmossed bark has invariably been in favour of West Indian or Jamaica bark. At the present sales the highest price obtained for Ceylon crown or grey bark was 7s. 4d. for "fine quill," as against 7s. 11d. for "good quill" from Jamaica; for "root bark" 6s. 4d. was obtained for good Ceylon root bark as against 8s. 10d. for Jamaica root bark—the advantage on these two qualities in favour of Jamaica being respectively 7d. and 2s. 6d. per pound. Again, for "twig and small bark" of this species the highest price realised for Ceylon produce was 1s. 2d. as against 2s. 3d. for that from Jamaica. For red bark, "fine quill" from Ceylon reached a maximum of 4s. 3d. per pound as against 4s. for "fair quill" from Jamaica. As mentioned above, no "good quill" of this species was represented in the present consignment, but even, by comparing the prices obtained for bark of second quality from Jamaica with the first quality from Ceylon, the difference is only 3d. in the pound in favour of Ceylon bark. For red "root bark" the highest price for Jamaica produce was 4s. 8d. per pound, for "good root" as against 2s. 6d. for "good root" from Ceylon; thus showing an advantage in favour of Jamaica root bark to the extent of 2s. 2d. per pound. For "twig and small ordinary" bark of *C. succirubra* Ceylon produce obtained from 2½d. to 1s. per pound as

against 10½d. to 1s. 6d. per pound for similar bark from Jamaica.

The above will, it is hoped, show that as with the celebrated Blue Mountain Coffee of Jamaica, so with the *Cinchona* bark grown in the same region, the conditions of soil and climate appear eminently favourable to the production of the best qualities of these valuable products, and as large tracts of land and the necessary labour are now available there are only wanting sufficient capital and energy to overcome the initial difficulties of the enterprise.

The results of the *Cinchona* sales for the year 1879-80 have slightly exceeded the estimated returns, and are as follows:—Quantity of bark shipped, 27,399 lb.; gross amount realised, £5380 9s. 6d.; nett sum realised, £5146 8s. 7d.

ROYAL BOTANIC GARDENS, CEYLON: REPORT OF THE DIRECTOR FOR 1879.—*Liberian Coffee.*—This Coffee is now being very extensively cultivated in the hotter districts of Ceylon, and although it suffers to some extent from the attacks of the leaf disease, it is hoped that this handsome species of Coffee will prove a profitable investment.

Cinchona.—This cultivation has made immense progress on the hills during the last few years, and it would appear to be in many cases highly remunerative. It will be remembered how large was the distribution of *Cinchona succirubra* and of *C. officinalis* during the past few years, and how considerable the amount realised for the Government from the sales at the Hakgala garden. This selling of the plants and seeds of these two above-named species being found to be very remunerative, and the demands continuing, the planters themselves have directed their attention to supplying these demands from their own estates. It has, therefore, been considered most desirable that the Superintendent of the Hakgala garden should be instructed to direct his efforts particularly to the cultivation of the much esteemed *Cinchona Calisaya* and *C. Ledgeriana*, for future distribution of seeds and plants of these valuable kinds. It is interesting to know that *C. Ledgeriana* grows tolerably fairly at the elevation of Peradeniya, though there is little doubt that its profitable cultivation would require a somewhat greater altitude.

Tea.—The Tea enterprise continues to increase largely. Supplies of seeds for distribution are still being kept up at Peradeniya and at Hakgala, to meet any demands for them which may arise.

Chocolate.—The cultivation, now a favourite one, is becoming very widely spread throughout the hotter parts of the island, and bids fair to become a very profitable speculation. There is a large demand for seeds for sowing, and this demand is partly supplied from the Peradeniya and Henaratgoda Botanical Gardens. Some enterprising planters are making arrangements for importing some of the most esteemed varieties of Cacao plants from the West Indies.

Rubber Plants.—Besides sending small supplies to British India, a moderate distribution of what could be spared of *Hevea brasiliensis* and *Manihot Glaziovii* has been made to some planters in this island who were desirous of trying the different kinds of rubber plants on their estates. The *Manihot Glaziovii* continues to furnish ripe seeds in considerable abundance from the trees here, but although the *Hevea* and *Castilleja* plants are growing most vigorously here and at Henaratgoda, they show no signs yet of flowering.

Garden Operations.

FLOWER GARDEN.

For the advancement of the work in this department, the extraordinarily fine, open weather of the past two or three weeks has been all that could be wished by those having new groundwork and alterations on hand, and such work being in a forward state, planting may be proceeded with. All kinds of deciduous trees and shrubs will transplant at this season successfully; and though this is not the orthodox season for transplanting, yet evergreens of all kinds, Hollies excepted, will bear removal now almost equally well. As a matter of convenience I have frequently had to plant all kinds of shrubs at this time of the year, and in a general way all have flourished about equally; so that, though there may be a best time to plant certain shrubs, it does not follow that they will fail to do well if planted at any other. With respect to Roses, the influence the season of planting has on the after-conditions is much more marked, November and early in December being the best period of planting for these, so that any yet to be done should be got out of hand forthwith, after which mulch them thickly with stable litter; or if neatness must be studied more than utility, then a mulching of cocoa-fibre refuse must suffice. Box-edgings that require mending or relaying should now be done, and turf edgings neatly trimmed, previous to turning or regravelling the walks, which work ought always to be done as early in the season as possible, that the gravel may get well consolidated before the summer

to this end every opportunity should be taken of rolling them after heavy rain or a thaw. In the event of hard frost setting in, much profitable employment may be found in clipping hedges and cutting-in Laurels, Hollies, Yews, and indeed any shrubs requiring their growth regulated. Such work is too frequently neglected, not so much from want of opportunity to do the same as from want of thought about it. Portugal and common Laurels and Hollies must be kept cut-in to keep them in anything like compact growth; thousands of these are constantly being irreparably injured by neglect to prune in the earlier stages of growth. Rhododendrons also that are planted under the shade of trees generally develop a straggly growth, and to keep them in compact form it is necessary occasionally to have recourse to pruning. The recent wet seasons have been beneficial to self-sown seedlings of these, the seeds having germinated in the most unlikely spots, and grown away with a vigour that I have never known equalled. This circumstance, together with the fact that many old established plants here, in the most moist positions, are by far the healthiest plants, teaches a useful practical lesson as regards their culture, which for my part I shall not be slow to act upon, namely, to plant them with greater confidence in damp situations. Whatever press of extra work there may be, routine labours should never be neglected, these now consisting of leaf-raking, rolling walks and lawns, sweeping, and the like. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

During the past fortnight an agreeable change has taken place in the weather, so that where planting was stopped in consequence of the wet condition of the soil after the drenching rains which fell about the middle of last month, the work should now be resumed upon every favourable opportunity until it is brought to a satisfactory termination. It is not unusual to read that the end of October or the beginning of November is the best time of all the year to plant fruit trees, and yet how frequently does it happen that the weather or something else prohibits planting with any certainty of success at that particular time. As a matter of fact we plant or replant from November to February, not because we do not believe in the desirability of planting earlier but because we cannot accomplish as much as we would like in a week or a fortnight. It is surprising, however, how work can be arranged in order to make the most of precious time by the exercise of judgment and forethought. The great point to study is to have abundance of fresh soil, in a fit state for working when it is dry overhead. Planting of course should take precedence of all other operations in dry weather, and if proper preparation is made beforehand and labour is judiciously concentrated, a good deal of important work may be satisfactorily accomplished in a short time. Wall trees, standards, or espaliers, may have their borders partially renewed in weather which would not be favourable for forming new plantations of fruit trees, which would necessitate the treading of the soil into a solid unhealthy mass, a condition which should at all times be avoided. Partial renovation of fruit borders consists in removing the surface soil to a depth of from 4 to 6 inches from off the roots, and replacing it with rich, fibry loam, chopped rough and surfaced with some good rotten manure—such as cow manure, or cow and pig manure mixed, or failing this, such other compound manure as can be obtained free of leaves, sticks, or other matter deleterious in its effects to the roots of fruit trees. In our light soil here work of this kind may be done any day during the winter when it is dry overhead, and even this is an advantage which always gives one the option of keeping ahead with work of one class or another. All trees are the better for being surface mulched, especially those that have been removed; but the top-dressing for vigorous growing trees should be applied more in the nature of a protection to the roots than as a stimulating element. These are, however, matters which must be determined by the judgment of the cultivator, and do not come within the range of general rules. In damp situations fruit trees are often infested with moss, which is solely owing to a humid atmosphere and an uncongenial soil. In the higher altitudes such a thing as canker and moss-covered trees is rarely met with. All trees affected in such a way should be scraped, and dusted over with hot lime when the bark of the trees is wet. The pruning and nailing of wall trees, with the pruning of standards and bush fruits, should be pushed on vigorously while the weather is mild, unless where work of a more urgent character claims prior attention. Upon several occasions during the summer I referred briefly to the restricted system under which standard Pears and Apples have been cultivated of late years, and the consequent results of the system. When a tree has roots out of all proportion to its branches, there is a constant stream of crude sap forcing its way into the half-developed fruit-buds, or it finds an outlet in a swarm of second growth, which is not a happy consummation in fruit growing. This, therefore, should be a subject for consideration at this season, and it

will be best understood if the few hints I have ventured to submit can be applied to special cases where the dwarfing system has proved unsatisfactory. Many trees suffered severely during the winters of 1878-79, which were admittedly unparalleled in their effects upon fruit trees, and if such trees have been allowed full scope to grow during the summer, except to stop or remove a gross shoot which threatened to monopolise an undue share of the vigour of the tree, perhaps it would be still advantageous not to prune "on the old lines" this winter, but simply thin out superabundant growths, and only shorten those that require it for the sake of symmetry. *W. Hinds, Canford.*

FRUIT HOUSES.

FIGS.—When a set of pot Figs has been forced early for a great number of years they become more fruitful as they increase in age, and start regularly into growth about the same time in a much lower temperature than is needed for young ones. In course of time they may become too large for the house; but instead of reducing the size of each tree the most profitable way is to reduce the number by the removal of the least promising kinds, or duplicates, when those left will produce quite as much or more fruit, of larger size and finer quality, than can be obtained from double the number of this heat and light loving tree, when crowded together and forced through the darkest part of the year. Many years ago, when the demand for this fruit was not so general as it is at the present time, few owners of gardens devoted more than one house to its culture; but in these days, with cheap glass and greater facilities for transit, a constant supply from the middle of April until November is now the rule, and under these altered circumstances duplicates discarded from the early house will be found equally valuable for giving a successional crop or fruiting in the warm orchard-house, where they will produce ripe Figs many weeks before they can be obtained from open walls. For general purposes, early or late, there is nothing better than Brown Turkey, or Lee's Perpetual and White Marseilles; and where established trees of these two kinds occupy all available space, it is hardly likely that they will be removed to make room for others, as well managed Fig trees never seem to become too old; but variety being the object Negro Largo, introduced by Messrs. Veitch, and Osborn's Prolific, are fruitful and good, and being moderate growers they are well worthy of a place in every collection. Where forcing was commenced about the middle of November the fermenting leaves that were placed loosely around the pots should now be examined, and in the event of the heat having declined to 70° they may be pressed down firmly to make room for an additional layer on the surface. Oak or Chestnut answer best, and they should be well worked and fermented before they are taken into the house. So far the weather in this locality has been favourable to early forcing, and little fire-heat has been required; but the time has now arrived for turning on heat every morning, if it is dispensed with at night, for the twofold purpose of raising the maximum temperature to 65° and producing conditions favourable to the frequent syringing of the trees, and damping the floors and walls. No difference need be made in the night temperature of 50° to 55°; but an additional 5° or 10°, with ventilation, may be indulged in on fine days when the weather is bright and gleamy. If the succession-house is not ready for forcing no time should be lost in bringing the usual preliminaries to a close, as it will be necessary to shut it up by the end of the month. The Fig, being so subject to red-spider and brown-scale, the annual routine of washing and dressing cannot be too carefully performed, and as soon as this is done the borders will require mulching and watering with tepid water at short intervals to insure a healthy state of the soil before the trees are excited. *W. Coleman, Eastnor.*

CUCUMBERS.

We have lately had a spell of dull and unusually mild weather for the time of the year, thus reducing the necessity for fire-heat to a minimum, with a proportionate decrease in the atmospheric moisture of the house, otherwise mildew would ensue, in the event of which the usual remedy—flowers of sulphur—should be applied to the affected leaves, while damp, a somewhat dry atmosphere being maintained until every vestige of the disease has vanished; after which the wonted growing atmosphere—neither too humid nor arid—may be resumed. Should green or black-fly be troublesome, tobacco-powder, applied with a distributor while the leaves of the plant are damp, will stop their ravages for the time being. Maintain a bottom-heat of from 75° to 85°, and give copious supplies of tepid liquid-manure to plants yielding heavy crops, especially to those having their roots in a rather confined space. Some fermenting material, consisting of two parts Oak or Chestnut leaves and one of stable dung (including the horse-droppings), should be thrown together in the course of a few days, with which to make a hot-bed at the end of the present or beginning of next month, which should be

turned over a couple of times during the interval to allow the rank heat to escape, in which, where no better means exist, to raise young Melon and Cucumber plants, and subsequently to plant them in. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

With fast shortening days and an absence of sunlight, it is useless fighting against Nature by keeping up high temperatures in these structures, as growth in the majority of instances produced under the adverse conditions of the present season and weather is anything but gain, as there is loss in the end, for it is obtained at the expense of the plants' future, but if they rest till after the turn of the year they are prepared to start with vigour. Rest, such as is now desired, may be brought about in two ways, the one by a diminution of heat, and the other by a marked reduction in the supply of water; but these changes, whenever made, should not be violent, but gradual, extending from day to day, till the minimum is reached, when the time will have arrived to alter the treatment in the opposite direction. Not only does dryness of the root cause rest, but it is a great sweetener and purifier of the soil owing to the increased quantity of air admitted therein, and therefore it is of great benefit in that way as is evidenced continually, even to the most casual observers. With a low degree of heat, which may be set at from 60° to 65° by night, and 70° to 75° by day with the aid of sun, atmospheric moisture must be less in proportion; but this must be entirely regulated by the external conditions, and the amount of fire that has to be applied to keep up the warmth. In frosty weather, when the pipes have to be made very hot, evaporation goes on at a rapid rate, as it is driven out by the heated atmosphere with which it escapes or is condensed on the glass. Coverings by night will prevent this in a great measure, and save an immense deal of fuel, and it is therefore good economy to have rollers with thick blinds of some strong material that can be quickly run up and down. These keep the wind from getting through the laps, and preserve the air inside in a quiet condition and prevent radiation, which on clear nights goes on at a rapid rate, and soon lowers the temperature. Not only is there frequently great waste of heat by night through not having some protection of this kind, but coal may often be saved during the day by not allowing the fires to continue burning when the sun would do the work far better without them, warmth absorbed from the solar rays being far more congenial to plants than any that can be obtained by artificial means. What they like, however, and delight in at this season is the vapour arising from tan fermenting under them, which if roused now and again by adding a little fresh to the old, will maintain the atmosphere in a sweet healthy condition, besides assisting materially in reducing the coal bill. Where cut flowers are required in quantity, there is nothing so well calculated to afford them after this period as the Bougainvillea speciosa, which, if well ripened and rested, blooms profusely from every twiggy piece of young wood. In going over the plants for the purpose of thinning, all such growths should therefore be left, but when starting B. glabra the shoots of that may be spurred-in, as the inflorescence only appears on the young annual growths as they form. The best way to treat the first-named species is to plant it out in a very circumscribed place against a wall near the boiler or flue, where it can, when desired, be kept dry; and if the top is trained well up to the glass in a sunny position there will then be no trouble in inducing it to bloom, but when the buds are first moving and till the leaves get advanced, water must be given sparingly, or the embryo blossoms will shed and fall off. Other valuable plants for cutting from are the Ixoras, which if cut back in the autumn will now be ready for shaking out and repotting, which should be done in good fibry peat and sharp sand in sufficient quantities to insure its porosity. As Crotons are very subject to mealy-bug it will be necessary to look them well over and thoroughly cleanse them, or they will get into the points of the shoots, and so cripple them as to prevent them from flowering. Gardenias, too, suffer in the same way, but, fortunately, they will stand syringing with paraffin in the proportion of a wineglassful to about 4 gallons of water, which soon settles the pest without injuring the buds or the foliage. A few Caladiums, Achenemes, and Gloxinias, started now, will be found to come in most useful, and seed of the latter sown at once or after the turn of the year will furnish a fine stock of plants for succession. It is a good time, too, to make a sowing of seed of tuberous Begonias, which are slow in germinating and getting into size, but which when grown are the greatest acquisitions that can be had for the embellishment of conservatories and greenhouses during the summer. Winter-blooming kinds are usually serviceable, and none more so than the old B. manicata, that should be in every stove, for when kept well up to the light the panicles of flowers colour up beautifully, and form the most graceful finish possible to any vase or epergne. *J. Sheppard.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Dec. 13	Sale of Lilium auratum and Dutch Bulbs, at Stevens' Rooms
	Sale of Dutch Bulbs, at the Auction Mart, by Protheroe & Morris.
TUESDAY, Dec. 14	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
	Sale of Nursery Stock at the Horrell Nursery, Woking, by Protheroe & Morris.
WEDNESDAY, Dec. 15	Sale of Roses, Fruit Trees, Dutch Bulbs, &c., at Stevens' Rooms
	Meeting of 11th Union Society, at 8 P.M.
	Final Sale of Nursery Stock, at Trigg's Nursery, Woking, and Clearance Sale of Stove and Greenhouse Plants, at Haberton, Hornsey Lane, N., by Protheroe & Morris.
THURSDAY, Dec. 16	Sale of Choice Imported Orchids, at Stevens' Rooms
	Sale of Lilies, Dutch Bulbs, Greenhouse Plants, &c., at the Auction Mart, by Protheroe & Morris.
FRIDAY, Dec. 17	Sale of Hardy Plants and Bulbs, &c., at Stevens' Rooms.
SATURDAY, Dec. 18	

A GOOD deal has been said of late as to the propriety or otherwise of ROOT-PRUNING fruit trees. We have had much of bold assertion, many unproved statements, and the upshot of it all seems to be—"it all depends." And this is a very salutary conclusion to arrive at. Abstract principles and general statements are all very well in their way, but the proof of the pudding is in the eating. We take it to be established that in certain cases root-pruning has been proved to be beneficial, in certain other cases it has been proved to be unnecessary. What is now particularly to be desired is a clear statement of the conditions when this practice is desirable, and when it is not. The requirements of the amateur and of the market gardener are in many respects different. The conditions of soil, of climate, of the stock upon which the fruit is grown, have all to be taken into consideration. The circumstances vary in almost every individual case, so that the injunction to prune or not to prune may be excellent advice under one set of conditions, fatal policy under another. Such questions as these have also to be answered. Can you wait? If so don't be in a hurry to root-prune—that is, if your soil be in fair condition. Do you want quantity or quality? How are your trees grown? against a wall, as espaliers, as bushes or as standard trees, and where? If your standards do not, after a fair time, bear as you want them, it would probably be better to graft some other kind upon them than to root-prune. If your trees are not too big it is probably better to lift them every other year than to root-prune. So far as the plant itself is concerned what are the facts? A healthy tree under natural circumstances must attain a certain age before it produces fruit. Nature's aim is to build up the tree and get it well established before she sets to work to secure its reproduction by seed.

If we force her to make fruit afore time, the chances are we enfeeble the tree. Fertility and vigour of mind and body in the human race do not always go together. The slums of Drury Lane teem with wretched specimens of humanity—a SHAKESPEARE or a BACON leave no issue. The parallel holds good in plants. But in practice, with dwarfing stocks and small areas of ground, and the necessity for speedy returns, we do not want to grow a timber tree, such as the Pear trees of the old Herefordshire orchards are. It is true that these old trees may, and probably are, in the long run, the most productive. But we want now-a-days immediate results. In an ordinary garden we do not want timber trees, nor do we want fruit fit only for cider or perry. We want a speedy supply of first-class fruit, and if the result is to kill our trees afore time, what matter? there are plenty more in the nurseries, and it will pay us better to buy a succession than to practise forestry in the fruit garden. We are, of course, referring to the small garden of the amateur rather than to the orchard of the fruit farmer. The big oots we cut across when root-pruning have for their object the anchorage, so to speak, of the tree. They are the provision for safe holdfast,

for extension into fresh fields and pastures new, and are necessary for the formation of timber. When we cut them across we check growth, as it is said, and we do so in reality. The upshot is the formation of a leash of fine feeding roots, useless, at least relatively so, as holdfasts, but of great value as feeders. Aided by the wriggling movement, which Mr. DARWIN has lately demonstrated that they possess, they pass in between the particles of soil, absorbing the moisture that fills the interstices, applying themselves to the minute fragments of soil, and somehow—how is not accurately known—extracting from them the nutriment they require. It makes a great difference whether a big root traverses a layer of soil as a big gaspipe runs along beneath a roadway, or whether a host of fine fibres occupy every available scrap of ground, draining it more effectually than any drainpipe, and extracting from it every available bit or rather drop of food they require. It is the custom among us to speak somewhat vaguely of a rush of crude sap up through the big roots. It is assumed that more is absorbed by, or, at least, conveyed through these big roots than through the fine ones, and hence it is said the gross sappy shoots, the luxuriant growth of leafage, the spreading boughs—hence also the increased fruitfulness consequent on an assumed diminished supply of food. But is this so? Is it not quite as likely—a good deal more probable, indeed—that actually more is sucked up from the soil by the leash of fine roots than by the big root? The multitude of fine suckers—we use the word loosely—in all probability absorb much more than the long tap-root, with its branches thinly beset with feeding fibrils.

Speaking broadly, and allowing for exception—the formation of the fruit depends, not so much upon changes which occur during the present season's growth as upon those which preceded it. Bark and young wood in autumn and winter are laden with stores manufactured in the leaves the year before, and stored up for use when required. The fruit-buds, too, are formed, generally speaking, the year before. This being so, the object of the gardener is to promote, so far as he can, the development of those buds at the expense, so to speak, of the leaf-buds. He wants to check the one and to develop the other—he wants to use the accumulated stores of the tree, not for further leaf and shoot formation, but for fruit forming. Does root-pruning do all this? There can be no doubt that it does; it assuredly checks growth: the formation of new leaves and new leaf-buds in spring, which would be the first work of the awakening spring, is assuredly checked by root mutilation, and a chance is given for the development of the embryo fruit-buds—a chance of which they speedily avail themselves. That is one way in which root-pruning is beneficial; but what we want to know—and we do not think root-pruners have yet established the fact—is, whether subsequent to, and as a direct consequence of the practice, actually more fruit-buds are formed than would have been the case had no mutilation been practised. It may be so—we think it is so—but we lack actual demonstration. In the case of transplantation, which after all is merely a form of root-pruning, we know how often the tree is thrown for the first season into a flowering state; and we know in such a case that it is the pre-existing flower-buds, which, under ordinary circumstances, would not develop, or only to a slight extent, that are thrown into bloom; but the leaf-buds pre-exist also, and it is not clear why these latter should be checked and the others developed, and it is not by any means the case that flower-buds are more abundant in subsequent seasons.

Diminished leaf-action—a very comprehensive matter—is doubtless at the bottom of it

all, and for its interpretation not only the experience of practical gardeners, but the detective insight of chemists and physicists is required to tell us further what goes on in those wonderful manufactories. Meantime it is interesting to note the antiquity of the process of root-pruning, and to observe how the peasants of the Riviera—pursuing doubtless the custom handed down from their Roman ancestors—root-prune their Olive trees by digging out a semicircular trench on one side of the tree and filling it with woollen rags, into which the newly-produced fibrils root freely, and slowly but surely extract nutriment.

— THE COMING WINTER.—Whilst intending holiday-makers are concerning themselves with the probable nature of the weather at Christmas, those whose vocation is horticultural are more anxiously thinking about the aspects the winter will present ere the spring once more opens to us. Holiday-keepers have very diverse notions of what is a nice Christmas-time, but the majority doubtless think that, were the weather which has marked the beginning of the month to continue to the end, nothing could be nicer. There are some, however, whose conceptions of Christmas weather are based upon the pictorial ideal which consists in hard frost, fleeting snow, roaring fires, merry domestic parties, the bitterest of conditions outside, the very antithesis within. Perhaps it is not far wrong to say that, with such selfish views of Christmas surroundings, the myriads of poor persons and others who are disastrously affected by hard weather may well re-echo the saying of the poor frog—"What is sport to you is death to us." But if indications mean anything, certainly they do not at present point to the consummation some may hope for of a jolly hard winter. It is but a few days since we read in the papers that the ice in the Russian rivers had suddenly broken up and produced much mischief amongst shipping. The phenomenon was doubtless not provided for, as it was unseasonable. With such an occurrence, however, must be associated the mild temperature which has for the past two or three weeks reigned over Europe, and specially over our island. The few wintery aspects that presented themselves recently soon disappeared, and the gardens bear an almost spring-like appearance. The weather is very diverse from that which ushered in the two preceding winters of intense cold and hard frost. We cannot hope in any way to indicate what will be the actual nature of the winter that is before us farther than to point out that, as in some preceding years, what has begun well has ended well, so may it be in this special instance.

— CHRYSANTHEMUM SNOWDROP.—We have received blooms from Mr. CANNELL of a little gem amongst Pompon Chrysanthemums, which is named Snowdrop, which he very truly describes as "the prettiest and most useful of all the lot." It grows usually one flower on a stalk, and this is of the purest and most sparkling white, extremely full, the florets reflexing over each other and illustrating well the florist's half globe in its outline. These charming little blossoms measure just 1 inch across. It must be a little gem as a decorative bush, and invaluable as a cut flower.

— "AFTERNOON TEA."—What lucky people are the children now-a-days—artists, authors, printers, publishers alike cater for their amusement. One of the prettiest children's books we have seen this year is that published by F. WARNE & Co., under the above title. The illustrations are excellent, and are the work of J. G. SOWERBY and H. H. EMERSON, and the text a real improvement—all heresy though some may think our statement—a real improvement on the nursery rhymes of our childhood.

— THE LINNEAN SOCIETY.—The general meeting of the Linnean Society, to be held on Thursday, December 16, at 8 P.M., will be made a special general meeting, for the purpose of electing a member of Council, in the room of GEORGE BENTHAM, Esq., F.R.S., resigned. The papers to be read the same evening include one "On the Theory of the Growth of Cuttings," illustrated by observations on the Bramble, by FRANCIS DARWIN, Esq., F.L.S.; and "On the Means by which Leaves place themselves at right angles to the direction of incident Light," also by Mr. FRANCIS DARWIN.

— **ART IN CROCKERY.**—Perhaps the worst specimen of art in crockery, so far as flowers are concerned, that has been manufactured is seen in those blue, white, and various coloured Dahlias shown during the past summer at South Kensington and elsewhere. If it was the special object of the designer to bring contempt upon our florists' Dahlias, certainly he was in a fair way to obtain success; more wretched abortions could scarcely be conceived, and these floral devices were actually intended to play the part of flower vases, we suppose, to be stood upon the dinner-table. Their flat and level appearance, as stood upon their show table, absolutely prompted the iconoclastic idea that it would afford a species of demoniacal delight to have a garden-roller run over the entire

complaint is made that a prizetaker took a prize for tubers which he had not grown himself, but which he had bought from another exhibitor. We have not the schedule before us, to be able to say whether or not these grievances are well founded, but assuming, as our correspondents do, that they are so, we again urge upon schedule framers the necessity of avoiding such unpleasant and wholly unnecessary disputes.

— **CUSCUTA REFLEXA.**—Mr. BURBIDGE sends us flowering specimens of *Cuscuta reflexa* which is now very remarkable in the College Botanic Garden, Dublin, on some of the winter-flowering Zonal Pelargoniums. It is a profuse bloomer, and by no means inconspicuous. During last

promises to be a convenient variety in the making up of a collection. As it enjoys the widest reputation as Warner's King, no doubt that name will stick longest, therefore whatever other names may have precedence or have been more recently applied, the best known designation is the most fitting as well as the most useful.

— **ROYAL CALEDONIAN HORTICULTURAL SOCIETY.**—At the annual meeting of this Society, held recently, Professor BALFOUR in the chair, Mr. FRASER, the Treasurer, read an abstract of the accounts of the Society for the past year, from which it appeared that the receipts had been in all £1210 15s. 2d., and that the expenditure

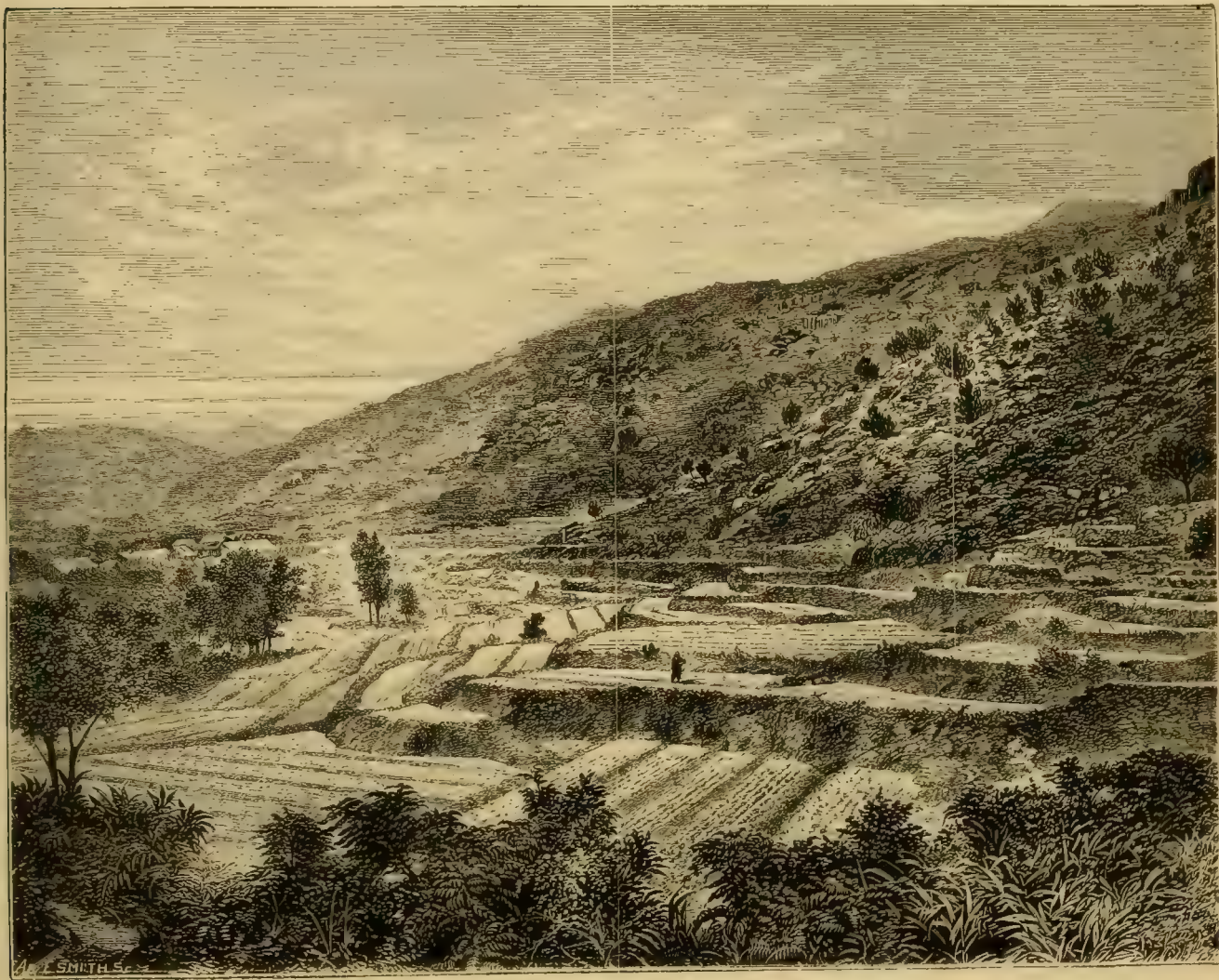


FIG. 147.—TREE PLANTING IN HONG KONG. (SEE P. 754.)

lot. What strange notions concerning Art some persons have. The greater the abortions the more freely do they believe that their productions exhibit the god-like genius.

— **POTATO SHOWING.**—In connection with the late Potato show at Birmingham two cases have cropped up which, to say the least, demand the serious attention of framers of schedules. Certain restrictions should be agreed on and acted up to faithfully, or there should be no restrictions at all. The same sort of grievance occurs at very many shows of various character, but quite unnecessarily, for if the framers would but lay down the law and abide by it, or leave it open entirely, no such grievances would arise. In the present case complaint is made against a trader showing in the amateurs' classes as well as in the classes for professional growers; and a further

summer Mr. BURBIDGE had it covering a large plant of *Forsythia suspensa* in the most vigorous way. On either side were other plants, viz., *Forsythia viridissima* and *Jasminum frutescens*, but on neither did it "take" so well as on the *F. suspensa*: 5" of frost kills every bit of it, but all through the summer it presented a phase of parasitic vegetation rarely seen in gardens.

— **WARNER'S KING APPLE.**—It would seem that this Apple is to suffer the infliction consequent upon greatness, by having to undergo the honour of possessing many titles. It was met with the other day at Richmond as D. T. Fish, Nelson's Glory, Lord Nelson, and Waltham Abbey Seedling; and now we learn that at Maidstone it has another appellation, as the Wavering Apple. Some of its fruit bear a close resemblance to Gloria Mundi, so that it

amounted to £1238, of which £578 stood as show expenses, and £584 as prize-money. After meeting the deficiency of £28 that had thus arisen, the funds in possession of the Society were £579. Lord BALFOUR, of Burleigh, was unanimously appointed one of the Vice-Presidents of the Society, in room of the late Lord DALHOUSIE, and Mr. JOHN DOWNIE and Mr. PRIEST, Newbattle, were elected members of Council. The Secretary (Mr. STEWART) and the Treasurer were reappointed.

— **SOOT.**—Our smoke-consuming reformers are so anxious to get rid of the nuisance of smoke and its impurities that they give little heed to the effect such measures might have upon the business interests of that Pariah among men the sweep, and still less for the results that might follow to the consumers of that product of bituminous combustion, soot. Somebody

has said there is a place for everything; but in the category of suitable positions for diverse things, few would perhaps care to find a fitting place for soot. Our market gardeners just now are solving that problem for the philosopher, for they find the best place for soot to be on and in the ground, dispersed amongst the crops, choking earthworms, killing slugs, poisoning wireworms, and getting rid of all kinds of earth vermin. Cheap as soot is, its uses for the purposes named renders it almost invaluable to the market grower. But if so valuable as a species of insecticide, how much more meritorious is it as a manure! To those who understand its real worth in this sense it is a mine of wealth; probably it enters far more largely into the composition of some artificial manures than we imagine, but whether used in a corrupted state, or applied neat, it is a fine soil-deodoriser, and gives back to earth much that is instrumental in promoting vegetable growth. How, where it is applied, the foliage becomes of a deep glossy tint, how full of health and vigour do the plants appear! Does not this, in its most practical sense, show that soot, whatever annoyance it may inflict upon civilised man, is not an unmitigated evil? If a bane, it has its antidote. If, however, the smoke reformers succeed in stopping the consumption of bituminous coal, with it must also be checked the production of this valuable manure.

— THE METEOROLOGICAL SOCIETY.—At the ordinary meeting of the society, to be held at 25, Great George Street, Westminster, on Wednesday next, at 7 P.M., the following papers will be read:—"Report on the Phenological Observations for 1880," by the Rev. T. A. PRESTON, M.A., F.M.S.; "On the Variations of Relative Humidity and Thermometric Dryness of the Air, with Changes of Barometric Pressure at the Kew Observatory," by G. M. WHIPPLE, B.Sc., F.R.A.S., F.M.S.; "On the relative frequency of given heights of the Barometer Readings at the Kew Observatory during the ten years, 1870 to 1879," by G. M. WHIPPLE, B.Sc., F.R.A.S., F.M.S.

— JAPANESE ART.—Mr. PROUNDES purposes to continue during the season his "at homes," to which those interested in Japanese art and literature are welcomed. Messrs. CHRISTIE (of King Street, St. James) have instructions to sell, during December, part of the collection of specimens of Japanese art Mr. PROUNDES has exhibited to visitors at Cleveland Row, the Mansion House, Society of Arts, &c., London, Windsor, and other places where he lectured; and he intends to replace these with objects illustrating the art teaching and schools of art of old Japan.

— A NEW BEGONIA.—One of the most interesting and certainly one of the most beautiful of the plants collected during the present year by Dr. I. B. BALFOUR, in the Island of Socotra, is a remarkably pretty species of Begonia now in flower at Kew. Of all places Socotra would have seemed to most people one of the most unlikely ones where a Begonia would be found, but the species now mentioned will, no doubt, when distributed, be highly prized both for its own merit as a decorative plant and for its value for purposes of hybridisation. It is probably destined to give rise to quite a distinct race, as to a rather striking habit is combined a peculiar tint of purplish-rose not met with except in some of the South American tuberous species or the hybrids derived from them. Another year it may, and in all likelihood will, produce larger leaves and flowers, and assume altogether a different aspect; at present the light green peltate leaves are about 3 or 4 inches in diameter—one or two of the largest being as much as 7 inches—and the male flowers, which are somewhat larger than the female ones, measure about 1½ inch when flattened out. Bulbils are freely produced at the base of the stems, and afford a ready and rapid means of propagating so interesting and ornamental a plant. A figure is being prepared for the *Botanical Magazine*.

— SPANISH PLANTS.—Professor WILLKOMM, of Prague, has prepared a large number of illustrations of Spanish plants, which will form a worthy complement to the admirable *Prodromus Floræ Hispaniæ*, drawn up by him in conjunction with Professor LANGE. The plates will be published in parts, each part containing ten large quarto coloured plates, accompanied by descriptive text in Latin, French, and Spanish. The flora of Spain is pecu-

liarily rich, and contains many plants that it would be very desirable to introduce into our gardens. The plates in the part before us have all the appearance of strict fidelity to Nature and careful execution. It is a work which no botanical library of any pretensions can dispense with. The publisher is E. SCHWEIZERBART (E. KOCH), Stuttgart; but the work may be obtained from Messrs. WILLIAMS & NORGATE, or other foreign booksellers.

— AGAVE HOOKERI.—In the Palm-house at Kew there is now in flower a fine specimen of this Agave, and a figure of it is being prepared for the *Botanical Magazine*. The species is described by Mr. J. G. BAKER, in the *Gardeners' Chronicle* for June 9, 1877, but the inflorescence has hitherto been unknown.

— THE MANCHESTER INTERNATIONAL HORTICULTURAL EXHIBITION.—Mr. BRUCE FINDLAY has received the following letter from Her Majesty the QUEEN, in reference to the International Horticultural Exhibition:—

"Balmoral, November 15, 1880.

"Sir,—Having laid before Her Majesty the QUEEN the application transmitted by you from the Council of the Royal Botanical and Horticultural Society of Manchester, I am commanded by Her Majesty to inform you that the QUEEN will be happy to patronise the International Horticultural Exhibition which it is proposed to hold next year. I am also desired by the QUEEN to let you know that Her Majesty will contribute £25 to the fund which is being raised for this purpose.—I have the honour to be, your obedient servant,

"HENRY F. PONSONBY.

"To Mr. BRUCE FINDLAY."

— DISEASE IN RUBIACEÆ.—Some years since an account was given in this journal, accompanied by illustrative figures, of a disease in young Cucumber plants caused by a nematoid worm which forms cysts in the deformed roots. M. CORNU has lately called attention in the *Comptes Rendus*, March, 1879, to a similar affection in Rubiaceæ belonging to the genera *Ixora* and *Hamiltonia*, in which the roots are equally distorted. JOBERT has described a similar malady which commits great ravages in the Coffee plantations of Brazil. Other nematoids attack Sanfoin, Clematis, and Cissus, some of which at present have not been thoroughly studied. *M. J. B.*

— NATIONAL AURICULA AND CARNATION AND PICOTEE SOCIETIES.—At a recent meeting of these societies, held simultaneously, it was decided to again hold the annual exhibitions at South Kensington, under the auspices of the Royal Horticultural Society; the Auricula exhibition to be held April 19, 1881; the Carnation and Picotee show on July 19, 1881. The reports and balance-sheets for 1880 were adopted, and showed a balance in hand for the Auricula Society of £10 15s. 1d., and for the Carnation and Picotee Society of £36 8s. 11d. Additional prizes were added for next season, one being for twelve yellow-ground Picotees, six at least to be distinct. The prizes for seedlings will again be given, and Mr. J. SMITH will also again give special prizes for Duke of Wellington Polyanthus.

— UROSKINNERA SPECTABILIS.—This showy and extremely interesting Scrophulariad was introduced to British gardens by the Horticultural Society, through G. U. SKINNER, Esq., of whom Dr. LINDLEY—when describing the plant now under notice—speaks as "the most generous of merchants, the most eager of collectors, to whom or to whose assistance the botany of Western Mexico and Guatemala owes more than to all the travellers who have visited those regions." It is a free-flowering, neat-habited plant, with much the general appearance of some Gesneras; the very hairy oblong toothed leaves measure about 4 inches in length, and the dense spikes of handsome pale violet flowers are about 3 inches long. Specimens in bloom may be seen in the T range at Kew.

— PRIMROSES IN DECEMBER.—Mr. SAMUEL BARLOW writes to the *Manchester Guardian*, under date of December 3:—"With this I have the pleasure of giving you a bunch of some thirty odd Primroses—not grown at Llandyghoshyn or at Lhony-mylch Bay, but gathered in my gardens some eight miles north of Manchester, where they have bloomed without the slightest protection in a district where the

trees and hedgerows are dying, and the atmosphere is often heavily charged with sulphuric and muriatic acids in addition to the soot, which is abundantly manifest on the trees, evergreens, shrubs, &c. The roots have been blooming freely for the last six weeks, during which they have been exposed to much frost; on last Monday night week we had the thermometer at 11° Fahr., or 21° of frost, which many of these flowers, and all the buds, have withstood. That this abnormal autumn, winter, and very early spring bloom is no uncommon occurrence in the Primula family is well known to growers of Auriculas, Polyanthus, and Primroses, and it is altogether independent of soil, situation, or climatic influence. I venture to trouble you with this because, when the favoured residents in salubrious localities with pure atmospheres find such abnormal blooms in their midst, they are apt to be somewhat ecstatic about it, and take all the credit thereof to the account of their favourable surroundings. But in doing this they are wrong. The general bloom of the Primrose will be "on" at about the same time in Lancashire and in Llandyghoshyn, and in neither place do a few winter blooms of Primroses make a spring."

— MIKANIA GUACO.—In South America, under the name of "guaco," several plants enjoy a considerable reputation as remedies against snake bites. Most of them are species of Aristolochia, but one, the Mikania Guaco, is a Composite plant. Notwithstanding this reputation, very little trustworthy evidence has been published as to the real efficacy of any of them. In a letter, however, recently received by the Director of the Royal Gardens at Kew, from Mr. ROBERT B. WHITE, of La Salada, New Grenada, the writer gives his personal testimony as to the value of the remedy, and some other information which, by the courtesy of Mr. THISELTON DYER, are made available for the readers of the *Pharmaceutical Journal*, whence we make the following extract. Mr. WHITE says that the Mikania Guaco is the true "Guaco," and forms the basis of all the preparations of the snake-bite doctors of the district. There are two varieties, one with green stems, the other, called "morado," with purple, the latter being the most prized. There are several species of snakes in the country whose bite is deemed mortal, some of them killing in a very few hours, but Mr. WHITE, who has lived in the Choco and other snake-infested regions many years, testifies that the Guaco, properly and promptly administered, is a cure for the bite of the most venomous. In cases of snake bite, when the Guaco leaves can be obtained fresh an infusion in sugar-water is made, in the proportion of one leaf to a large cupful, and this quantity is given hot every hour. It is said to stop the vomiting usually occurring. The leaves are also preserved by bruising and placing them in alcohol, and of the tincture thus formed a teaspoonful is administered every half hour for one hour and a half, and then every hour, and afterwards the dose is gradually diminished. Hot poultices of the bruised leaves and stem of the plant are applied to the wound, taking care not to use sufficient heat to drive off the volatile principle of the plant. If there be swelling and pain the limb is fomented with hot water to which some tincture of guaco has been added. The Mikania Guaco is described as growing from seed in any good soil where there is a temperature of 24° to 25° C., and it would appear to be a plant deserving of physiological and chemical experiments to determine its true character. It is worthy of note that it was at one time said to be the source of Condurango.

— USES FOR SAWDUST.—Amongst some notes recently received from the United States on new American inventions is one on the utilisation of sawdust, and we are reminded that lumbermen have for many years been looking about for a profitable mode of application. Burning it as fuel for their steam-engines makes no appreciable diminution in the supply, and though various means of turning it to good account have been suggested, their adoption is not always practicable on the spot. Mixing the sawdust with tar or pitch, and converting it into fuel, has been found to answer in some cases; in others the manufacture of fire-lighters, by mixing the sawdust with petroleum or resin, and pressing it into small cakes, has been adopted. An ingenious American inventor has recently devised a machine for working up the material into a pulp, and compressing it into

various shapes, such as barrels, brackets, doors, &c. Articles of furniture are also made in this way, and they are said in some respects to be preferable to those made of ordinary wood, the pulp becoming perfectly hard and impervious to water.

— **XANTHIUM STRUMARIUM.**—It appears from a paper read by Dr. BANCROFT before the Queensland Philosophical Society, that this plant, which is said to have been introduced with Cotton seed from the Southern United States of America, is extremely fatal to cattle, horses, and sheep. The animals eat only the young plants, and do not touch it when it attains a height of 2 or 3 feet. It seems to paralyse the action of the heart and lungs, inducing torpor without pain or struggle. An extract of *X. spinosum*, made by Dr. BANCROFT, produced the same effects when given to animals. The foliage of this latter plant, however, is not eaten by animals. Both species occasionally occur as "waifs" in this country.

— **TOBACCO IN BAVARIA.**—From a recently issued report on the cultivation of Tobacco in Bavaria it seems that the area of land under its growth has decreased during the past three years. The districts in which the chief cultivation is carried on are those of Ludwigshafen and Kaiserslautern in the Palatinate, and Nuremberg and Firth in the province of Middle Franconia. The greater portion of the area, however, under Tobacco is in the Palatinate, and the Tobacco there grown is of better quality, and more carefully cultivated, than in the other parts, a great portion of the leaves being suitable for "wrappers" for making cigars, which causes a large demand for it.

— **TRIPHASIA TRIFOLIATA.**—This shrub is quite distinct from one often grown in nurseries and elsewhere under that name, as well as under those of *Figle sepiaria* and *Limonia trifoliata*. A good deal of confusion seems to have arisen between the two plants, thoroughly different though they are. The true *Triphasia trifoliata*—of which the red, transparent-skinned, Orange-like fruits (about the size of a Hazel-nut), are sometimes imported into this country preserved in syrup—is now fruiting in the Palm-house at Kew; the false one, which has withstood in the open at Kew the two last severe winters without any protection, has recently been figured in the *Botanical Magazine* under its true name—*Citrus trifoliata*.

— **THE LAND QUESTION IN JAPAN.**—While English politicians of all parties are turning their attention to the very important matter of land tenure, especially in relation to Ireland, some information has come to us relating to Japanese customs. The *Echo* informs us that they have no land question in Japan, for all the land belongs to the Government, and any one who occupies it pays a ground rent. As a consequence the Japanese, it is said, are excellent agriculturists; but though they grow several cereals and a number of vegetables the staple crop is Rice. The Japanese Rice is of the finest quality known, and the natives know how to cook it. They serve it up with pickles and tea, and in the country districts it is the only meal the traveller can depend upon getting. Although they grow Wheat, Barley, Rye, and Buckwheat, the Japanese do not know how to make bread, and in many places they use the Wheat instead of Tea in making a kind of drink, which may be described as the metheglin of the country. Thanks, however, to the land laws, the soil is everywhere in settled districts thoroughly cultivated, for besides vegetables of all sorts, fruits, such as Peaches, Plums, Oranges, and Figs, are extensively grown, and of late years an enormous number of acres have been devoted to the growth of Lilies and other plants, which are exported in large quantities to this country and the Continent.

— **ERYTHRINA CRISTA-GALLI.**—That good things are frequently allowed to fall into neglect is shown in the case of the Erythrina—the Cock's-comb Coral-tree, as it is sometimes called. It is a most useful greenhouse plant; and in the warmer parts of England and Ireland it will live through the winter in the open ground, and for many years a fine plant grew at the south end of a plant-house adjoining Mr. TURNER's residence at the Royal Nursery, Slough. Erythrina Crista-galli also makes a good and useful exhibition plant, and is well suited for exhibitors with limited convenience for growing plants. In Ceylon, which is regarded by travellers as the favourite abode

of Flora, they have seen lofty belts of the Coral-tree with its profusion of scarlet flowers pendent on long spikes; and it is said they cast so dazzling a glare upon the waters near which the plants grow on the shores of this famous island as to scare away the fish during the flowering season. In Battersea Park and other places where subtropical gardening has been carried out with success, we have been made acquainted with the decorative value of the Erythrina during the summer, and we have come face to face with varieties of much distinctness of character. E. Madame Boulanger is one of the best; it is a dwarf-growing variety, and very fine, the flowers of a velvety-reddish crimson, dark and yet rich in colour.

— **GAZANIA SPLENDENS FLOWERING IN AUTUMN.**—It has been said that the expansion and closing of flowers is supposed to be regulated by light and moisture, and that a plant accustomed to flower in daylight at a certain time will continue to expand its flowers at the wonted period, even when kept in a dark room. The *Gazania splendens* during the midsummer months will fully expand its flowers when the sun shines, but when sunlight is withdrawn and the atmosphere is dull, the flowers close. In the autumn the flowers will open wide in the dull weather, so long as light lasts; therefore it is a good autumn-flowering plant. A specimen lifted from the open ground, placed in a pot and put into a cold frame, has opened its flowers regularly by day, whatever the weather, till the plant ceased to throw any more. It will be remembered that Dr. SEEMANN, who acted as naturalist of KELLET'S Arctic Expedition, mentions, in the records he compiled, the regular closing of the flowers during the long day of an arctic summer. "Although," he says, "the sun never sets while it lasts, the plants make no mistake about the time when, if it be not night, it ought to be; but regularly as the evening hours approach, and when a midnight sun is several degrees above the horizon, they droop their leaves and sleep, even as they do at sunset in more favoured climes." This naturalist adds that, if ever man should reach the Pole, and be undecided which way to turn when his compass has become sluggish and his timepiece out of order, the plants will show him the way; their sleeping leaves will tell him that midnight is at hand; and that, at that time, the sun is standing in the north. In the case of a total eclipse at mid-day bringing darkness, flowers and leaves have been known to fold up just as at midnight.

— **GARDENIA STANLEYANA.**—About forty years ago this very striking shrub was sent from Sierra Leone to the late Earl of DERBY, after whom it was named by Sir W. J. HOOKER. It is a large-growing species, with oblong, shortly-stalked leaves, and large, handsome, powerfully-fragrant blossoms, as much as 9 inches in length. The long, slender corolla-tube is dark purple as well as the throat, but the spreading limb is pure white, tinted with rose at the margins, speckled with dark purple spots. In one of the warm houses at Kew we noticed recently a specimen which will shortly be in flower.

— **DOUBLE PRIMROSES.**—That these charming spring-flowering plants should be universal favourites is not to be wondered at; but that they are difficult to cultivate is a truism. The commoner varieties, such as the Early Sulphur, white, lilac, and rose, grow freely in the South in the open ground; but the purple, crimson-purple, late yellow, and the splendid old velvet-crimson, are not so accommodating, and require to be treated tenderly, and with much care. It is only under exceptional circumstances that they will grow and do well in the open ground in the drier parts of the country, and generally they require pot-culture. The general complaint is that the plants dwindle away to nothingness, and a kind of rot passing up what is termed the "carrot" causes the plants to decay. Those who have kept the plants in pots for nearly a year find this out to their cost. The best plan is to plant out-of-doors in early summer, in a cool, shady, moist place, using a light free soil in which some cocoa-fibre refuse has been placed, and keeping the plants well sprinkled overhead in dry weather. Red-spider preys on the leaves during hot weather, and it is the loss of the leaves that leads to decay. At the end of the summer the plants should be lifted, the roots pruned, cutting away the parts of the roots that are decayed, and repotting very firmly in small pots in a light, free, and rather sandy soil.

The plants need to be potted rather deeply, as new roots are put forth from between the leaves at the base of the plants. The beauty of these interesting subjects can only be enjoyed at the expense of some trouble, but what a great reward comes to the cultivator!

— **LEIANTHUS LONGIFOLIUS.**—A native of Jamaica, from whence it was first introduced to Kew about 1793, since which time it has been repeatedly lost to British gardens, although it is by no means a very difficult plant to grow. Its long drooping lemon-yellow flowers are certainly ornamental; the tube is funnel-shaped, the five lobes of the limb being first spreading and afterwards reflexed. A form, differing somewhat from that figured in the *Botanical Magazine* and elsewhere, more than a quarter of a century ago, is now in flower at Kew.

— **PENICILLARIA SPICATA AS A FORAGE PLANT.**—Our contemporary, *The Colonies*, draws attention to the value of *Penicillaria spicata* as a forage plant, and recommends its more extended cultivation. From a trial made of a sample sown in New Jersey, on stony land, the results were very satisfactory; the plants were cut forty-five days after sowing, when they stood 7 feet high. They were cut 3 inches from the ground, and weighed green at the rate of 30 tons per acre, and when dried as hay gave 6½ tons per acre. A second growth was cut forty-five days after the first; it stood 9 feet high, and yielded at the rate of forty-five tons to the acre green, or 8 tons dried. The cold weather came on, and stopped its luxuriant growth for the third crop, which was cut again after an interval of forty-five days, and the yield was then 10 tons green, or 1½ ton when made into hay. This gives an aggregate yield of 90 tons of green fodder, or 16 tons of hay, in 135 days. When given to the farm stock, either green or dried, it was eaten up greedily. The plant thrives best in hot weather, and will grow on thin sandy soils, though not so luxuriantly as on richer land. It would, however, probably be found a useful crop on some of the thinner lands of Queensland, Western Australia, and also in India and South Africa. It is sometimes known by the name of African Cane, its enormous growth in Africa giving it the appearance of a cane rather than a grass.

— **CRASSULA LACTEA.**—Introduced from the Cape of Good Hope about a century ago, and as an easily grown, neat habited, winter-flowering species, decidedly worth growing for its panicles of snowy white flowers. There is a variegated form of exactly the same habit as the type, both making compact plants about 6 inches in height. The two are in the Succulent-house at Kew.

— **GNAPHALIUMS FOR THE CHRISTMAS SEASON.**—This, the homely Everlasting of our gardens, always plays an important part in our Christmas decorations. The enormous number of flowers used in various ways give some idea of the extent to which this useful flower is cultivated in Germany, France, and other countries; but the acreage would be something startling, no doubt. The *Gnaphalium* and *Cape Helichrysum* are, no doubt, the two everlasting flowers most in demand at festive seasons, but the former has the greatest call. After being harvested the flowers are dried, bleached, and dyed in many colours, such as blue, violet, mauve, crimson, scarlet, orange, yellow, &c.; and as they take the dye well, the colours remain bright and effective for a long time. A bunch of vari-coloured *Gnaphaliums* will do duty as a decorative agent in many a household during the coming Christmas season; and it is especially in the great manufacturing centres where the consumption is largest. A great many *Gnaphaliums* are imported to this country as harvested, then bleached and dyed as required. It is an industry that at home and abroad gives employment to a great many persons; and the flowers carry many a gleam of gladness to humble homes.

PUBLICATIONS RECEIVED. — *Familiar Garden Flowers.* (Cassell & Co.) — *Proceedings of the Academy of Natural Sciences, Philadelphia.* — *The Golden Mark: Christmas number of The Quiver.* (Cassell & Co.) — *Cassell's Cookery, Part I., and Cassell's Popular Educator, new and revised edition, Part I.* — *The Rose Annual for 1880-81.* By William Paul, Waltham Cross. — *The City Diary.* (Collingridge.)

— A NEW INVENTION.—We quote the following from the *Glasgow Herald* of December 4:—A new and beautiful invention has lately been made and patented by Herr KROGER, of Glasgow, in preserving flowers and plants for decoration and ornament, of which we have seen some charming samples in the form of splendid bouquets and of flowering plants in pots. There has been hitherto no difficulty in drying some kinds of flowers and leaves, but in the drying process they lose their colour, and in the present mode of dyeing them they mostly lose their shape. To give them natural-looking colour, tint, and hue, and to preserve at the same time their real graceful shape, has been the difficulty which has now been entirely overcome by this new and, as we are told, inexpensive process, by which almost every kind of flower is preserved in its normal shape, and a natural-looking and brilliant but subdued colour given them. We see Roses, light, dark, and shaded, in their natural lovely form, likewise Fuchsias, Hyacinths, drops, even Dahlias, and many other kinds of flowers, an *ensemble* so natural that our first impulse on seeing them is to smell. Thus, then, the number of kinds of flowers that now can be preserved and made use of for temporary or even permanent decoration is almost unlimited, and instead of having to content ourselves in future for winter decoration with those mostly unnatural and stiff-looking everlasting flowers and grasses, we may have on our table bouquets which may vie for months, or even years, with bouquets of flowers fresh from the garden or the conservatory.

— CAPTAIN BURNABY MELON. We have been favoured by MESSRS. T. METHVEN & SONS, of Edinburgh, by whom it was sent out last year, with a sample of this Melon, grown by Mr. WEBSTER, of Gordon Castle. The seed was brought from Khiva by Captain BURNABY. The fruit, which weighed 9 lb., was cut on November 1, having changed little or nothing in appearance for the previous three months. It was of oblong form, 14 inches long, with a white firm fibrous flesh, 2 inches deep, remarkably full of juice, and when cut on December 8 was quite sound, and pleasantly but not richly flavoured. The colour was dark green, and the surface rough. We hear that it has been grown this season up to 20 lb. weight. Such a succulent mass must be a blessing in the deserts of Khiva, but here it must be regarded rather as a curiosity than an acquisition.

— ORCHIDS AT THE LATE BIRMINGHAM SHOW.—A correspondent calls our attention to the omission by the writer of the report at p. 732 of any reference to a beautiful collection of cut Orchids exhibited by C. WINN, Esq., of Selly Oak, Birmingham. Our correspondent remarks that "they were a magnificent lot, and included many novelties."

— THE WEATHER.—General remarks on the weather during the week ending December 6, issued by the Meteorological Office, London:—The weather has been very cloudy or gloomy, but still very mild in all parts of the kingdom. Very little rain has fallen, except in Scotland. The temperature was again above the mean in all districts, the excess being as much as 5° in "Ireland, S." and "Scotland, E." The maxima were generally rather high, ranging in most districts between 55° and 57°. The thermometer was lowest on the 2d and 3d, when it went down to 23° at Manchester, and to 25° at Cambridge and Markree Castle. The rainfall was slightly more than the mean in Scotland, but considerably less in most of the English and Irish districts. Bright sunshine has been very scarce in all places. The percentage of total possible duration was greatest (22) in "England, E.," and least (6) in "England, S.W." The wind blew from the south-westward generally, with moderate force at most stations, but freshly at times in the west and north, where it increased to a slight gale on November 30 and December 5.

— GARDENING APPOINTMENTS.—Mr. ALEXANDER MCKINNON, who has been Gardener to Viscount MELVILLE, at Melville Castle, Midlothian, for the last nine years, has been appointed Gardener to the Earl of MANSFIELD, at Scone Palace, Perthshire, in succession to Mr. JOHN HALLIDAY, who has been over a quarter of a century gardener at Scone.—Mr. MCKINNON is succeeded at Melville Castle by his brother, Mr. GEORGE MCKINNON, late Foreman to Mr. LEWIN, at Drumpeller, Lanarkshire.—Mr. ALEX. SHEARER has just left Yester, East Lothian, where he has been a most successful gardener for the last thirty-nine years. Such an able and intelligent and thorough gardener is not likely to be long in want of a good situation.

NOTES ON GRAFTING.

HEREABOUTS most of the nurserymen and others get the "frumice" that is left from making cider, and after washing sow the Apple seeds taken from it. All the seedlings that come up, and a vast quantity do, are by them called and considered to be Crabs.

As every one knows that cider is made from a variety of Apples, and also that most seedlings are more or less like the parents, I think I may safely say few, if any, are really what are properly called Crabs, or the Crab Apple. Now to this way of doing things, I think, many failures of certain Apples in certain orchards are due, and not to the soil so much as has been thought. The Apples are grafted on the wrong stocks, as I can clearly observe by looking around my own trees, mostly bought in the neighbourhood.

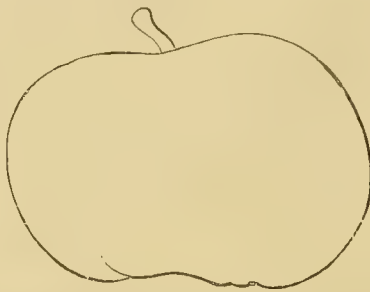


FIG. 148.—COURT PENDU PLAT AS GRAFTED ON THE PEAR.

Plant the seeds of Margil Apples, and ten to one you get Margils, or do the same with a King Pippin, you will get Pippins. Well, what is the sequel? Large strong-growing Apples, such as Wellingtons or Blenheim Orange, put on these would not do so well as put on something stronger growing.

I will not take up more space, but give some examples of the influence of the stock on the scion, from experiments made here, as I wish to draw more careful attention to this matter. Some years ago I grafted the Black Diamond Plum, which is very large and tolerably strong in growth, on the Sloe. It is now about ten or eleven years old, and is about 3 feet

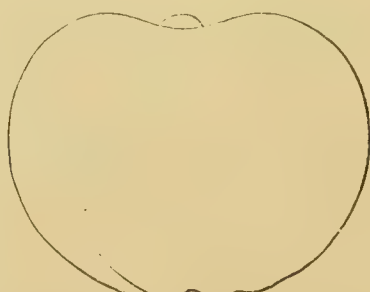


FIG. 149.—COURT PENDU PLAT AS GRAFTED ON THE PEAR: NAT. SIZE.

high, whilst the fruit is but one-third, at the most, the size of the Diamond. The flavour appears about the same, though perhaps a little more acid; the colour is of a bluer black, and the shape more round or more that of the Sloe.

At a nursery, some time since, I found two small trees (maidens) of the Court-pendu Plat Apple that had been accidentally grafted on the Pear stock; I bought them: one soon died, the other is still existing and has borne fruit the last three years, though the tree is dying. The flavour of the Apple is certainly peculiar, and the size and shape is altered. I give the outline, full size, of the only two of this year (figs. 148, 149): they are different in form, the eye of one is very small and deep set, while the other is very large and in a shallow basin, and the skin is more like that of a Pear. When Dr. Hogg was here three years ago he was of opinion, as well as myself, that the fruit tasted of Pear.

Again, another experiment: I grafted the Durondeau Pear on General Todtleben, which was grafted

on the Quince. The double grafting has had a marvellous effect: the fruit produced is very nearly double the size of the Durondeau only grafted on the Quince, besides which the flavour is different, and it is more of a melting Pear. Some who have tasted it think it improved, it not being so astringent—the colour also is lighter and brighter. I give outlines of both (fig. 150). The weight of the large one was 14 oz., and of the small one 7½ oz.

Some years ago I wanted a standard *Pyrus japonica*. I procured some tall Quince stocks, and grafted the *Pyrus* on the tops, but though they took and grew for a while, they all soon died. I then selected a strong straight sucker from the *Pyrus*, and the result is very satisfactory. I have a beautiful standard with weeping branches, which is most effective in the spring; I merely mention this in passing. *Harrison Weir, Weirleigh, Breckley, Kent.*

Home Correspondence.

The Pitmaston Duchess Pear.—At p. 718 a correspondent, writing on the quality of this Pear, is likely to lead gardeners astray, especially when he says it is a Pear of the best quality. I can bear out all that is said of it as regards size and beauty of the fruit. For appearance on the dinner-table I know of no Pear so handsome, and as far as my experience goes that is all that it has to recommend it. I can quite understand it being a market Pear, it is just the fruit for that purpose, but for a gentleman's garden, where a good assortment of Pears are grown, one tree on a good wall is quite plenty. It is not a long keeper, and when ripe it goes bad quickly. It is full of juice, in fact it overflows the mouth, but that juice is little better than sugar and water. I should not be so sanguine in giving my opinion on the merits of this Pear if it depended only on fruit of my own growing, but a grower from Isleworth sent me some fine looking Pitmaston Pears gathered from a standard tree, and like, I should say, your correspondent "A.D.'s" trees, they bear fruit well without being root-pruned: no doubt old Father Thames does that little bit of scientific work in winter, and then feeds the fruit in summer. My own Pears were grown on a south wall, and were equal in size, excepting two fruits which were larger than those sent me, otherwise when they were mixed together they could not be separated; so it will be seen that the sunny South had done as much to beautify the Pear on the standard, as a northern sun had done for the Pear on a south wall. I could distinguish no difference in the quality. At a large dinner given here in the early part of November there was a dish of Marie Louise, and a dish of the Pitmaston Pears; the latter were spoken of as insipid compared with the Marie Louise, but made a handsome dish; the Marie Louise were all eaten, whereas the Pitmaston Pears were left in pieces on the plates. *Beurré d'Amanlis* here is one of the best large early good flavoured Pears that I know, and it keeps well when it is ripe. *William Culverwell, Thorpe Perrow, Beale.*

Barking Vines.—The practice of stripping the bark off Vines is a cruel and barbarous one, although I am aware that it is one that has been in vogue for years past, and is pursued more or less in most gardens. The best cultivators, however, scarcely allow them to be touched, as they know well that to do so would be injurious to the rods, the bark being the natural protection from heat and cold, and the best non-conductor that can be had for the purpose. I have seen Vines so bared by scraping and cleaning as to show the inner rind, and after a time become so stunted as not to swell, but to look contracted and pinched, in which condition the sap must have great difficulty in circulating, as in such cases is evidenced by the meagre crops and poor Grapes they bear. Vines stripped as some are are always struggling to reclothe themselves, and if they were let alone they would succeed in so doing, but no sooner does the winter come round than off come their coats again, till it almost makes one shiver to look at them. It is not, however, so much in winter that they suffer, but in summer, when they are affected by sunstroke, from the exposure. We all know that it is necessary to clean Vines in a certain way—that is, if there are insects lurking on them; but the best course with these pests is to smother them in their beds by sealing up the doorways and windows of their habitations, thus stopping their breathing, and leaving them no way of escape from their prisons. Before doing this, however, the Vines should be scrubbed with strong soft-soap and water; or, better still, nicotine soap, a preparation that contains a good deal of the active properties of tobacco, a decoction of which in any form is always so fatal to thrips. These and red-spider are about the worst plagues one can have in a viney, but both, together with mealy-bug, may be annihilated by any mixture having the nicotine soap as the principal ingredient. The best way is to use it of a strength of about 6 oz. to the gallon, and to get the proper consistency, so as to make a sort of

paint, mix with it some clay, cow-dung, and sulphur, when it may easily be put on by means of a brush; but to be effectual, every part of the stem of the Vine must be covered. Whether the wood derives any nutriment from the manure so applied is a question; but Vines always seem benefited greatly by such a covering, and swell very fast. *J. Sheppard.*

Root-pruning Fruit Trees.—If, when first writing on this subject, "A. D." had only taken up the ground to which he has now retreated, in showing that in the case of his trees no root-pruning was required to make them bear, no one would have demurred, as he would simply have been instancing that which all who have cultivated Apples and Pears in various soils and situations knew frequently happened. But the remarks "A. D." first made

ages which those who find fault with it fail to see. *T. Baines.*

Cabbage Broccoli.—One day last week, through the kindness of a friend, I had an opportunity of judging of the merits of Mr. Gilbert's Cabbage Broccoli as regard its flavour, crispness, and good appearance. I have not the slightest doubt of its being quite distinct from, and superior to, any winter Cabbage that I am acquainted with; and, though a Cabbage in appearance, but so delicately white—a sure indication of crispness—it strongly partakes of the Cauliflower flavour. I consider it a great acquisition to the Brassica tribe, and it is sure to find a place in every garden as it becomes better known. I think I am right in inferring that the heads of Cabbage, when cut, are succeeded by a crop of miniature heads; if so, "A. D.'s" aphorism that

but "Dunchailleán," from the Gaelic words, *dun*, a fortress, and *uilleán*, woods, meaning the fortress or stronghold in the woods. Again, there is no historical evidence whatever that the Romans encamped near Dunkeld in 138, for in 120 the Emperor Hadrian withdrew the Roman forces back behind the wall between the Tyne and the Solway, and it was only in 139 that operations were again set on foot by Antoninus sending the Roman general Lollius Urbicus to North Britain to put down the native tribes. Nor can I find any evidence that a monastery was established at Dunkeld in the sixth century; the earliest account we have of the establishment of a church there is in 796, when the Norseman broke in upon the western isles and murdered the Iona monks to the number of three score and ten, a few years afterwards. Dunkeld was no doubt selected by Constantine king of the Picts (not Kenneth, who lived fifty years later) for its central position, who removed the relics, or some of them (not the body), of St. Columba to Dunkeld for greater security against the northern pirates. Your correspondent is slightly in error also as to the Culdees; "Ceil de Dia" cannot mean servants of God—Ceil, or more properly Ceile, means, not servants, but spouse. All the Columban monks and abbots were not Culdees; but I don't want to enter into this subject, and I crave your correspondent's pardon for what I have already written, but Scottish history is a hobby of mine, and he, like myself, no doubt likes correctness. *A. D. McKenzie, 2, Grove Terrace, Edinburgh.*

Poinsettias.—Having noticed some correspondence in recent issues of your paper as to the size attained by these plants, wherein 12 to 16 inches is mentioned as a very good size for the head of bracts, perhaps it may be of interest to your readers to learn that there may now be seen in the gardens of H. N. Middleton, Esq., Bradford Peverell, Dorchester (gr., Mr. Gollop), several plants of very unusual dimensions, one of which is 18 inches in diameter. The foliage covers the rim of the pot, whilst the bracts are within a foot of the pot. The plants are some of the most perfectly grown specimens I have ever seen, and are well worth a visit from any one interested in floricultural pursuits. *One who has Seen Them.*

English Gardeners Abroad.—At p. 724 you again refer to the fact that young English gardeners go abroad very little. They can well understand the social and practical advantages to be derived from a few years' sojourn abroad, but, unfortunately, the principal obstacles to such a course rest at home in our own country. It is a notorious fact that if an English gardener, whether head or otherwise, goes abroad for a few years, and then returns to his native land, he finds great difficulty in getting a situation worth having. The fact of his having lived abroad is an insurmountable objection with many gentlemen, and not with gentlemen alone, as many head gardeners, too, object to taking young men as foremen who have just returned from abroad. I can at the present time point to several instances of this kind, and it is this fact, and this alone, which deters many young gardeners from seeing more of the world. Remove these obstacles, and many more of our young gardeners would be glad to see and gain experience in foreign lands. *Alfred Gant.*

The Cut-leaved Alder.—This tree deserves to be planted more than it is. It is rarely one meets with it. I am sure if it were better known it would be planted more. The tree when in full leaf is very ornamental; besides, it will grow in very moist situations, where very few other trees will thrive. The tree is quite at home by the side of a river or lake. There is a very fine specimen of it growing in the grounds here by the side of the lake. When in foliage it is a very striking and beautiful object. I have looked over several nursery catalogues, but did not find it in any: this is very unaccountable. I find the common Alder offered in various sizes. *M. Saul, Stourton, Yorkshire.*

Gardeners' Royal Benevolent Institution.—When a young man I could not see the force or necessity of this institution; but as one gets older, and one's experience greater, the wisdom of joining such a society is clearly apparent, and never did I realise it more fully than this season, when I have, postafterpost, received letters from aged gardeners or their widows, begging me to remember them with my vote—yes, men at the top of their profession in their day and generation, and never for a moment imagining that in their declining years they would need help from their brethren in the craft. The year 1880 will soon have passed away, with all its hopes and fears: let us all begin the new year with good intentions, and first amongst those let us be still more zealous in winning members to this (in every sense of the word) noble institution, remembering that although one is young and strong, well up in their profession, with good connections and above all a good character, still one reads and sees that "the race is not to the swift nor

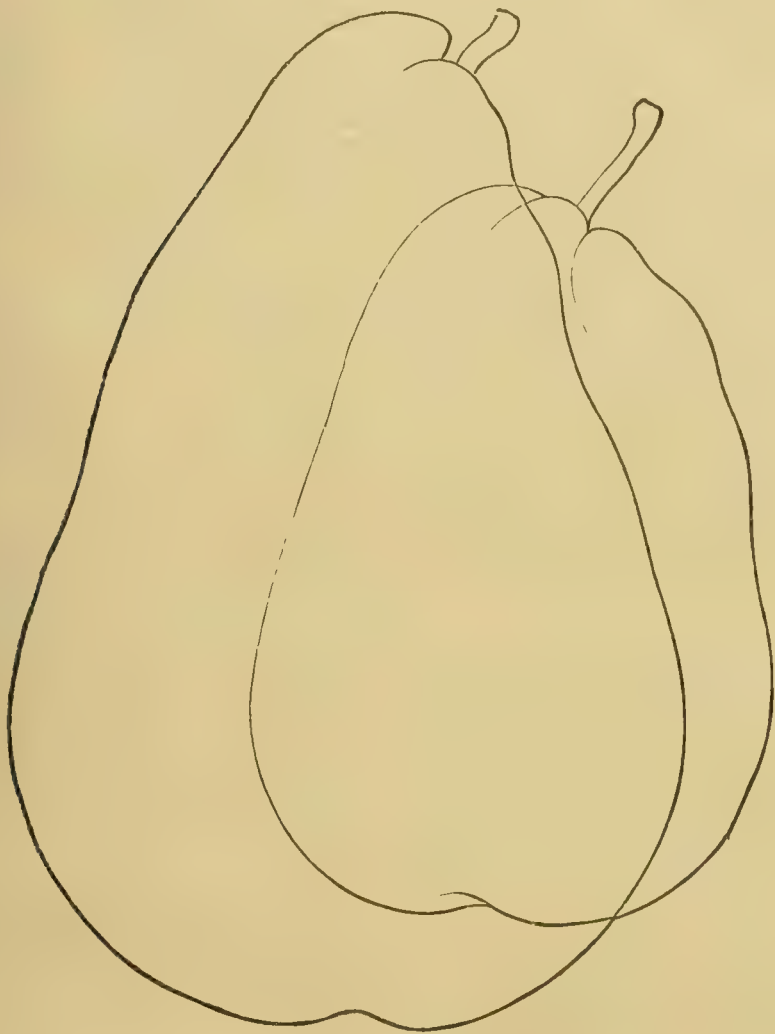


FIG. 150.—DURONDEAU PEAR ON THE QUINCE, SMALL, AND DOUBLE-GRAFTED, LARGE. (SEE P. 760.)

were in condemnation of root-pruning without exception. Now that accumulative evidence has been forthcoming from those whose practice has not been confined to trees in a single place—all at variance with his views—"A. D." tries to get out of the dilemma by arguing that fruit trees should not be planted in situations that will necessitate root-pruning. Here, again, he ignores the position in which most of those who have to deal with private gardens find themselves, for reasons which I stated at p. 699. The majority of those who have to deal with private gardens are under the necessity of planting their trees where they cannot avoid being under the exciting influence of soil that is manured, to say nothing of the many places where the land is naturally of a character such as to induce over-vigorous growth, and an absence of fruit longer than it is consistent to wait. The greater number of those who have gardens cannot afford to devote a portion of their ground to fruit trees alone, in the way "A. D." advises; the arrangement usually existent has advant-

"When it is cut as a Cabbage there is an end to it," will not hold good. *H. W. Ward, Longford Castle.*

Dunkeld and its History.—A delightful article appears in the *Gardeners' Chronicle* of November 20 (p. 658), on Dunkeld; as one interested in our old Scottish history allow me to call the attention of the author of that article to one or two points not strictly correct. Dunkeld does not "guard the ancient boundary line of Picts and Scots," but is situated almost in the very heart of what was the Pictish territory. The small colony of Scots who came over from Ireland in the year 498 under their three leaders, Fergus, Loarn, and Angus, never occupied more than the modern county of Argyle, and were separated from the great Pictish nation who then inhabited the whole of Scotland north of the Firth of Forth, by the Grampians, "Dorsum Britanniae" or "Drumalban." The ancient name of Dunkeld is not "Calidon Castle" nor "Dunkelden"

the battle to the strong;" and one sees this clearly exemplified in everyday life. Could a rule be added to induce young gardeners to become members at an early period, say twenty, at a lower premium, says 5s. (the same as insurance societies), thirty years for 10s., and forty years for a guinea? I merely throw out the suggestion, for this subject has constantly occupied my mind for some time past; and to young gardeners I would say, Be wise, be prudent and frugal with your hard-earned wages, remembering that there are often many ups and downs in life "or ever the silver cord be loosed." *J. Rust, Eridge Castle, Dec. 3.*

Thuja gigantea.—It has been my good fortune to see the Hemlock in Canada, the Cypress in Rome, Cunninghamia in Chusan, and a fine specimen of Araucaria excelsa at the Cape; but I have never seen, nor am I ever likely to see, the magnificent Conifers of North-west America, in maturity. I therefore hope that the promise of some illustrations in the *Gardeners' Chronicle* may be fulfilled. An accurate drawing of *Thuja gigantea* would be most interesting; although not so graceful as *C. Lawsoniana*, it has every other quality—hardiness, rapid growth, beauty, and even smell. While Deodars and Wellingtonias are often disappointing, I have never known *T. gigantea* to fail. I believe that it would be better known if nurserymen did not persist in naming it *T. Menziesii* or *Lobbii* in their catalogues. Trusting that we may ere long see it figured in your pages. *H. K.*

Late Swallows.—On November 22 we had 10° of frost at daybreak, and at about 10 o'clock I counted six swallows in a group on one of the corners in front of the house where there was the most sun. They took singly frequent flights in the sun above the grass, always turning at the shade, and finishing before resting by skimming all the front windows, doubtless for food, but although the windows were open never attempting to go inside when the sun-heat had brought out abundance of food. I considered this a late nest, at the same time I could not see many feeding. We often have them in the warm front up to the beginning of the month, but not so late as this before. At 4 they had left for good. I don't know if they lay twice in the season, but I noticed the old ones feeding a nest in one of the cow-houses up to about the beginning of the month. *J. F., Cliveden.*

The Douglas Fir.—Mr. D. T. Fish, in recording his testimony in favour of the value of this Fir for timber, adds some remarks respecting its requirements as to situation, which I am bound to confess my inability to comprehend from a writer of his intelligence. "That it thrives best planted in somewhat exposed situations," as stated by your correspondent (p. 698), is an assertion of which I leave your readers to form an opinion for themselves, when the results are described as follows:—"The only drawback they sustain in such sites is, that their tops get bent out of shape by the fierceness of the gales." I may here state that I have had some thousands of these trees under my care in all stages of growth, from seedlings of my own raising to specimens upwards of 70 feet in height, planted under a variety of circumstances, so that my opportunities for observation are not assumed. The cause I assign for the horizontal direction so often taken by the leading shoot of this Fir, as referred to by your correspondent, is, that on the tree becoming established, it rushes off with its well-known rapid growth, and so long as the shelter necessary for its well-being is afforded it the tree increases in beauty, but on outgrowing its shelter the rapidly grown young leader bends to the breeze, and before its tissues can become solidified to support itself a distorted growth is the result, and in no instance that I can recall have I ever seen a leading shoot as described attain a nearer approach to its perpendicular than an angle of 45°. Now that planters of this Fir for timber have profited by their earlier experience in planting for ornament the hideous starved-looking specimens so frequently met with become things of the past, and that plantations are yearly being made proves the esteem in which the Douglas Fir is held as a cover tree, its vital requirements being shelter from wind and drainage. In support of what I have already stated, I may mention a visit paid during the past summer to a plantation of Douglas Firs belonging to that noble patron of arboriculture, the Right Hon. the Earl of Ducie, on his Tortworth estate, in this county. The situation chosen for this favourite of his was the base of a steep hill, forming one side of a valley, thoroughly drained by a tributary of the Severn running through it, and effectually sheltered by the surrounding heights; there *Abies Douglasii* and its variety *taxifolia* are in numbers, making an annual growth of between 2 and 3 feet, clean and straight as a gun barrel; and as an example of growth worthy of imitation I will cite the *Abies Douglasii* flagstaff erected in the Royal Gardens, Kew, bearing its lofty truck 159 feet above the

ground, a worthy tribute to the memory of Douglas. *J. A. Smith, Alderley Grange, Wotton-under-Edge.*

Dahlia imperialis.—What a lovely plant this is when successfully cultivated and coming into bloom at this season of the year when Nature has almost gone to rest. It is cheering to welcome this autumn visitor, arrayed in its snowy whiteness. How noble it looks with its tall arching stems and large drooping pure white bell-shaped flowers. For conservatories of lofty elevations it is a most desirable subject. We have four plants of it here in bloom carrying in all about seventy of its charming flowers. It is grown very much at Cannes, in the South of France, but very seldom met with in this country. *Wm. Bowman, Hylands, Chelmsford.*

The Tomato Disease.—However much it may be harmful to allow Tomatoes to become thick in growth and overcrowded, few readers of the *Gardeners' Chronicle* will be disposed to follow "H. W. W." in admitting that the disease is the product of that cultural defect. I had thought it was now pretty well established that this disease was but our old acquaintance the *Peronospora infestans*, which seems to find in the Tomato plants congenial food upon which to fasten. I recently referred to Mr. Cole's plants being badly affected although under glass. These were in no way overcrowded, were each carefully staked and kept thinned, in fact, had the best cultural care shown them. Yet these all became badly diseased. The few plants I had here were grown sprawling upon straw, and latterly were but indifferently thinned or attended to, and yet not a speck of the disease was visible. But take the case of plants grown by the market gardeners in the open air by the acre. Here the greatest care is exercised to keep the plants thin, each one is staked and kept divested of all useless growth, but in spite of this we saw two years in succession thousands of plants quite killed in a few weeks. The supposition that indifferent culture and crowding promote the disease is but a revival of the theory relative to the influence of the same defects upon the Potato some years since. It was difficult to get people to believe that the disease was a mysterious fungoid visitant that existed and operated totally independent of kind or culture, but was probably helped in its destructive operations by bad culture. We know now that culture may alleviate, but cannot prevent the attacks of the disease, and the same may be said of its attacks upon the Tomato. "H. W. W.'s" theory is very much like attributing typhoid fever to overcrowding; that may aggravate it, but the cause must be looked for elsewhere. *A. D.*

The Dymond Peach.—Much has been written of late years about early and late Peaches, but not a word about the above, which in my humble opinion is the best of all the mid-season varieties; it has a good hardy constitution, and seldom fails to produce a good crop of fruit. The Peach walls here are about 200 yards in extent, and for a great many years were much admired, but during the last two or three seasons they are gone very much to the bad, and yield little fruit, excepting the above, which has never failed. Those who are about to plant this season, will do well to give the above variety a trial: it is equally good under glass. *W. G. Pragnell, Castle Gardens, Sherborne, Dorset.*

Iris Kämpferi.—I, for one, think there has been no more lovely addition to the hardy plants of English gardens than the *Iris Kämpferi*. True, some who have tried to grow them have reported failures. The Rev. J. Carron, for instance, stated that last winter his plants suffered greatly, and he lost many; but was it the cold, or slugs, snails and grubs that took them? I think the latter, for here, in spite of the intense cold, I found them quite hardy, although my plants were small, and one or two were imported direct. But a certain black grub made much havoc, and so also slugs. Soot, sawdust, trapping, &c., were tried, but in vain; some of my best plants were eaten entirely. So I had recourse to ducks, and saved the remainder, and beautifully some bloomed. I was delighted with them. Their colours and markings are exquisite. I am a lover of *Iris*. I have over 100 varieties of germanica, and of anglica also a considerable number, but the *Kämpferi* threw them quite into the shade. I grow them on a loamy soil, enriched with yard manure; and the border where they are planted is in a damp part of my garden. Next year I hope to have a fine show, as I have purchased some of the very splendid spotted or rather mottled varieties imported by the Messrs. Veitch. They are truly grand, and I have seen none to equal them. I have some seeds sent from Japan, but have only raised two plants, and they have not yet bloomed; the rest of the seed seem good, but will not start. In Japan, apparently, this kind of *Iris* is grown in water, for I have a very fine *Cloisonne* dish, and there, excellently portrayed, are the *Iris Kämpferi*, blue and deep bright pink, in full bloom, with a stream

running amongst them; and again in Mr. Cutler's careful work, entitled *A Grammar of Japanese Ornament*, I find a plate of a large bed of the *Iris* growing in water, and a staging erected amongst them, so that the owner can walk about on the plank and look down on and admire them. Evidently this plant is a pet one in Japan, and I predict it will soon be so here. *Harrison Weir.*

A Christmas without Holly.—It will hardly seem possible, but it will be so in most places. I have never seen such a complete failure of *Holly*-berries. In all past failures a few trees here and there, or groups or masses, have always been coralled over; but amid thousands and tens of thousands I have not seen a single berried *Holly* this year. I was told of one and went some way to see it, and it had, perhaps, a score of berries! And that is all I have seen. The Yews are equally destitute of fruit. These mostly fruit with unusual plentifulness here, but this season I have not seen one. Haws are also thin, so that there is a desperate prospect for the decorators and the birds this Christmastide. The latter, poor things, think winter is over and gone and the time of the singing of birds has come, and they have sung well through most of the first weeks in November. Thrushes and blackbirds have swelled the sweet chatter of the small birds into a very respectable song, and all through yesterday (December 7) the woods, groves, and shrubberies here resounded with the clear stirring notes of the birds. But should the winter set in severe, it is feared that starving will soon succeed their merry notes, for never in my recollection was so little food available for the birds. The one large crop of the season is acorns, and it is the one that is, perhaps, of the very least use for the birds. Even Beech-mast, that many of the larger birds can eat, is conspicuously absent, and in general terms it may be affirmed that all the trees are bare, especially the *Holly* trees. A considerable number of trees carried their last year's berries until a month or two ago; but these have all disappeared, the birds apparently being too sharp set to stay to question the quality of the stale berries. The persistent adherence of last year's *Holly* berries was almost as singular a fact as the entire absence of berries this year. *D. T. Fish.*

Nisbet's Victoria Tomato.—I desire to say a word in favour of this Tomato, which with me has proved to justify all that has been said in its behalf; I can, therefore, without hesitation, confidently recommend it to all who may be inclined to give it a trial, and I am sure they will not have cause to be disappointed. Perhaps some of your readers can bear me out in this who have given it a trial; but some may say the fruit is so small. I take for granted there are many sorts much larger, nevertheless its extraordinary productiveness fully compensates for this, and I question very much if nearly double the weight cannot be obtained from this variety in a given space than from any other variety extant. It is a decided acquisition for winter work; in fact, it may well be termed an all-the-year-round Tomato. Its colour is good and flavour excellent; its Grape-like clusters, which are produced from every joint, averaging a dozen berries to a bunch, also recommend it for decoration, and I doubt not, had Mr. Fish given this variety a trial for this purpose instead of the Cherry Tomato mentioned by him a few weeks ago, he would have been much more satisfactorily rewarded. This Tomato never requires stopping, consequently does not make so much foliage—an objection raised by Mr. Fish with regard to the Cherry Tomato for decorating purposes. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Open-air Grapes.—It may be interesting to "F. W. B." (see p. 653) to know that Grapes are grown in the open air with success in some parts of England, although not to the extent they deserve to be. The sorts I have grown here for some twenty years past are—*Esperione*, Black Hamburg, White American Cluster, Royal Muscadine, or Chasselas de Fontainebleau, Buckland Sweetwater, and Foster's Seedling; and last year I planted the Strawberry Grape on trial. Some seasons I have had Black Hamburg bunches weighing 1 lb., which have been much admired at table, and Royal Muscadine is always acceptable and good, and always the first to ripen. This year I measured berries of Foster's Seedling 3 inches in circumference. About thirty years since I often saw Black Hamburg Grapes growing in the open air on the south-east coast, about a mile from the shore; they were black, too, and fit to place on any table, and handsome both in bunch and berry. I find they will always pay well for any extra attention or care bestowed on them. No doubt there are many other kinds that would succeed in favourable situations. If I had the space to spare I would plant Black Prince and Bidwell's Seedling and a few others. If other gardeners would give the names of those they have proved, a

list of hardy Grapes might be given for those who intend to plant, also soil and situation. Here we are due south, with a sharp light loam, on Kentish rag-stone. Is the American White Cluster the same as Scotch White Cluster? *W. Divers, Winton, Maidstone, Dec. 7.*



SEASONABLE NOTES. — AURICULAS. — The sharp frosts early in November have had the usual effect of causing the outer leaves to decay; these have been carefully removed without injuring the main stem. The plants are now well hearted up, and those that have not yet shown any signs of flower trusses may be expected to give good trusses in April. Our plans to look over the plants once a week during the next two months, and to water only those plants that are likely to shrivel for want of moisture, carefully removing at the same time any dead or mouldy leaves. Should the frost be very severe it may be necessary to throw mats over the glass at night; this keeps the leaves drier than they would be without it, else very severe frost does not hurt the plant at all, indeed I fancy they are the better for it, as witness the fine blooms after the last severe winter. Where the choicer varieties are planted out in borders and rock-work the leaves may be protected with a small square of glass raised over them to throw off the rain. The alpine are rather more hardy, but even these must be protected from rain as much as possible. Those in pots must not have a drop during the winter.

CARNATIONS AND PICOTEES.

There will be no growth to speak of amongst the choice florists' varieties. The mild weather is very much in favour of the late potted varieties, although I fancy, when they are well rooted before the winter, sharp frosts to induce complete rest is the most desirable condition for them. If the plants have not been looked over since they were potted, it ought to be done at once, the decaying and decayed leaves being carefully removed by hand, or a pair of sharp-pointed scissors. Stir the soil in the pots on the surface, and then press it in again with the fingers. Keep the atmosphere of the frames as dry as possible, and water only those plants that really require it: attention to the above will quite prevent the "spot" from appearing on the leaves, which is caused by damp and insufficient ventilation at this season of the year. We have only recently had some plants sent home, and as some of them were not well rooted a gentle hobbed was prepared for them, and the glass lights kept rather close for some time, gradually giving air as roots were formed.

DAHLIAS.

It will merely be necessary to look over the roots occasionally to see that none of the stems are decaying from damp; if this happens the damp portion must be removed and the roots dried. If the roots are stored away in too damp material they are likely to start prematurely into growth; and they are not likely to suffer from over-dryness unless they are placed close to hot-water pipes or flues, which they ought not to be.

GLADIOLI.

The roots are now all stored away for the winter, and will require no other attention than to see that none of them decay, and by doing so cause others to do the same. The early flowering section should all be planted out or potted; the bulbs are injured if left out of the ground until the spring. *G. Colvillii*, *The Bride*, is one of the most useful varieties amongst them; it ought to be grown plentifully in clumps in the flower border. Many of the others are also well adapted for this purpose. They should be left in the ground without removal for years in the same place, merely covering them in the winter with dry leaves or some similar mulching.

HOLLYHOCKS.

Where the plants have been placed out in pots in the cold frames or are planted out there they must now be looked over, and the surface-soil stirred, decayed leaves being removed at the same time. The young plants in small pots, if they are in any way pot-bound, should be repotted if the weather is such

that any growth will be made. Where the growths are long enough and thickly placed on the old stems some of them may be removed and be put in as cuttings. The best place for them at this season is a close frame fitted up in a house or pit where the temperature is about 55° at night. A little bottom-heat should be supplied to the frame, and cuttings or root-grafts may be put in during the winter season, and as they form roots they may be removed outside the frame. I place each cutting separately in a small pot in very sandy soil.

PANSIES.

The plants in pots in frames require very much the same attention as other hardy plants. To flower early and strongly they should be repotted into their blooming pots, so that they are established before the winter. If the weather is mild this may be done now. Draw the lights quite off the frames during fine weather, and tilt them against the wind during cold or rainy seasons, the plants are much injured if exposed to cold frosty winds. Fumigate to destroy greenfly, which is fond of the Pansy, and mildew is usually a troublesome parasite: it should be destroyed with flowers of sulphur. The plants in beds out-of-doors have had a good chance this season; they must be made secure by being fastened to sticks, or they may be pegged down, but this plan is not safe in a wet season, or if there are many worms in the ground.

PINKS.

The plants in pots of the laced varieties require much the same attention as Carnations and Picotees, with plenty of air at all times. A few plants of each of the forcing varieties should be introduced into a house where there is a little artificial heat; they should be started very gently at this season of the year. See that they have a good supply of water at the roots, but it is not safe to syringe them overhead much at this time, unless occasionally on the mornings of fine days.

PENTSTEMONS.

The old plants have now all been cleared away, and in fine weather the ground must be prepared for the plants for next year's bloom. It ought to lay up for the frost to act upon it during the winter. Deep trenching and rich manure is essential to a strong growth and continuous bloom. The young plants are now secure in hand-lights or cold frames. When well rooted they may be potted off singly in small pots, or be planted out in shallow boxes.

PHLOXES.

These are much harder than Pentstemons, and it is just as well to put the plants out in their flowering quarters, as taking up less time than attending to them in pots. Those to flower in pots are now in cold frames, and continue to make growth in favourable weather. Small plants of new varieties should be potted on into rich compost. The Phlox demands rich food, in order to give us strong spikes well furnished with good flowers.

POLYANTHUSES.

The fanciers usually require their plants to be in flower at the time of the Auricula exhibitions; and in order to have them in condition the plants ought to be kept back, by being set in as cool a place as possible. Our plants are at present in a frame with its back to the south. None of the plants are allowed to suffer in the least for want of water at the roots, and decaying leaves are carefully removed. Persons who have their plants near old buildings should take note of the fact that rats are rather fond of the tender young leaves; they got a taste of ours one season, and we found a great difficulty in keeping them out of the frames; they even burrowed under wire netting placed round them. The leather-coated grub will also disfigure the leaves at this season, and do permanent injury to them, if it is not watched for at night.

ROSES.

No time should be lost now in getting all the planting done. In order to have a good bloom next season the plants should have a hold of the fresh soil before Christmas. Put a thick mulching round the plants. If they have been arranged in beds, it is best to cover the entire surface of the soil with light manure. The high price of standards this year, and also next season, will cause many persons to plant dwarfs. I know amateurs who have planted Roses in their town gardens, every one of them standards. These are double the price of dwarfs and not nearly so

satisfactory. I would advise all who have a strong fancy for standard Roses to try a portion on the seedling Brier or Manetti stock, if they have light soil to deal with, and judge for themselves. *J. Douglas, Loxford.*

THE FORCING PINK. — Amongst flowers to be prepared annually to force early in the season there are few better adapted for the purpose than the Pink. The old laced varieties are not grown so much as they used to be, but even now the supply is not always equal to the demand. The early-flowering or forcing section are even more easily grown than the others, they are quite as hardy, and everybody can prepare their own plants for forcing. To produce anything like a mass of flowers it is necessary to propagate the plants early in the year. About the end of April the small succulent side growths should be taken off and made into pipings, a dozen of them may be inserted in a 5-inch pot, using light sandy soil. If these are placed over a sweet mild hot-bed they will speedily produce roots, and when they are well established they may be planted out in boxes, about 3 or 4 inches between each plant. They must be gradually inured to stand the open air, when they should be planted out on a border of fine light soil, allowing a distance of a foot between each plant. The care required during the summer is to keep the ground free from weeds by stirring the surface of the ground with a hoe. The plants will make large specimens by the month of September, when they may be carefully lifted and potted in 6-inch pots, afterwards placing them in cold frames until they are wanted in the forcing-houses. Their delightfully scented flowers are much valued by gardeners for cutting, and they are much appreciated by everybody. The best pure white variety is *Lady Blanche*, it has fine smooth-edged flowers, grows freely, and blooms profusely. The best coloured one is *Lord Lyons*, it has sweet rosy-purple flowers, which are freely produced. *Mrs. Moore* and *Mrs. Pettifer* are pure white flowers with dark centres. *Derby Day* is a good variety, with large flowers and a tall habit. The above are a sufficient number of varieties, and all are well worth growing. *J. Douglas, Loxford.*



AMERICAN FORESTS AND FORESTRY. — The following extracts are taken from the annual report of Mr. Thos. Meehan, botanist of the Pennsylvania Board of Agriculture. Mr. Meehan last season devoted two months to travel and investigation of the forests of Virginia, North Carolina, and Tennessee, and later in the season, a short time was spent among the forests of Schuylkill county through the kind invitation of the Board of Girard Trusts, of the city of Philadelphia. The result of these investigations is the knowledge that there is very much more timber in the country than people generally believe, though at present in localities not convenient, as a general thing, to market at paying prices. Mr. Meehan reports that near the present sources of supply there is a growing dearth of timber, and it is this prominent fact that creates so much alarm, and the prevalent fear that the whole timber supply will soon give out. And, finally, it is apparent that when there shall be a real scarcity of lumber, so as to affect the market price seriously, it will pay companies to plant timber; and forests so planted will come into use, when properly cared for, in much less time than the community has been led to believe.

Trees grow in Europe very slowly. The Oak in England has been known to live a thousand years, and the writer has seen some 500 years old, and still with many hundred less cubic feet of lumber than many American Oaks not 200 years old. Indeed it is doubtful whether any timber trees in the eastern Atlantic States reach 200 years of age without exhibiting signs of decrepitude, in which case the tree makes poor lumber, and is really fit for little more than firewood. During the past season large numbers of trunks and stumps have been examined, and, by carefully counting an inch where the annual growths are the smallest, and an inch where the annual growths seemed most rapid, and taking an average with which to measure the diameter, very much of

the lumber of commerce was found to be from trees less than a hundred years old, and very few trees were found with rings showing over 150 years. In going through the Shenandoah Valley of Virginia, the absence of any remarkably old trees was very apparent, and Major Jed. Hotchkiss, an able naturalist of Staunton, Virginia, furnished proof entirely satisfactory that when the white man settled in the valley it was wholly clear of timber, and that most of the immense quantity we find there now has grown up during the past 100 or 200 years. In like manner the probability is that in all the large valleys of Pennsylvania there was no wood at the early settlement of the State. This is the tradition among most all who have had family estates for several generations, and this is confirmed by the recent investigations of Dr. Joseph Leidy. Indeed the tradition is, especially in the Cumberland Valley, that these valleys were annually fired by the Indians, chiefly that trees might be kept down, and food provided for the buffalo instead. We have cut away a great deal, but then we have gained some, and the fact is worth remembering.

In the States of Virginia, Tennessee, and North Carolina, there are at the present time millions of acres of magnificent forest trees. Among these are White Oak, Chestnut Oak, Red Oak, and the Tulip Poplar, in immense quantities, with a great quantity of species, useful but less known, used in the leading arts, such as Beech, Birch, Elm, sweet Gum, black or sour Gum, Buttonwood, Linden, Cucumber and other Magnolias, Ash, Sugar and other Maples, Locust, Chestnut and Horse Chestnut, Walnut and Hickory, enormous Sugar-berry trees, and Dogwoods larger than in the North, besides many other interesting to the botanist, but for which the special uses have yet to be found. Besides these, there are among the resinous trees immense quantities of the Yellow Pine (*Pinus Teda*), Bull Pine (*Pinus mitis*), and Post or Jersey Pine (*Pinus inops*), which grows up into forests of straight trees, very different to what we find them in New Jersey and Pennsylvania. Besides these are Hemlock Spruce in some quantity, White Pine in less, and in still smaller quantities Balsam Fir (*Abies Fraseri*), and Black Spruce (*Abies nigra*).

But little use is made of these magnificent forests beyond fence timber and firewood. The streams run everywhere to the sea. No use, with rare exceptions, is made of the water-power. Mills and factories are rarely seen. The effort has been to bring settlers on the land rather than encourage workshops or mining enterprises. Hence the noble timber trees are regarded as an incumbrance. Tobacco and corn for distant markets receive consideration before population of a character suited to home consumption, and hence the timber is being rapidly destroyed by the girdling process, in order that a single crop of Tobacco, corn, or perhaps Oats may be taken. Many hundred acres of dead trees of huge size were standing the past season, with the initial crops of Tobacco and corn between them. In some cases saw-mills had been erected, chiefly by railroad companies, and the lumber shipped by them to Northern markets. A small supply may be always expected in Pennsylvania markets from Virginia, but it is not probable there will ever be much more than now.

The amount of timber Pennsylvania requires to carry on her various industries is enormous. In the coal mines of the Reading Coal and Iron Company, no less than 3000 miles of solid timber is used annually—that is to say, the logs set end to end would extend across the Atlantic from America to England. Most of the timber fit for this purpose within paying distance has been cut away, and it is already a question what shall be done next? It is not that there is not an abundance of timber in Pennsylvania—probably one-fourth of her whole area is under forest—but it is nearly impossible to get what is needed at the points required without a heavy draft on the profits which invested capital is expected to pay.

There are forests not 20 miles from a large lumber market, like Philadelphia, which would scarcely pay the expense of cutting down, because they happen to be 10 or 12 miles from a railroad track or navigable water, and which would have paid a much greater profit to the owners if cut down years ago and put into corn. But if such timber lands were near mines or other sources of heavy timber consumption, they would be profitable indeed.

Thus we see that the blind attempts to "encourage timber culture" in some States have failed. General laws giving premiums for "planting trees" very

where and anyhow, so that trees are planted, is a mere waste of public money. The true policy is for those large corporations or public bodies which are the most likely to need timber in their operations, to work out for supplies from their own forethought in forest culture.

Forest Fires.—One of the great drawbacks to forest culture is the liability to forest fires. The Girard Trust has correctly noted, that the chief source of forest fires is underbrush, which gathers dead branches, besides retaining all its own dead wood, as well as keeps an immense amount of leaves from at once rotting by the lightness which the underbrush keeps about them. There is nothing more certain, that with no underbrush there would be no serious forest fires. In view of this, the Girard Trust have kept the underbrush, in a portion of a piece of young second growth of wood, cut down. What is left there is not above a foot or two high; but the continually dying wood among this low brush, and the holding together of dry leaves, would make a serious fire if once started. Another good lesson is afforded by the superior growth of the young trees in the part comparatively cleared. They are, on an average, one-fourth larger, in, the writer believes, about six years since the old wood was cut down. This is because there was more food and moisture for the young trees, with a small amount of brush between them than when the brush was heavier. A small experiment was made to change the character of the forest, by planting other kinds between the brush; but these have failed, and evidently because the strong rooted brush near them took all the moisture, and left nothing for the struggling trees. While they are getting roothold, the others crowd them down.

The only way to make these forests produce good timber, safe from fires, would be to cut out everything but the young trees desired to remain for timber; and to clean them out to about 6 feet apart every way. Then grub out by a bull tongue or other strong ox plough everything else, running though with a drag harrow once or twice a-year to keep all woody growths down but those intended to stand. No forest fires would then trouble them, and the young trees, by having all the food and all the moisture to themselves, would make as much growth in ten years as they would in twenty by the present crowded plan. The yearly harrowing would not need to be done for many years, for as soon as the young trees made heads to touch each other, the summer shade and dryness from the young tree roots would cramp the vigour of all other vegetation. Whether it would pay now to do this, after five or six years of strong growth, is a question. It would probably cost from 20 to 40 dols. per acre to do it as it should be done; but, on the other hand, we may remember that if cleared, good paying timber would be there in from fifteen to twenty years, and timber for some purposes earlier; while, on the other hand, the neglected plan will give no timber worth speaking about for thirty or forty years, with the chance of its being all burned up before that time.

From the lessons afforded by the experiments of the Girard Trust there need be no hesitation in saying that in cleared land young timber trees should be set out in rows as we would set out corn, and kept clean between the rows for four or five years, just as we would keep corn clean. If a forest has been cut down we should at once burn all the brushwood, and then run an ox team with drag harrows through in lines about 6 feet wide, leaving lines of about 2 feet wide for the first year, for young seedlings or second growth sprouts to appear. The cross lines, as in corn, could be harrowed the next season, after the young trees had shown themselves. Of course, in an old forest these lines could not always be straight, nor would the straightness or regularity of width be essential. The time that I have given for the forest to make good timber may seem short to those accustomed to read of the slow growth of forest trees in Europe, or who have only seen them in the crowded fire-inviting forest, but in the way described the trees would get in America the sizes indicated.

Some measure of success would naturally be due to the proper selection of trees to the soil, some doing better on some than on others, and some attention must be paid to the wants of the region.

A question has been raised whether Nature does not teach that a new kind of tree should succeed that of the old forest cut away. Sometimes we do see in Nature one kind succeeding another, but not always. In the Black Mountains of North Carolina Balsam succeeds Balsam, and does as well as the original

forest did; and the second crop of Chestnut woods, in familiar experience, is as good as the first. In some cases a new kind may find food which the original growth rejected, but a forest is not like a regular farm crop. What is taken from the soil is annually returned to it, only the wood, which is for the most part carbon taken from the atmosphere, being taken away. There is little reason, judging both from science and observation, why the same kind of forest tree might not go on for ages in the same soil without any difference in growth being perceptible. *Thomas Meehan, Botanist to the Pennsylvania State Board of Agriculture.*

Reports of Societies.

Dundee Horticultural Association: Nov. 3.—

At a gathering of professional and amateur horticulturists in Dundee in October last a suggestion was made, that an association should be formed for the promotion and advancement of horticulture and such branches of natural science as bear upon it. The suggestion met with a hearty response, and upwards of thirty persons immediately signified their willingness to become members. No time was lost in electing office-bearers and a council, to whom was delegated the framing of a constitution and bye-laws. These having been drawn up and approved, the first ordinary meeting was held in the Imperial Hotel, Dundee, on Friday, the 3d inst. There was a large attendance, and Mr. Doig, Rossie Priory Gardens, President of the Association, occupied the chair.

The President in opening the proceedings delivered an interesting address on the progress of horticulture. After alluding to the general history and progress of gardening in this and other countries, Mr. Doig went on to point out various practical matters which might profitably form subjects for discussion in the coming winter. It was very desirable that the nature of the different soils and their adaptability for the growth of the various plants which came under the care of the horticulturist should be considered. The winter digging of soils might form not an uninteresting paper—whether in all cases it was desirable or beneficial. The different kinds of manure and their proper application was a subject of paramount importance. The matter of seed and seed-sowing demanded careful inquiry; and the seasons for seed-sowing should form part of the information to be derived from their meetings. He suggested for the consideration of local nurserymen whether it would not be for their benefit, as well as for the benefit of horticulturists in general, to persevere in eliminating from their catalogues the great amount of unnecessary varieties in the different genera. The theory that Potatoes became exhausted after several years' growth had been brought very prominently before the public of late. The fact that they still had the Ash-leaved Kidney as vigorous and prolific as it was forty years ago pointed to the desirability of raisers of seedlings endeavouring to raise early varieties of good keeping qualities, so that they might be ripe and stored before the disease got hold of them. It was not to be wondered at that Potatoes had succumbed to the treatment they had received for many years. How often did they see them planted in May, at the time they ought to be breaking through the ground, with all the first sprouts broken off, and sometimes the second, and thrown amongst fermenting manure in such a crippled state that in their efforts at recuperation the season was so far advanced that the wet in autumn found them in a soft, unripened state, and an easy prey to disease. Instead of saying Potatoes were exhausted, it would be nearer the truth to say they were destroyed through neglect and want of attention on the part of the cultivator. The rotation of cropping the kitchen garden was another thing worthy of being brought before the Association, as was also the transplanting of trees. Although the latter operation was principally mechanical, yet failures often occurred from want of scientific knowledge of the proper principles which should guide them. Mr. Doig next drew attention to the subject of pruning, on which he said there existed a considerable diversity of opinion; to the cultivation of stove and greenhouse plants, and the culture of fruit under glass. The Pine-apple was not now cultivated so much in this country as formerly. The rapid communication between the different parts of the world enabled the growers where no glass was required to produce Pine-apples so much cheaper, and often of superior quality, for the greater part of the year, as almost to drive the home produce out of the market. After a reference to the growing of Peaches, Figs, and other fruits, flowers and vegetables, and to the manner in which the debates should be conducted, the President concluded by expressing the hope that the meetings of the Association would help to stir up and foster a desire for self-improvement, which ought to form a part of every man's ambition.

Mr. Edward Moir then read an able paper on the "Alpine Flora of Forfarshire." He pointed out that the hills and dales of the county contained many of the rarest plants of our British flora. The rare *Lychnis alpina*, *Saussurea alpina*, *Linnæa borealis*, *Mulgedium alpinum*, *Astragalus alpinus*, and the still more rare *Oxytropis campestris*, all found a home in the Clova mountains. Dried specimens of nearly every plant named were exhibited, these adding greatly to the interest of the meeting. Cordial votes of thanks were passed to the President, and to Mr. Moir.

Natural History.

THE CHAFFINCH.—A strong minded blue-stocking had been examining her brother, an estimable land agent, on the pyramids and the antiquities of Egypt, when he took her to the window and enquired the name of a little bird upon the lawn. She did not know its name. "That little bird, my dear," he said in a gentle voice, "is a hen chaffinch." It would be well for blue-stockings to study Nature, and learn the names and habits of small birds like the chaffinch.

The chaffinch, including the cock as well as hen, is one of the most interesting of small birds. In my native dale, studded with wood and copse and garden, farms, country seats, and secluded shrubberies, the chaffinch abounded like other small birds. There was an old doctor in our place, dead fifty years, before my remembrance commences, but I remember his fame and sometimes think I must have seen him—a tall spare man in Hessian boots. He had introduced my elder brother to the world, and was often mentioned in our family as an Esculapius of the old school. For several years I used to think the chaffinches twittered the name of Dr. Widgeon in that quick merry song of theirs, and even now their early song in spring still ends for me with the name of Widgeon. This is its merry burden, "Twit, twit, twit, Dr. Widgeon." The impression will never wear out, and when Nature awakes and the early lark is on the wing on fine mornings, mounting to "heaven's gate" in her song, and the vernal thrush is on the treetop pouring forth her music, I know the time has come for that other early song, "Twit, twit, twit, Dr. Widgeon."

The chaffinch is one of the earliest of spring songsters. He is in full voice in our southern dale long before Valentine's Day. Both the sexes sing, not aloft like the lark—the chaffinch never sings on the wing—but in trees, and too often in cages. He is not the commonest cage-bird with us, but in Belgium and Holland, and elsewhere across the German Ocean or the Channel, you meet him everywhere in the smallest of wooden cages, singing merrily at a time of year when in this country his notes have departed and he has grown quite dumb for the season. Why should it sing in a wretched alley abroad, and lose its voice in our dale suddenly in July, remaining dumb as a capercailzie throughout the winter? The robin and wren twitter with us, and the thrush and lark praise the Lord with loud cymbals, for the blessing of a fine day, even in the very depth of winter, but the chaffinch loses all power of melody before August, and his admirable voice, mimic as he is of a dozen other songsters, retains but a single note, the call-note, which most persons are familiar with.

It is the cruel custom of bird fanciers on the Continent to sear the eyes of the chaffinch with a red-hot iron, and that is said to be the cause of its winter song. It may be so. To hear it in the alley aforementioned, in November, you could fancy that the month was May, and the scene an Apple tree where its nest was hidden in our dale. It sings as if its throat would burst. "Does this blind captive," says a humane naturalist, "pour forth its melody in order to soothe its sorrows?" Such cruelty, to tickle ears which deserve to be cropped rather than pleased, disgraces humanity. No wonder the poet could sing severely:—

'The thrushes chatter'd with afright,
The nightingales abhor'd his sight,
And every beast before him ran,
To shun the hateful sight of man."

"Oh," says Charles Waterton, the friend of birds and their preserver—"Oh, that the potentate in whose dominions this little bird is doomed to such a cruel fate would pass an edict to forbid the perpetration of other barbarous deeds! Then would I exclaim, 'O king of men, thy act is worthy of a royal heart.'"

The chaffinch is a small bird, not much larger than the hedge sparrow, and not very formidable in gardens. He has a strong and sharply pointed bill, lives in summer on worms and insects and in winter on seeds and wild fruits. He can shell and husk well with his convenient bill, and is sometimes called locally in the North of England "apple-sheller" and "shelley" or "shell Apple," "Beechfinch," and "snawbird." In Sweden Linnæus himself called him "bachelor." Waterton ignores its annual trial for a

season of a life of single blessedness, so far as Walton Hall is concerned; and so may I, as respects our dale; but in Sweden the hen chaffinches assemble in flocks apart from the males and keep their own society during the winter. A Northumbrian naturalist whose name would be known to fame if he would publish his valuable observations in a book, affirms that the sexes separate in autumn in his district and do not again associate till pairing time. The hens migrate southwards, he thinks, leaving the males at home, so that the latter are far more plentiful throughout the winter than the former. In Glendale, he says, the females generally disappear before the end of November, and few are seen, and these few always in distinct groups by themselves until the month of March. Soon after the return of the females from their trip to the south the birds begin to pair and nidification commences. The nest is a wonderful work of art, as every boy knows. Waterton declares that he has seen a chaffinch, as he had seen a humming-bird in Guiana, interweave a cobweb with the lichen of its nest to attach the material more closely and neatly! It is one of the most compact and well made of bird's-nests, often hidden in the fork of a branch in the Thorn, Whin, and Wild Rose, and the better concealed from its grey colour, which resembles that of the branch in which it is concealed. It is lined with soft materials, hair, wool, and feathers, and the young are born blind. The eggs are four or five in number, and occasionally, says a Northumbrian naturalist, "we have found the female sitting contentedly on three." He adds that when four are laid, if one be taken out in her absence she will continue to sit on the other three, but if another be removed she will at once desert the nest. The same thing will happen if five be laid and two extracted—she will incontinently desert! In one case she will sit on three, in the other case she declines to do so. This is strange, indeed. If she will spare the spoiler one in four, why not spare him two in five? The chaffinch produces two broods in the season, and is fairly prolific, satisfactorily secure from molestation during nidification and tolerably safe afterwards, tame as it is, for a more friendly little bird hardly exists. He or she is ever in our path, more agile than timid, moving along in hops and leaps, flitting into the hedge, and occasionally in full flight, first rising, then falling in its course, as it opens or closes its wings. It is a hardy bird, and will live in a cage many years. A canary at Hampstead lived in its cage eleven years, a chaffinch fifteen. H.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, DEC. 8, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLASHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 48 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.		
Dec.	In.	In.	°	°	°	°	°	°		In.
2	30.11	+0.37	43.0	29.0	14.0	36.4	-5.3	34.5	WNW	0.03
3	30.15	+0.40	49.4	27.8	21.6	41.2	-0.6	39.4	WSW	0.00
4	30.29	+0.54	50.3	42.0	8.3	47.0	+5.2	43.0	S.W.	0.00
5	30.32	+0.56	50.8	41.2	9.6	47.4	+5.7	40.8	W.	0.00
6	30.31	+0.55	52.0	44.8	7.2	49.0	+7.4	45.4	WSW	0.00
7	30.46	+0.69	51.5	44.0	7.5	48.2	+6.7	44.0	WSW	0.00
8	30.37	+0.60	50.3	43.7	6.6	47.5	+6.1	43.3	WSW	0.00
Mean	30.29	+0.53	49.6	38.9	10.7	45.2	+3.6	41.5	WSW	0.03

- Dec. 2.—A dull, cloudy, cold, damp day. Fog all day, very dense at night. Little rain in early morning.
- 3.—Dull, very cloudy and foggy till 3 P.M., fine afterwards. Cloudless at night.
- 4.—Overcast and dull till evening, then fine. Cloudless at night. Mild.
- 5.—A dull cloudy day, yet fine and mild. Overcast at night.
- 6.—Dull morning, fine till night, then again dull. Mild.
- 7.—A fine day, but cloudy. Overcast at night. Mild.
- 8.—Overcast and dull till night, then fine and cloudless. A mild day. Little thin rain at 9 A.M.

LONDON: Barometer.—During the week ending Saturday, December 4, in the vicinity of London, the readings of the barometer at the level of the sea increased from 30.31 inches at the beginning of the week to 30.47 inches by the night of November 29, decreased to 30.09 inches by the afternoon of December 1, and increased to 30.52 inches by the end of the week. The mean reading for the week at sea level was 30.35 inches, being 0.40 inch above that of the preceding week, and 0.44 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 51° on November 28 to 43° on December 2; the mean value for the week was 48°. The lowest temperatures of the air observed by night varied from 27° on December 3, and 29° on the 2d, to 42° on the 4th; the mean value for the week was 36°. The mean daily range of temperature in the week was 12°, the greatest range in the day being 21° on December 3, and the least 8°, on the 4th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Nov. 28, 46°.3, +4°.7; 29th, 46°, +4°.3; 30th, 41°, -0°.7; Dec. 1, 46°, +4°.3; 2d, 36°.4, -5°.3; 3d, 41°.2, -0°.6; 4th, 47°, +5°.2. The mean temperature of the air for the week was 43°.4, being 1°.7 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 87° on November 28, 62° on the 29th, and 76° on the 30th; on the remaining days of the week the highest readings were between 50° and 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 23° on December 3 and 24° on the 2d; the mean of the seven lowest readings was 33°.

Wind.—The direction of the wind was S.W. and W.S.W., and its strength moderately strong at times.

The weather at the beginning of the week was fine, but generally dull afterwards. Fog was prevalent on December 2, 3, and 4.

Rain.—Rain fell on December 1 and 2, but only to the amount of 0.04 inch.

ENGLAND: Temperature.—During the week ending Saturday, December 4, the highest temperatures of the air observed by day were above 55° at Truro, Plymouth and Sunderland and below 51° at Norwich, Nottingham and Hull; the mean value from all stations was 52°. The lowest temperatures of the air observed by night were below 30° at Blackheath (London), Leicester, Cambridge, Birmingham, Nottingham and Hull, and above 35° at Plymouth, Brighton, Liverpool and Sunderland; the general mean from all places was 31°. The extreme range of temperature in the week was more than 23° at Blackheath (London), Leicester and Cambridge; and less than 17° at Brighton and Bradford; the mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was above 53° at both Truro and Plymouth, and below 49° at Blackheath (London), Norwich, Wolverhampton, Nottingham, and Hull; the mean from all places was 50°. The mean of the seven low night temperatures was below 37° at Blackheath, Wolverhampton, and Hull, and above 43° at Liverpool and Sunderland; the general mean from all stations was 39°. The mean daily range of temperature in the week was more than 12° at Truro, Cambridge, Wolverhampton, and Hull, and less than 8° at Bradford and Sunderland; the mean daily range of temperature from all places was 10°.

The mean temperature of the air for the week from all stations was 45°, being 18° higher than the value for the corresponding week in 1879. The mean temperature was above 47° at Truro, Plymouth, and Liverpool, and below 43° at Wolverhampton, Nottingham, and Hull.

Rain.—The amounts of rain measured during the week were small everywhere, and varied from 0.30 inch at Liverpool, to 0.03 inch at Sunderland; the average fall over the country was 0.10 inch.

The weather during the week was mild, dry, and generally dull and gloomy. Fog was prevalent on the 2d, 3d, and 4th of December.

SCOTLAND: Temperature.—During the week ending Saturday, December 4, the highest temperatures of the air observed by day varied from 54° at Leith to 50° at Paisley; the average value from all stations was 52°. The lowest temperatures of the air observed by night varied from 30° at Perth to 37° at both Glasgow and Greenock; the mean from all places was 33°. The mean range of temperature from all places was 19°.

The mean temperature of the air for the week from all stations was 43°, being 16° higher than the value for the corresponding week in 1879. The highest were 45° at Glasgow and 45° at Leith, and the lowest were 41° at Aberdeen and 42° at Dundee.

Rain.—The heaviest falls of rain were at Greenock, 2.45 inches; Paisley, 1.32 inch; and Glasgow, 1.14

inch; and the least falls were at Aberdeen, 0.43 inch, and Leith 0.60 inch; the average fall over the country was 1 inch.

JAMES GLAISHER, F.R.S.

Obituary.

ON Sunday, November 28, there passed quietly away, at Aylesbury, at the ripe old age of eighty-three, a very eminent medical man and a horticultural amateur of no mean mark. For many years Mr. ROBERT CEELY was one of the most diligent and successful cultivators known of the genus *Cactus*. All the time he could snatch from his extensive and laborious practice was spent in his greenhouses, hybridising and fertilising the flowers of his favourites. He raised many beautiful and interesting varieties and hybrids from seed; and when his houses were in full bloom nothing gave him greater pleasure than to throw them open to his friends, and descendant upon the beauties and merits of his pet plants. He was particularly successful in the cultivation of the night-flowering *Cereus*, and it was no uncommon thing for him to have nearly 100 blooms expanded at the same time. It is much to be regretted that Mr. Ceely never gave his horticultural knowledge and experience to the public, but he was one of those singularly modest men who think nothing of their own eminence and ability, and to whose worth it is a duty, quite as much as a pleasure, to testify when they are gone. *H. Harpur Crewe, The Rectory, Drayton-Beauchamp, Tring, Nov. 7.*

Enquiries.

He that questioneth much shall learn much.—BACON.

DEVONSHIRE CREAM.—Please to give full instructions for making the Devonshire, or clotted cream, and very much oblige *Baltimore*.

FUEL.—What is the cheapest fuel, where Newcastle coke is 20s. per ton, and best Silkestone coal 21s. per ton, for tubular and saddleback boilers? *Subscriber*.

SINGLE WHITE CAMELLIA.—Where may this be obtained? *B.*

Answers to Correspondents.

AFFODILLUS: *Enquirer*. This term was applied by old writers to *Iris florentina*, not to any *Narcissus*.

BOOKS: *Young Gardener*. Johnson's *Cottage Gardener's Dictionary* (Bell & Sons), of which a new edition is in the press.

ERRATUM.—At p. 732, col. b, for Mr. Leywood read Mr. Tugwood.

FUEL PEAT: *J. H.* would be able to buy fuel-peat from Mr. Beckett, Whixall, Salop, if he does not live at too great a distance, and the carriage is not a serious item. It is usually called "turf" here. *G. T. Shaw, Nantwich*.

CHAMÆRANTHEMUM GAUDICHAUDII: *Aber.* *Chamæranthemum Gaudichaudii* is a low growing Acanthad of the easiest stove culture, with smooth oval leaves freely marked with silvery variegation—not at all like *Lygodium scandens*, so there is an error somewhere. We do not know *Croton "salaicifolius"*, but it is probably another name for *C. angustifolius*.

GRAFTING ORANGE TREES: *X.* The best time is during the early spring months—say early in March. Whip-grafting is the best method. The trees should be kept in a close frame for some time after the operation is performed. They do best if a frame can be placed inside a house where there is a little heat.

LAPAGERIA ROSEA: *G. Humphrey*. There is a great variation in the size of the flowers on plants raised from seed. Yours is an exceedingly fine type, but we have seen as good before.

LICHEN ON PATHS: *Old Subscriber*. A solution of common salt, put on hot, will kill the weed, and brighten up the surface. Another remedy is to water with a solution of oil of vitriol, 1 lb. to 10 quarts of water. We have no doubt that carbolic acid would be also effectual, and advise an experimental trial as to the strength, as the proportion would depend on the strength at which it was procured.

PORPHYRYTIC GRAVEL: *J. G. C. G. P. Benest & Co.*, 83, Lower Thames Street. See an article at p. 749.

ROCK PLANTS: *J. H. Savory*. You will get a much more satisfactory selection by visiting some nursery or private garden where a good collection is grown: the choice is so large, and you would thus the better meet your own taste. The high rock banks would be well suited for a collection of Clematises in the portions well exposed to light, but in your sandy soil they would require manuring at planting and a good annual mulching. In the shady parts you cannot do better than establish a hardy fernery, choosing the finer varieties of *Polypodium vulgare*, *Scolopendrium vulgare*, *Lastrea semita*, and the *Polystichums*, as an evergreen furnishing, and introducing between them the elegant but annual-fronded *Athyriums*, and the semi-annual-fronded

Lastreas. If you do not wish to plant Ferns, a selection of choice Ivies would be suitable. There are few flowering subjects that would be effective; *Hypericum calycinum*, a low shrub about a foot high, is one of the best. *Sedums*, *Sempervivums*, *Saxifragas*, *Armerias*, *Vincas*, *Primulas*, and *Campanulas* offer a large choice for the exposed rockwork, and by no means exhaust the supply.

RUSSELLIA JUNCEA: *Aber.*—This is a tall slender-growing stove plant, which grows freely in open well-drained peaty soil, but should have plenty of water when growing. The central stem should be tied to a tall erect stake, and the laterals allowed to droop all around, fountain-like, which they do most elegantly, and have a very handsome appearance when well furnished with the scarlet tubular blossoms. It may also be grown in suspended baskets.

TACSONIA EXONIENSIS: *Mrs. G. H. G.* Rich crimson with a blue centre.

NAMES OF PLANTS: *Jas. Cubitt*. A *Pleurothallis*, which we regret to be unable to name.—*T. Carlton*. *Epidendrum ciliare*.—*T. W. S.* *Cymbidium sinense*.—*H. M. R.* *Jacquinia ruscifolia*.—*F. A. D.* *Cyrtanthus McKenii* (see fig. 151). It is an interesting bulbous plant, found at Port Natal by Mr. Mark J. McKen, in whose honour it was named by Sir



FIG. 151.—CYRTANTHUS MCKENII.

Joseph Hooker. See *Gardeners' Chronicle*, 1869, p. 641.—*A. B.* 1, *Selaginella Poulterii*; 2, *S. Kraussiana* (denticulata, Hort.); 3, *S. stenophylla* (microphylla, Hort.); 4, *S. Martensii*; 5, *S. uncinata* (caesia, Hort.). The *Primula* appears to be of a good type, but nothing extraordinary.—*H. J. C.* We only name six specimens at one time. 1, *Cyrtanthus caryotideum*; 2, *Adiantum formosum*; 3, *Nephrolepis pectinata*; 4, *Pteris hastata*; 5, *Adiantum tenerum*, apparently; 6, *Pteris cretica albo-lineata*. Many of the specimens are very poor.—*J. C. T.* 1, *An flex* we do not recognise—we will inquire; 2, *Euonymus europæus*; 3, *Rhamnus Alaternus*; 4, *Buddleia globosa*; 5, *Euonymus radicans*; 6, *Schizostylis coccinea*.—*J. Martin*. A very interesting Moss, *Bryum ligulatum*.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—James Cocker & Sons (Aberdeen), General Catalogue of Nursery Stock.—Putz & Roes (Erfurt) and London Dépôt, 50, Great Russell Street), Annual Trade Seed List.—William Fell & Co. (Wentworth Nurseries, Hexham), Catalogue of Forest and Ornamental Trees and Shrubs, &c.—Corry, Soper, Fowler & Co. (Finsbury Street, E.C.), Trade Price List of Sundries, and Tobacco Preparations Free of Duty.

COMMUNICATIONS RECEIVED.—H. C.—Ebor.—F. S.—C. W.—F. A.—Peplow.—A. O.—B. F.—M. D.—A. I.—W. F. B.—W. R. B.—P. H. G.—D. S.—W. B.—F. L.—I. D. H.—G. M.—Dr. W.—J. R.—C. S.—H. W.—W. C.—J. C.—B. D.

DIED, on December 3, at 7, Woodland Terrace, Plymouth, aged seventy-two, MARY LYNE PONTEY, relict of the late Alexander Pontey, nurseryman and seedsman.

Markets.

COVENT GARDEN, December 9.

Large supplies of St. Michael Pines are now reaching us, causing English fruit to fall considerably in value, and hang upon the market. The supply of Grapes is now falling off, and good well-kept samples will begin to realise better prices. Trade quiet. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	.. 2 0-5 0	Lemons, per 100	.. 6 0-10 0
Cobs, per lb.	.. 1 0-2 0	Pears, per dozen	.. 1 6-5 0
Grapes, per lb.	.. 2 0-3 0	Pine-apples, per lb.	.. 1 0-2 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe,	per doz. .. 3 0-6 0	Horse Radish, p. bun.	4 0-..
Asparagus, Fr., bndl.	1 6-2 0	Lettuces, Cabbage,	per doz. .. 0 6-1 6
Beans, French, p. lb.	0 9-..	Mint, green, bunch.	0 4-..
Beet, per doz.	.. 1 6-2 6	Mushrooms, p. bask.	1 6-2 0
Cabbages, per doz.	.. 1 0-2 0	Onions, per bushel.	5 0-..
Carrots, per bunch.	0 4-0 6	— Spring, per bun.	0 6-..
Cauliflowers, Eng-	lish, each .. 0 3-0 6	Parsley, per bunch.	0 4-..
Celery, per bundle	.. 1 6-2 0	Radishes, per bun.	0 2-..
Chilis, per 100	.. 3 0-..	Rhubarb, per bund.	1 0-..
Cucumbers, per doz.	6 0-9 0	Seakale, per basket	2 6-..
Endive, per doz.	.. 1 0-1 6	Small salading, pun.	0 4-..
Garlic, per lb.	.. 1 0-..	Spinach, per bushel	4 0-..
Herbs, per bunch	.. 0 2-0 4	Tomatoes, per lb.	0 9-1 0
		Tunips, new, bunch.	0 4-..

POTATOS:—Kent Regents, 8s. to 10s.; Champions, 6s. to 8s.; Best Regents, 12s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag. No change; supplies very large, and trade heavy.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	.. 6 0-12 0	Evergreens, in var.,	per dozen .. 4 0-18 0
Bouvardias, per doz.	12 0-24 0	Ferns, in variety, doz.	4 0-18 0
Chrysanth., p. dozen	6 0-18 0	Ficus elastica, each	1 6-7 6
Cyclamen, per doz.	12 0-18 0	Foliage Plants, vari-	ous, each .. 2 0-10 6
Cyperus, per dozen	6 0-12 0	Fuchsias, per dozen	9 0-12 0
Dracena terminalis	30 0-60 0	Hyacin., Rom., doz.	15 0-18 0
— viridis, per doz.	12 0-24 0	Myrtles, per doz.	6 0-12 0
Epiphyllum, per	dozen .. 18 0-30 0	Palms in var., each	2 6-21 0
Erica gracilis, dozen	9 0-18 0	Primula, single, per	dozen .. 5 0-6 0
— califra, per doz.	8 0-12 0	Solanums, per dozen	6 0-18 0
— hyemalis, .. 12 0-36 0		Tulips, 12 pots	.. 12 0-..
Euonymus, various,	per dozen .. 6 0-18 0		

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3-0 6	Marguerites, 12 blms.	0 4-0 9
Arum Lilies, 12 blms.	6 0-9 0	Mignonette, 12 bun.	4 0-9 0
Asters, 12 bunches.	9 0-12 0	Narcissus, Paper-	White, 12 sprays.. 3 4-0 4
Bouvardias, per bun.	1 0-2 0	Pelargoniums, 12	sprays .. 0 9-1 6
Camellias, per dozen	3 0-6 0	— zonal, 12 sprays	6 0-9 0
Carnations, 12 blms.	1 0-2 0	Primula, double, per	bunch .. 1 0-1 6
Chrysanth., 12 bun.	3 0-9 0	— single, 12 sprs.	0 9-1 6
— 12 blooms	.. 0 3-2 0	Roses (indoor), doz.	2 6-10 0
Cyclamen, 12 blms.	0 3-0 6	Stephanotis, 12 spr.	9 0-15 0
Epiphyllum, 12 blms.	1 0-1 6	Tropeolum, 12 bun.	1 0-3 0
Eucharis, per doz.	.. 4 0-9 0	Tuberose, per dozen	1 6-3 0
Gardenias, 12 blms.	9 0-18 0	Violets, 12 bunches.	1 6-2 6
Heliotropes, 12 sp.	0 6-1 0	— Neapolitan, Fr.,	per bunch .. 3 6-5 0
Hyacinth, Roman,	12 sprays .. 2 0-3 6	— Crar, Fr., bunch	2 0-3 0
Lapageria, white, 12	blooms .. 4 0-6 0		
— red, 12 blooms.	1 0-3 0		
Lilac, Fr., per bunch	8 0-10 0		

SEEDS.

LONDON: Wednesday, Dec. 8.—The market to-day was well attended, but the business transacted was limited. Values all round keep exceedingly firm. The inferiority of the new samples of red Clover seed causes the attention of buyers to be devoted to fine yearling parcels, and for these more money is now asked. As regards Trefoil the tendency of quotations is still upwards. Italian Rye-grass continues extremely steady. For wrinkled seed Peas there is a brisk inquiry, and growers can now obtain on Mark Lane highly remunerative rates for same. Bird seeds, as is usual towards Christmas, move off very slowly. Königsberg spring Tares, being good and cheap, meet with favour. Haricot Beans sell freely; forming a cheap and excellent article of food, their consumption in this country increases year by year. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

POTATOS.

The Borough and Spitalfields markets reports state that full average supplies were on offer, and the trade dull at the following quotations:—Scotch Regents, 95s. to 110s. per ton; ditto Victorias, 110s.; ditto Champions, 90s.; Essex Regents, 80s. to 90s.; ditto Champions, 80s. to 90s.; Belgian Kidneys, 3s. 9d. per bag; German Reds, 4s. 6d. to 5s. 6d. per bag.—The imports into London last week consisted of 78,993 bags from Hamburg, 1401 Bordeaux, 4585 Ghent, 3002 Bremen, 125 tons Roscoff, 110 Harfeur, 15,500 bags Stettin, 1106 bags 398 tons Rouen, 5194 bags Bremen, 10 bags Rotterdam, 200 Boulogne, 44 Antwerp, and 815 bags Harlingen.

COALS.

The following are the prices current at market during the week:—East Wylam, 16s. 6d.; Bebside West Hartley, 14s. 9d.; Ravensworth West Hartley, 14s. 9d.; Walls End—Hetton, 17s. 6d.; Hetton Lyons, 16s.; Lambton, 17s.; Original Hartlepool, 17s. 6d.; Wear, 16s.; Chilton Tees, 17s.; South Hartlepool, 17s.; Tees, 17s. 3d.

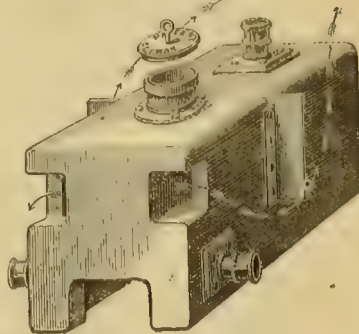
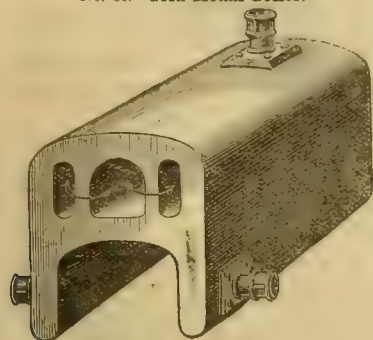
CONTRACTORS TO HER MAJESTY'S WAR AND PRISONS DEPARTMENT.

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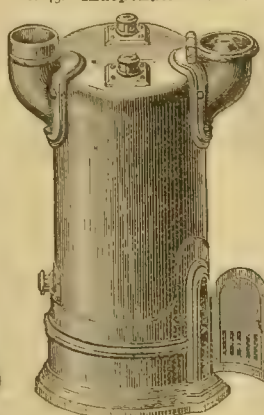
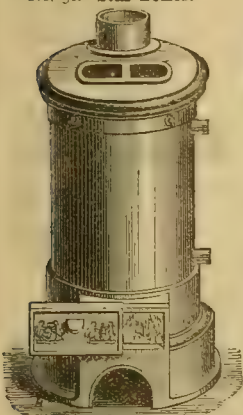
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IRONFOUNDERS,*35 & 36, UPPER THAMES STREET,
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No. 47.—Climax Boiler.

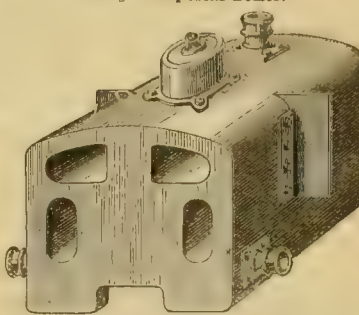
This being the Season for Hot-water
Work, we beg respectfully to call attention to
our Stock, which is the largest in London, of**HOT-WATER PIPES,
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*COIL CASES, FURNACE
FITTINGS,*And all Requisites for
HORTICULTURAL PURPOSES.We shall be glad to forward
Illustrated PRICE LISTS, on appli-
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No. 51.—Star Boiler.

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AWARDED THE "ONLY GOLD MEDAL" EVER OFFERED FOR BEST BOILER IN WORKING COMPETITION

*Price 1s. stitched.***HOW TO GROW MUSHROOMS.**

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HYDRAULIC ENGINEERS,
WHITEFRIARS STREET, LONDON, E.C.****THE IMPROVED SELF-ACTING HYDRAULIC RAM.**This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to
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CHRISTMAS TREES, fine bushy plants, 3 to 4 feet, 10s. per 100; 4 to 5 feet, 20s. per 100. Cash with order.

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H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN AND FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality. Seed Growing Establishment, Wisbech.

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RASPBERRY CANES.—Grown on soils specially adapted for the growth of best rooted plants, packed and put on rail either for home or abroad, with instructions for their culture, if desired.

Fastoli, 4s. per 100; 500,000 Carter's, at lowest quotations. Cheque or Post-office Order with order.

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R. AND A. MORRISON offer the following

ALDER, incana, transplanted, 18 to 30 inches, fine. glutinosa, transplanted, 18 to 30 inches, fine.

ASH, 1-yr. seedling, strong. common, transplanted, 9 to 12 and 12 to 18 inches. Mountain, transplanted, 1½ to 2, 2 to 3, 3 to 4, and 4 to 6 feet, fine.

APPLES, Crab, 2-yr. fine. transplanted, fit for working.

ELM, Scotch, 1 and 2-yr. seedlings, strong.

LABURNUM, Scotch, 1 and 2-yr. seedlings, strong.

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PINUS AUSTRIACA, transplanted, 1-yr., 1-yr.; 2-yr., 2-yr., strong and fine.

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MONTANA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., strong and fine.

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PEARS, 2-yr. seedlings, fine. transplanted, fit for immediate use.

POPLARS, sorts, transplanted, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.

FIR, Scotch, true native, 1-yr. 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., 4 to 6, 6 to 9, 9 to 12 inches, transplanted, very fine.

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ARBOR-VITÆ, American, transplanted last year, finely rooted, 1 to 1½, 1½ to 2, and 2 to 3 feet.

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3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 20s.; 4-bushel bags, 4d. each.

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PEAT, for Rhododendrons, &c., of excellent quality, on rail, Ringwood Station, Hants, in trucks of 4 tons, £3; do., coarse and fine SAND, 25s. per truck; selected Peat and compost for choice plants. Fresh gathered SPHAGNUM, &c. Chief Office and Depot, Ringwood Station, Hants. F. G. GATERELL, Manager.

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COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons, invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1s. each; 15 Sacks, 12s.; 30 Sacks, 20s. (all Sacks included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 300 bushels), free on rail, 25s. Terms cash with order.

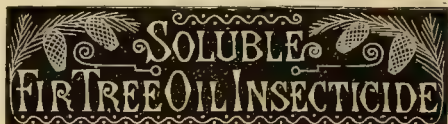
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Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

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WATERPROOF TREE and PLANT

LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times.

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Highly commended by all the Gardening Papers.

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TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

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Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The

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DOUBLE, TRUSS PATENT TRUSS PATENT EXPANSIVE
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QUADRUPLE JOINTS.
ANY LABOURER CAN FIX THEM.

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WROUGHT-IRON HOT-WATER BOILERS,

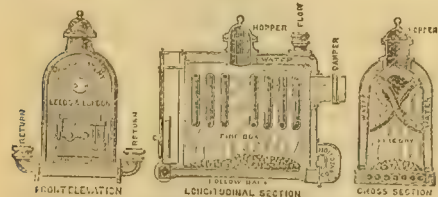
With Tubes or Shelves, and Hollow or Ordinary Cast-iron Grate Bars.

SADDLE BOILERS,

With WATERWAY BACKS and WELDED BOILERS, Specially adapted for Heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

They are the neatest, cheapest, most effective and durable of any extant.

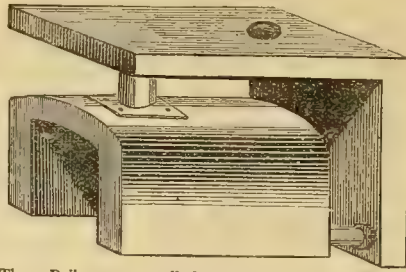
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These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

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20 in.	18 in.	300
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24 "	24 "	700
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28 "	28 "	1800

Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Ballam Hill, S.W., May 29, 1873.

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Tees (No. 33)	1 5	2 4	3 3	4 0
Syphons (No. 23)	1 3	2 0	3 0	4 0

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The "Expansion Joint." The Best and Quickest Made.



This joint, being easily removed, is specially adapted for Tenants.

Pipes (6 ft. long)	2-in.	3-in.	4-in.	5-in.
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Joint complete, with Rubbers and Pins, 2-in., 3-in., 4-in., 5-in.

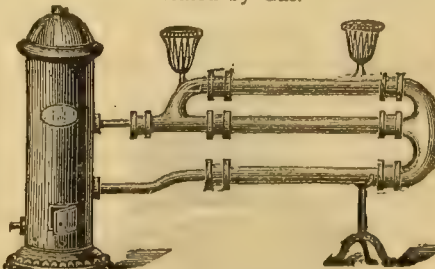
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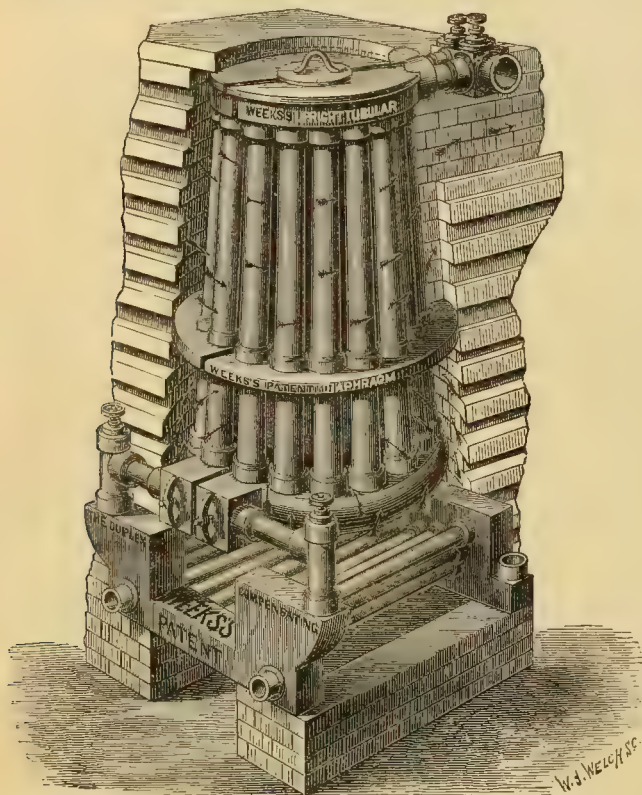
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The Chair to be taken at 6 o'Clock precisely. By Order,
EDWARD R. CUTLER, Sec.
14, Tavistock Row, W.C., December 14.
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LILIAM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Fruit Trees, Roses, and General Nursery Stock.
W. B. ROWE and CO. (Limited) offer a large and very extensive collection of the above, in fine condition, well rooted for removal. Inspection solicited.
Barbours Nurseries, Worcester.

FOR ABSOLUTE SALE, having to give up the land, strong transplanted Deciduous TREES, up to 10 and 12 feet, 4s. to 6s. per dozen; Standard APPLES, from 6 to 8 feet, 6s. to 9s. per dozen, or from 45s. per 100; other Nursery Stock correspondingly cheap. For LIST apply to
T. L. MAYOS, Nurseryman, Hereford.

Floral Commission Agency.
NOTICE TO SENDERS.—All Goods consigned to W. CALE, Floral Commission Agent, must be sent not later than Thursday Morning, December 23.
4, Tavistock Row, Covent Garden, W.C.

LARGE CONSIGNERS of CUT FLOWERS, CHOICE FRUITS, &c., are requested to communicate with
WISE and RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

UNWIN'S CUT FLOWER and FRUIT COMMISSION AGENCY is open to receive consignments of GRAPE, WANTED, CUT FERN.
Letters, 13 and 14, James Street, Covent Garden, W.C.

WANTED, a few Hundreds of good strong Standard ROSES. State price and quantity to
R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, Seedling BRIERS (Dog Rose), fit for Immediate Working; also DE LA GRIFFEKALE STOCKS. State price per 1000 to
BELL and SON, Nurserymen, Norwich.

Manetti Stocks.
WANTED, a few thousand good MANETTI STOCKS. Address, stating quantity and price, to
Z. L., Gardeners' Chronicle Office, W.C.

WANTED, MANETTI STOCKS. State quantity and price to
R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, MANETTI STOCKS, best quality. Send sample, stating quantity and price, to
JAS. DICKSON and SONS, "Newton" Nurseries, Chester.

WANTED, MANETTI STOCKS—strong clean stuff, fit for working next summer. Quote lowest price per 1000 to FRANCIS & ARTHUR DICKSON & SONS, The "Upton" Nurseries, Chester.

WANTED—AURICULAS, green, grey, and white-edged varieties; DOUBLE PRIMROSES, rose, bluish, and salmon colour; DOUBLE POLYANTHUS; DOUBLE VIOLETS, choice varieties. Send price, description, and quantity, to
C. C., Gardeners' Chronicle Office, W.C.

To Nurserymen.
WANTED, 80 or 100 EUONYMUS BUSHES. Not less than 3 feet high and bushy. Cash price on rail to
R. W., 134, Cheapside, London, E.C.

WANTED, Special Quotations of Surplus Stock of THUJAS, PICEAS, AUCUBAS and EVERGREEN SHRUBS of sorts, per 100 or 1000, from 2 to 3 feet high, delivered free to
W. HOPWOOD and SON, Nurserymen, Cheltenham, Midland or Great Western Station.

WANTED, AUCUBA JAPONICA, Green BOX, and RHODODENDRONS—short, bushy stuff, about 6 to 9 inches, for planting out. Send samples and lowest cash price per 1000 to
W. FROMOW and SONS, Sutton Court Nursery, Turham Green, W.

To the Trade.
WANTED, FOUR STANDARD EVERGREEN OAKS, with good heads. Reply, with price and height, to
W. H. TOVEY, 50, St. John's Wood Terrace, St. John's Wood, N.W.

WANTED, FOUR STANDARD FIGS, 4 feet stems, well grown. State price, with particulars, to
JNO. JEFFERIES and SONS, Royal Nurseries, Cirencester

WANTED, MUSHROOM SPAWN; also CRAB and PLUM STOCK, fit for working. Send lowest price to
T. EVES, Gravesend Nurseries.

SUTTON'S AMATEUR'S GUIDE contains the best Novelties of the Season. 1s. 3d., post-free. Gratis to Customers.

SUTTON'S AMATEUR'S GUIDE. One of the most practical works on Gardening. 1s. 3d., post-free. Gratis to Customers.

SUTTON'S AMATEUR'S GUIDE. Beautifully Illustrated with Coloured and other Engravings. 2s. 3d., post-free. Gratis to Customers.

SUTTON'S AMATEUR'S GUIDE is now being posted to all Messrs. Sutton's Customers. If not received Messrs. Sutton should be written to. Non-customers may obtain it post-free for 15 stamps, or for 1s. at all the Bookstalls.
Royal Berks Seed Establishment, Reading.

To the Trade.
E. P. DIXON, Hull, has a Surplus Stock of named HYACINTHS, and will be glad to send LIST of Names and Prices on application.

Seed Catalogue.
V. SCHERTZER and SONS, SEEDSMEN and FLORISTS, Haarlem, Holland, beg to announce that their Wholesale LIST of Garden Seeds is now ready, and may be had post-free on application.

HANDSOME CHRISTMAS TREES, 4 feet, 6s.; 5 feet, 8s.; 6 to 7 feet, 12s. per dozen, cheaper by the 100. Cash or satisfactory reference from unknown correspondents.
W. WRIGHT, Nurseryman, Relford, Notts.

AZALEA INDICA.—Twelve New and Beautiful Azaleas, 21s.; large, full plants in 5-inch pots, about 1 foot over, crowded with buds (50 to 100 on each plant); finest known sorts, Double Whites, &c. Packages gratis for cash, with order. A few fine specimens, 10s. 6d. and 21s. each.
J. H. LEY, Royal Nursery, Croydon.

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. **HARDY AZALEAS**, a selection of the most beautiful kinds known, all well furnished with buds.
Knapp Hill Nursery, Woking, Surrey.

EVERGREEN HEDGES, in great variety, very cheap.
Descriptive Price LIST on application.
RICHARD SMITH and CO., Nurserymen, Worcester.

Norway Spruce.
SANDY and SON have many thousands of the above to offer, fit for Forest Planting, from 1 to 3 feet. Prices and samples on application. Unknown applicants will please send cheque or reference with order.
The Nurseries, Stafford.

Forest Trees.
MUNRO BROTHERS, Inverness, N.B., have a large stock of the above, including transplanted true native SCOTCH FIR, LARCH, SPRUCE, HAZEL, ALDER, &c.

FINE ALDER, LARCH, ASH, from 1 to 6 feet. For prices apply to
GEORGE BUNYARD and CO., Maidstone.

Roses, Fruit Trees, &c.
WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
Ottershaw Nurseries, Chertsey.

DWARF ROSES.—Splendid grown stuff on Manetti. Best named varieties, 30s. per 100.
HEATH and SON, Exotic Nurseries, Cheltenham.

PYRAMIDAL FRUIT TREES.—Very finely grown Trees, with Fruit Buds, of the best APPLES and PEARS, are offered by
GEORGE BUNYARD and CO., Maidstone.

Fruiting Trees of APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds. Priced LIST on application to
J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

Vines—Vines—Vines.
J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

CABBAGE PLANTS, very fine autumn sown:—Early Enfield, Battersea, York, Rainham, East Ham, Sugarloaf, Wheeler's Imperial, Robinson's Champion Drumhead, Thousand-Head, Nonpareil, and Red Pickling, in any quantity, at 3s. per 1000. Low price quoted for large quantities.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

Seed Potatoes.
H. and F. SHARPE are prepared to make special offers of all the leading varieties of Seed Potatoes, grown from the finest selected stock and free from disease.
Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

3000 LILUM auratum, just received from Japan.
MR. J. C. STEVENS will **SELL** by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **MONDAY**, December 20, at half-past 12 o'clock precisely, an importation of 3000 Bulbs of **LILUM auratum**, just received from Japan; a consignment of choice **CAMELLIAS**, **AZALEAS**, **ZEPHYRANTHUS ROSEA** and other **BULBS** and **PLANTS**, from Messrs. Hovey & Co., of America; also fine **ENGLISH GROWN BULBS** of the lovely **LILUM NEILGERENSE**, **L. BROWNII**, **L. PARDALINUM**, **L. GIGANTEUM**, and many other rare kinds; a consignment of fine Bulbs of **TIGRIDIA GRANDIFLORA**, **GLADIOLI**, &c., from New Jersey; a great variety of choice hardy **BULBS** and **PLANTS** for the open border, and a quantity of **BULBS** from Holland.
 On view the morning of Sale, and Catalogues had.

Very Rare Orchids.—(Sale No. 5760.)
MR. J. C. STEVENS has received instructions from Mr. F. Sander, to **SELL** by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, December 23, instead of Monday the 20th, as previously announced, at half-past 12 o'clock precisely, Importations of New and Valuable **ORCHIDS**, including **Phajus Humblotii**. Professor Reichenbach says—"A most remarkable and unexpected novelty." (See flowers and drawings.) **Angraecum articulatum**, the Giant form of **Angraecum Ellisii**, and extremely rare, offered for the first time; the beautiful **Odontoglossum Alexandræ Lehmanni**, in splendid condition and fine pieces; **Calanthe sylvatica**, **Cymbidium rhodocharix**, **Cymbidium Loise Chauvieri**; **Aranthus grandiflorus**, **Eulophia ramostachya** (for description of these novelties see Catalogue); grand masses of **Cutleya labata** and **Oncidium phymatoclitum**; a large lot of **Anthurium Andreanum**, **Oncidium macranthum**, **Odontoglossum Edwardsi**, **Ouvirandra fenestralis**, **Angraecum sesquipedale**, and other species.—On view the morning of Sale, and Catalogues had.

Final Sale this Season—Monday Next.
MESSRS. PROTHEROE AND MORRIS will **SELL**, at the Mart, Tokenhouse Yard, opposite the Bank, E.C., on **MONDAY NEXT**, at half-past 11 o'clock precisely, a large consignment of First-class **HYACINTHS**, **TULIPS**, **CHOCUS**, **NARCISUS**, **GLADIOLUS**, and other **DUTCH BULBS**; a superb assortment of English grown **LILIES**, several thousands of Cape and other **BULBS**, **DARLINGFONIA**, **CALIFORNIA**, **DISA GRANDIFLORA**, **AMARYLLIS**, **PANCRATIUM**, **CALOCHORTIS**, **CALIFORNIAN LILIES**, **CARNATIONS**, **PICOTEES**, **HELLEBORUS**, and a variety of other **PLANTS** and **BULBS**.
 Catalogues at the Mart, and 58, Gracechurch Street, E.C.

Ilford, Essex—Clearance Sale.
MESSRS. PROTHEROE AND MORRIS will **SELL** by AUCTION, on the Premises, Clement's Estate, opposite the Ilford Railway Station on **TUESDAY** next, December 22, at 12 o'clock, by order of Messrs. J. A. & A. Withers, Without Reserve (a further portion of the estate being required to be cleared for building purposes), the whole of the fine **GROWING TIMBER**, a large quantity of **BRICKS**, the whole of the fine **PYRAMIDAL FRUIT TREES**, in excellent condition for transplanting; 5000 roots **MYATT'S VICTORIA RHUBARB**, &c.
 Catalogues had at principal local Inns, and of the Auctioneers, 93, Gracechurch Street, E.C., and Leytonstone, E.

Important Sale of 200 Choice Double Camellias and AZALEA INDICA, compact plants, well set, $1\frac{1}{2}$ to $2\frac{1}{2}$ feet; 400 handsome Standard and other **ROSES**, selected **FRUIT TREES**, hardy **CONIFERÆ**, **SHRUBS**, **AMERICAN PLANTS**, with a collection of **DUTCH BULBS**, &c.

MESSRS. PROTHEROE AND MORRIS will **SELL** by AUCTION, the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on **TUESDAY**, December 22, at 12 o'clock precisely.
 On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 93, Gracechurch Street, E.C., and Leytonstone, E.

Victoria Nurseries, Springbourne, Bournemouth.
 About ten minutes' walk from the East Railway Station.
IMPORTANT SALE of Valuable SURPLUS NURSERY STOCK.

MR. ALFRED H. JOLLIFFE has been favoured with instructions from Mr. E. White to **SELL** by **PUBLIC AUCTION**, as above, on **MONDAY**, December 20, and following day (if necessary), commencing at 12 o'clock, a portion of the valuable **NURSERY STOCK** of Ornamental and Flowering **SHRUBS**, **FOREST TREES**, **EVERGREENS**, &c., including the following choice and other varieties:—

10,000 Scotch Firs	20,000 Common Laurel
1,000 Horse Chestnut	2,000 Sycamore
1,500 Beech	5,000 Privet
800 Cupressus Lawsoniana	1,000 Cupressus macrocarpa,
500 Portugal Laurel	in pots
400 American Arbor-vitæ	1,000 Lavender
400 Chinese Arbor-vitæ	200 English Yews
200 Thuja compacta, Berberis Darwinii, Poplar and Snowberry	500 Rhododendron ponticum
500 Ribes	1,000 Pinaster

The Auctioneer invites the special attention of Gentlemen, Builders, and Landscape Gardeners now planning to the fact of the stock being in splendid condition; having been shifted within the last eighteen months, it is now thoroughly well rooted, healthy and thriving.

Catalogues may be obtained at the Bournemouth Nurseries, Holdenhurst Road; also at the Offices of the Auctioneer, Bournemouth and Poole.

The Extensive and Valuable Collection of rare Stove and GREENHOUSE PLANTS and ORCHIDS formed by the late **JAMES JOHNSTONE, Esq.**

MESSRS. WEATHERALL AND GREEN will **SELL** by AUCTION, upon the Premises, Hooley House, Carlisle, Surrey, about 3 miles from Caterham Junction Station, on the main Brighton Road, by order of the Chancery Division of the High Court of Justice, on **TUESDAY**, January 11, 1881, and following days, at 11 for 12 o'clock each day precisely, the widely-known and very fine **COLLECTION** of **SPECIMEN STOVE and GREENHOUSE PLANTS**, consisting of **Azaleas** and **Camellias**, well-grown **Crotons**, **Palms**, **Bananas**, and Tree and other Ferns; a superb collection of **Orchids** of the rarest kinds; **Fruiting and Succession Pines**, **Vines**, **Greenhouse Plants**, **Heaths**, **Orange**, **Citron**, and other **Fruit Trees**, **Garden Implements**, and miscellaneous Effects.
 May be viewed and Catalogues obtained of **J. ANDERSON ROSE, Esq.**, Solicitor, 11, Salisbury Street, Strand, W.C.; of **HENRY PALMER, Esq.**, Solicitor, 32, Essex Street, Strand, W.C.; and of the Auctioneers, 22, Chancery Lane, W.C., or will be forwarded on application.

Valuable Nurseries in the West of England for Sale.

TO BE SOLD, by Private Contract, with Immediate Possession, the Goodwill and Stock of a **NURSERY BUSINESS**, established upwards of forty years, well situated and well watered, within three minutes' walk of a most important Market Town in the West of England. The property is held for the residue of a term of years, and comprise about $\frac{1}{2}$ Acres of Land, Dwelling-house, two large Glasshouses, Propagating-house, and Potting Sheds; also an extensive and varied stock of healthy **Shrubs**, **Fruit** and **Forest Trees**. The above is thorough *bona fide*, and there being a good business connection the property offers a first-class investment.

The fullest information and particulars can be obtained by letter, addressed B., 89, Bolsover Street, Great Portland Street, London, W.C.

To Florists, Gardeners, and Others.—Suit Growers.
FOR DISPOSAL, Convenient PREMISES, three-quarters of an Acre with Glasshouses and Cottage. Situate $\frac{1}{2}$ mile from Swiss Cottage. Lease fifteen years. Ground Rent £16 10s.

Further particulars of Mr. HERBERT DRAKE, Florist's Agent, 34, Finchley Road, St. John's Wood, N.W.

SEEDSMAN'S GENUINE CONCERN, main thoroughfare, 12 miles from London, extensive premises, low lease, low rent, well established remunerative business. Only £380, including everything. Must be sold at once. **SEEDSMAN**, 223, Upper Thames Street, London, E.C.

TO BE LET, an old-established **NURSERY**, **FLORIST**, and **SEEDSMAN'S BUSINESS**, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are Eight and a Half Acres of deep, rich soil, and all the necessary Glasshouses, &c., for carrying on a large business.—For particulars, Apply to **J. WATSON**, 38, Crown Street, Eury St. Edmunds.

In the High Court of Justice, Chancery Division.
 G. Gray, Jun.'s, Estate.—Gray v. Gray, Brox Nursery.

TO BE LET, the Old Established **NURSERY**, known as Brox Nursery, Chertsey, of 12 a. or 28 p., with or without Dwelling-house, Stable and Offices, 3 Greenhouses and Pits, and 2 Labourer's Cottages, very advantageously situated at Brox, Chertsey, about $\frac{1}{2}$ miles from the Working and Chertsey Stations on the South-Western Railway, together with the Goodwill, presenting an exceptionally good opportunity to any person wishing to secure a well established Nursery Business.

For particulars apply to Mr. R. WATERER, Receiver appointed by the Court, Auction and Estate Agency Offices, Chertsey; to **J. A. REDHEAD, Esq.**, Solicitor, Chertsey; or to Messrs. **HEATHFIELD AND SON**, Solicitors, 44, Lincoln's Inn Fields, London, W.C.

To Landscape Gardeners.

THE STRATFORD-UPON-AVON CORPORATION are prepared to **RECEIVE TENDERS** for the **LAYING-OUT** of **GROUNDS**, **FORMATION** of **WALKS**, **PLANTING SHRUBS**, &c., on the Site of New Cemetery, Evesham Road. Plans may be seen, and Specification and Quantities obtained, upon application to me at my Office on and after Saturday next, the 18th instant. Tenders to be sent in to me not later than January 1, 1881.

THOS. HUNT, Town Clerk.

TO GENTLEMEN SEEKING A PLEASANT HEALTHY OCCUPATION.

To Nurserymen wishing to Enlarge their Business.

To Gentlemen's Gardeners with Means.

THE DIRECTION of the **SUNNINGDALE NURSERY**, established and successfully conducted by **CHARLES NOBLE**, must now, owing to the age and failing health of the Proprietor (who has no son to succeed him), be delegated to more robust hands, and he is prepared to entertain proposals for importing into the business new energies, either wholly or in part. The Grounds are extensive, over two-thirds being Freehold, and one-third Leasehold, to run some time, with little chance of objection to renewal. The situation is one of the very best in England (only a few minutes' walk from a railway station); it contains within itself every kind of soil, from heavy loam to peat and pure sand; and the neighbourhood is admitted on the highest authority to be one of the most healthy positions in Great Britain. The owner is prepared to consider any *bona fide* proposal, either from one or more persons, and every reasonable facility will be given to persons of moderate means. Skill and enterprise will be taken into account, and as favourably considered as mere money value. The business is capable of extension, or can be limited at pleasure, and contains within itself several specialities of undoubted value.

Bagshot, Nov., 1880.

Testimonial to MR. WILLIAM MURPHY, [Leith Walk Nurseries, Edinburgh.]

MR. WILLIAM MURPHY, who has been for nearly thirty years Manager of the Leith Walk Nurseries, Edinburgh, being about to retire from the active duties of his situation, on account of ill health, it has occurred to many of his friends that this would be a fitting opportunity of showing their personal esteem and appreciation of the urbanity and energy which have uniformly marked his career.

Steps have accordingly been taken with a view to present him with a Testimonial, to which your kindly co-operation is most respectfully invited.

Subscriptions will be received up to January 31, 1881, by Mr. JOHN SADLER, Royal Botanic Gardens, Edinburgh. Mr. GEO. SIMPSON, Rosebank, Pilrig, Edinburgh. Mr. WM. YOUNG, 33, South Bridge, Edinburgh.

Joint Secretaries.

CHRISTMAS TREES.—Well formed, bushy, and of good colour, 3 to $3\frac{1}{2}$ feet, 15s. per 100; $3\frac{1}{2}$ to 4 feet, 20s. per 100. The Executors, **H. BLANDFORD**, The Dorset Nurseries, Blandford.

A LOE, golden-edged, large, of 14 years' growth, in a tub, to be sold for want of room. Apply to **W. TRELAUNY**, Earley, Reading.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application. **JAMES DICKSON & SONS**, NEWTON Nurseries, CHESTER.

At Reduced Prices.
DAFFODILS, **NARCISUS**, **HYACINTHS**, **TULIPS**, **ENGLISH and SPANISH IRIS**, **SPARAXIS**, **TRITONIAS**, **BABIANAS**, &c.

BARR AND SUGDEN, SEED AND BULB MERCHANTS, 12, King Street, Covent Garden, W.C.
DAFFODILS, 5s. to 21s. per 100; 30s. to 60s. per 1000.
NARCISUS TAZETTA, 10s. 6d. to 21s. per 100, 50s. to 100s. per 1000.

HYACINTHS for Bedding, 15s. to 21s. per 100.

for Pot Culture, 5s. to 9s. per dozen, 30s. to 60s. per 100.

TULIPS, in mixed colours, 3s. 6d. per 100, 30s. per 1000.

in named sorts, 4s. 6d. to 10s. 6d. p. 100; 40s. to 60s. p. 1000.

IRIS, English and Spanish, 3s. 6d. to 5s. 6d. p. 100.

IXIAS, **BABIANAS**, **SPARAXIS**, **TRITONIAS**, &c., 3s. 6d. to 7s. 6d. per 100, 30s. to 60s. per 1000.

BARR AND SUGDEN, 12, King Street, Covent Garden, W.C.

LILUM AURATUM—The beautiful Golden-rayed Lily.

Magnificent Bulbs, imported direct; each Root carefully enveloped in clay, for preservation during transit from Japan.

Price, each, 9d., 1s., 1s. 6d., 2s. 6d., and 3s. 6d.

Price, per dozen, 7s. 6d., 10s. 6d., 15s., 24s., 36s.

Trade Price, in cases containing about 100 Bulbs as imported, on application.

CARTERS, The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.

APPLE TREES with **MISTLETO** growing on them. Price from 7s. 6d. to 21s. each.

RICHARD SMITH AND CO., Nurserymen, Worcester.

New Japanese Apple.

MAULE AND SONS can supply 2-yr. old Seedlings of this most hardy and delicious preserving fruit, at 10s. per 100 (post-free); all hybridized and selected from the finest fruit. The Original Stock, 5s., 7s. 6d. and 21s. each.

The Nurseries, Bristol.

RHUBARB, Victoria and Albert, 16s. per 100. Cask and packing included.

T. EVES, Gravesend Nurseries.—Established 1870.

RHUBARB FOR SALE.—Extra strong Roots, for Forcing and Planting. Price, per dozen, 100, or 1000, of.

S. BIDE, Alma Nursery, Farnham, Surrey.

ASPARAGUS.—**ASPARAGUS**.—Extra strong forcing roots. Also **SEAKALE**. For price apply to

OSBORN AND SONS, The Fulham Nurseries, London, S.W.

JOHNSTONE'S ST. MARTIN'S

RHUBARB.—Earliest and best in cultivation, forces well. Strong Roots 1s. each, 9s. per dozen. Trade price on application.

Priced Trade CATALOGUE of Seedling and Transplanted Forest Trees, &c., free on application.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

SPRUCE FIRS!—SPRUCE FIRS!

For Christmas Trees.

SPRUCE FIRS, $1\frac{1}{2}$ to 2 feet, 4s. per 100; 30s. per 1000.

" 2 to $3\frac{1}{2}$ feet, 7s. per 100; 50s. per 1000.

JOHN PERKINS AND SON, 52, Market Square, Northampton.

Continental Seeds.

O. KNOPFF AND CO., Erfurt (Established 1834), offer their well known **FLOWER SEEDS** to the Trade. For CATALOGUES, &c., apply to

BECK AND POLLITZER, 211, Upper Thames Street, E.C.

Blooming Rhododendrons.

H. LANE AND SON, Nurseries, Berkhamstead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Potenticums, very cheap.

FRUITING PLANTS

of **PEACHES**, **NECTARINES**, **APRICOTS**, and **GRAPE VINES**, a large and fine stock, now offered for Sale.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

DWARF H.P. ROSES, 30s. per 100, £6 5s. per 500; in all the leading kinds. **LIMES**, **SYCAMORE**, **CHESTNUT**, **BEECH**, 6 to 15 feet, cheap, stout transplanted stuff. Wanted, 20,000 **MANETTI STOCKS**.

HENRY MAY, The Hope Nurseries, Bedale, Yorks.

Floral Decorations.

LUCOMBE, PINCE AND CO. are still

Booking Orders for the following cut flowers for Christmas:—**Arums**, **Azaleas**, **Camellias**, **Chrysanthemums**, **Poinsettias**, **Ixoras**, **Luculias**, and **Roses**.

Priced LIST on application.

Exeter Nursery, Exeter.—Established 1720.

ROSES, CLEMATIS, SHRUBS, FRUIT TREES, &c., the leading varieties, very strong and healthy.

Descriptive priced CATALOGUE post-free on application.

GEO. J. WOOLLETT, Nurseries, Caterham, Surrey.

QUICKS, extra fine and strong, 2 to 3 feet, 17s. per 1000. **PEAR STOCKS**, fine, 30s. per 1000.

LAURELS, $1\frac{1}{2}$ to 2 feet, bushy, 8s. per 100.

W. JACKSON, Blakedown, near Kidderminster.

WHITE CAPE FLOWERS.

Just arrived. Finest quality. Sample and price per 1000 on application.

TURNER BROS., Florists, 2, Parker Street, Liverpool.

MORRISON BROTHERS, Aberdeen, beg

to inform their friends in the Trade that they have now posted their **LISTS** for the season; if any are omitted, one will be sent on application.

They abound in Seedling and Transplanted **CONIFERS**, Seedling and Transplanted **FOREST TREES**, specially fine lot of 2-yr. Transplanted **SCOTCH FIR** and **LARCH**. Dwarf

ROSES, budded low on Manetti, and **TEA ROSES** from the open field worked low on the Seedling Brier. Priced

LISTS on application.

SEED POTATOS.—Myatt's Prolific, Royal

Ashleaf, Erin's Queen, Mona's Pride, Gloucester Kidney, Old Ashleaf, Veitch's Ashleaf, Snowflake, Magnum Bonum, Schoolmaster, International, Breadfruit, Scotch Champion, &c.

Prices, low, on application to

G. BRAMLEY, Hambleton, near Selby, Yorkshire.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.
Strong HOLLY, 9 to 12 inches high, 12s. per 100.
Strong HAWTHORN QUICK, 25s. to 30s. per 1000.
RICHARD SMITH AND CO., Nurserymen, Worcester.

A. M. C. JONGKINDT CONINCK has to offer large quantities of the following Hardy Plants, at very low prices:—
Saxifraga granulata, fl.-pl. Tradescantia virginica alba.
Selinella helvetica. " " curculia.
Spiraea Aruncus. " " tosea.
" filipedula, fl.-pl. " " rubra.
" palmata elegans. " " violacea.
Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

CLEMATIS for BEDDING and CLIMBING—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.
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To the Trade and Large Buyers.
EWING AND CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and FILBERT BUSHES; ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees, MYROBELLA (PRUNUS MYROBALANA), for fencing, &c.
The Royal Norfolk Nurseries, Eaton, near Norwich.

POTATOS—POTATOS.
Special Offer to the Trade.
200 tons SCOTCH CHAMPIONS, excellent sample and quality, £4 10s. per ton, 5s. per cwt.
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A large stock of other varieties to offer, including READING ABBEY, SCHOOLMASTER, BEAUTY OF HEBRON, &c.
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To the Trade.
DUTCH BULBS at DUTCH PRICES.—White Garden LILIES, 12s. 6d. per 100; DIELYTRA SPECTABILIS, 25s. per 100; ANEMONE FULGENS, 16s. per 100; single French ANEMONES, 30s. per 1000; Paper-white NARCISS, 8s. per 100; SNOWDROPS, HYACINTHS, TULIPS, NARCISS, CROCUS, &c., at low prices and unsurpassed quality. CATALOGUES on application to
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N.B.—Half and Quarter dozens at same rates.
All packages gratis, and plants forwarded directly, securely packed for any distance, on receipt of cash, and a few plants gratis in each order. On £5 orders a collection, amounting in value to 10s., can be selected by purchaser, and will be included gratis; and at the same rate on larger orders.
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ONE HUNDRED CHOICE and RARE ORCHIDS for £10 10s., consisting of the most beautiful and fragrant sorts in cultivation, and forming in itself a select collection for the amateur. Could not be bought anywhere else in Europe for £50. This offer is for cash only, and during the present month, to make room before winter. Package included for cash with order. All correctly named, and packed to travel any distance safely. Will produce quantities of flower during winter and spring. Selected for cold or warm house, or mixed. In pectin requested. Nursery close to stations L.B. & S.C.R., twenty minutes from London Bridge or Victoria.
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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
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" Golden Queen, 4, 5, 6 to 10 feet high.
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WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
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PICEA AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
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PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUIOPSIS BOREALIS, 4, 5 to 10 feet.
DOLABRATA, 3, 4 and 5 feet.
THUJA AUREA, 2, 3 and 4 feet high.
SEMPER AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high. The Plants referred to in this Advertisement have all been recently Transplanted.
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SPRUCE FIRS for Christmas Trees, well formed, 3 to 4 feet, 30s. per 100; 4 to 5 feet, 40s. per 100.
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Roses.—Torquay.
CURTIS, SANFORD AND CO., of the Devon Roseries, adjoining the Railway, have this season to send out an unusually fine stock of STANDARD and DWARF ROSES, well ripened trees. Best Standards from £7 10s. to £10 per 100. DWARFS of the finest leading varieties of Perpetuals, a very choice collection of Thirty for 1 Guinea, our own best selection. Larger collections as above in orders of not less than 100, strong DWARFs, at 50s. per 100. LISTS sent free on application. Plants added gratis for carriage.

AN UNUSUAL OPPORTUNITY.—Large, frequently transplanted Trees, from 6 to 15 feet high, all perfect specimens, are offered as under:—
POPLAR, Black
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MAPLE, Norway
OAK, Scarlet
LIMES
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CHESTNUT, Horse
" Scarlet
Standard APPLES and PEARS
COB NUTS, Webb's, 3 to 5 feet
Standard RHODODENDRONS.
It is believed no Establishment in Europe can show such a Stock of the above as
CHARLES NOBLE'S Nursery, Bagshot, Surrey.

RASPBERRY CANES.—Grown on soils specially adapted for the growth of best rooted plants, packed and put on rail either for home or abroad, with instructions for their culture, if desired.
Fastolf, 4s. per 100; 500,000 Carter's, at lowest quotations. Cheque or Post-office Order with order.
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THE DESCRIPTIVE CATALOGUE of FRUIT TREES is now ready, and will be forwarded free by post on receipt of three penny stamps.
CATALOGUES of Roses and Orchard-house Trees post-free on application.
THOMAS RIVERS AND SON, Nurseries, Sawbridgeworth, Hertfordshire.

To the Trade.
HOME-GROWN GARDEN and FIELD SEEDS.
H. AND F. SHARPE are now prepared to make special offer to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

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SPRUCE FIR, suitable for Christmas Trees, 3 to 4½ feet, 15s. per 100; 4 to 5½ feet, 25s. per 100.
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New Catalogue.
WILLIAM BARRON AND SON'S New Descriptive CATALOGUE of Conifer, Hardy Ornamental Trees, and General Nursery Stock, may now be had on application. A personal inspection of their unrivalled Stock solicited. The Nurseries are three minutes' walk from the Borrowash Station on the Midland (Derby and Nottingham) Railway.
Elvaston Nurseries, Borrowash, Derby.

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Descriptive Price LIST for 1d. stamp.
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TUBEROSE, LILIES of the VALLEY, CHRISTMAS ROSES, &c.—50 Double American TUBEROSE Pearl, and how to grow them, for 25s. 100 Berlin LILIES of the VALLEY, single crowns, and how to grow them, for 15s. 25 Christmas ROSES for 12s. 6d. Consignments will shortly arrive, the best that can be procured. LAURUSTINUS, fine bushy plants and well rooted, 1½ to 2 feet, 50s. per 100; 2 to 3 feet, 75s. per 100. On receipt of Post-office Orders the above will be forwarded to any address carriage paid.—R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

RARE and CHEAP LILIES, including that lovely Lily, LILIUM AURATUM, are offered at prices which will command patronage. Finest possible Roots of auratum, Size No. 1, 6d.; No. 2, 1s.; No. 3, 1s. 6d.; and No. 4, 2s., with liberal discount to Trade. CATALOGUE free on application to
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THE MOST SUPERB ROSES that money can buy.
Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.
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RICHARD SMITH AND CO., Nurserymen, Worcester.

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W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks: free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Spring Flowers.
RODGER MCCLELLAND AND CO.'S New Special LIST of above, including double and single Primroses, Hepaticas, choice Pansies and Violas, Daisies, Phloxes, and all kinds of Spring-flowering Plants and Spring-blooming Trees and Shrubs, is now published, and will be forwarded on application to all applicants.
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CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.
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POLYANTHUS—Choice varieties, including Gold and Silver Chain, Hose-in-Hose, &c.
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CHRISTMAS ROSES—In variety.
SWEET WILLIAMS—Very choice sorts.
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MYOSOTIS DISSITIFLORA—Spring Forget-me-Not.
COLEUS—In first-class variety.
Apply to Mr. COOPER, Calcot Gardens, Reading, Berks.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Frutting Bush Apples on the Paradise Stock.
THOMAS RIVERS AND SON have a large Stock of these fruitful little bushes to offer. LIST of sorts and prices forwarded on application.
The Nurseries, Sawbridgeworth, Herts.

TRADE.—25,000 Dwarf ROSES, on Manetti, 35s. per 100, £14 per 1000; 20,000 1-yr. cultivated Seedling BRIERS, 20s. per 1000. Extra strong SEAKALE, for Forcing, 80s. per 1000. Strong SEAKALE, 60s. per 1000. Planting SEAKALE, 35s. per 1000. For cash with orders.
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NEW CATALOGUE for AUTUMN, 1880, post-free, of the finest and cheapest DUTCH, FRENCH, and other FLOWERING BULBS. For prices, see last week's large Advertisement.
SPRING FLOWERING PLANTS, 100,000 fine plants, now ready.
HARDY FLORIST FLOWERS, and the choicest HERBACEOUS PLANTS for Garden Decoration. See CATALOGUE and last week's large Advertisement.
WINTER FLOWERING PLANTS for Indoors. A fine stock of the best sorts, well set with bloom. See CATALOGUE. PLANTS and ROOTS for forcing, very fine.
DWARF ROSES, well rooted, strong good plants.
FRUIT TREES. STRAWBERRY PLANTS, EVERGREEN and DECIDUOUS TREES and SHRUBS, &c. For prices, List of sorts, and descriptions, see CATALOGUE.
WM. CLIBRAN AND SON, Oldfield Nursery, Altricham.

SPECIAL NOTICE.

A
BEAUTIFULLY COLOURED
ALMANAC

(18 in. by 13 in.),

FROM AN ORIGINAL DESIGN,

Will be presented with

THE
GARDENERS' CHRONICLE

For SATURDAY, January 1, 1881.

Price, 5d.; Post-free, 5½d.;

Or with Almanac mounted on Oak Rollers, ready to be hung up, and enclosed in Case,

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Purchasers are specially recommended to
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Applications for Space should be sent in as
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THE BEST NOVELTY OF THE SEASON.
SENECIO SPECIOSUS.

The exceedingly bright and pretty magenta-coloured flowers of this plant make it very attractive. It is a half-hardy perennial, introduced from South Africa, and is exceedingly floriferous, so much so that, planted in the open air, its flower-spikes are successively produced from Spring until the end of Autumn, and in a cool greenhouse its cheerful blossoms are produced throughout the year; they are each about 1½ inch in diameter, and are borne in branching corymbose spikes. This pretty novelty has been figured in the *Garden* and *Botanical Magazine*.

Mr. WILLIAM BULL

Is now sending out, for the first time, Seed of this interesting and pretty plant.

*The following Firms have already received a supply of the above, from
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HOOPER & CO.	Covent Garden, W.C.	WOOD & INGRAM	Huntingdon.
HURST & SON	Houndsditch, E.C.	HENDER & SON.. ..	Plymouth.
LEGERTON, Mr. A.	Aldgate, E.C.	GRÖNEWEGEN & CO.	Amsterdam.
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WAITE, NASH, HUGGINS & CO.	Southwark Street, S.E.	STUART & CO.	Covent Garden, W.C.
WATKINS & SIMPSON	Strand, W.C.	LEE, CHAS., & SON	Hammersmith, W.
WRENCH, JACOB, & SONS	London Bridge, S.E.	BARR & SUGDEN	King Street, W.C.
WILLIAMS, B. S.	Holloway, N.	LITTLE & BALLANTYNE	Carlisle.
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ROBSON, Mr. J.	Altrincham.	HOWDEN & CO.	Inverness.
OSBORN & SONS	Fulham, W.	CARTER, J., & CO.	Holborn, W.C.
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DANIELS BROS.	Norwich.	DIXON, E. P.	Hull.
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HENDERSON, PETER, & CO. ..	New York.	ROWLAND, H.	Norwich.

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KING'S ROAD (and Ashburnham Park), CHELSEA, S.W.

VERY RARE ORCHIDS.

(SALE No. 5760.)

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 23, instead of Monday the 20th, as previously announced, at half-past 12 o'clock precisely, Importations of New and Valuable ORCHIDS, including PHAJUS HUMBLIOTII. Prof. Reichenbach says:—"A most remarkable and unexpected novelty." See flowers and drawings. ANGRÆCUM ARTICULATUM, the giant form of *Angræcum Ellisii*, and extremely rare, offered for the first time; the beautiful ODONTOGLOSSUM ALEX-ANDRÆ LEHMANNI, in splendid condition and fine pieces; CALANTHE SYLVATICA, CYMBIDIUM RHODOCHARIS, CYMBIDIUM LOISE CHAUVIERI, ÆRANTHUS GRANDIFLORUS, EULOPHIA RAMOSTACHYA—for description of these Novelties see Catalogues; grand masses of CATTLEYA LABIATA and ONCIDIUM PHYMATOCHILUM; a large lot of ANTHURIUM ANDREANUM, ONCIDIUM MACRANTHUM, ODONTOGLOSSUM EDWARDI, OUVIRANDRA FENESTRALIS, ANGRÆCUM SESQUIPE-DALE, and other species.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN,
LONDON, W.C.

CARTER'S VEGETABLE NOVELTIES For 1881.

NOTE.—All these Novelties have received First-class Certificates from the Royal Horticultural Society, or have been recognised as great improvements upon kinds already in cultivation.

PEA—Carter's Stratagem.

The only Pea certificated by the Royal Horticultural Society in 1879.
Retail price, in sealed packets, 5s. per pint.

PEA—Carter's Telephone.

Awarded the First-class Certificate of the Royal Horticultural Society, 1878.
Retail price, in sealed packets, 3s. 6d. per pint.

PEA—Carter's Pride of the Market.

A superb new Dwarf Pea for Garden or Field Crops.
Retail price, in sealed packets, 3s. 6d. per quart.

PEA—Culverwell's Telegraph.

An indispensable exhibition variety.
Retail price, in sealed packets, 2s. per pint.

PEA—Carter's Little Wonder.

A Dwarf Wrinkled Marrow, as early as Advancer.
Retail price, in sealed packets, 2s. 6d. per pint.

MELON—Blenheim Orange.

Awarded First Prize in a competition of thirty-one varieties at the June Show of the Royal Horticultural Society, afterwards awarded the First-class Certificate of the Royal Horticultural Society, September, 1880.
Retail price in sealed packets, 2s. 6d. and 3s. 6d. per pkt.

CABBAGE—Chou de Russie.

An invaluable winter vegetable.
Retail price, in sealed packets, 1s. 6d. per packet.

BEAN—Carter's Leviathan.

Takes First Prize everywhere. Producing enormous pods, 13 to 15 inches long.
Retail price, in sealed packets, 2s. 6d. per pint.

MELON—Hendre Seedling.

Awarded Second Prize where Blenheim Orange was First.
Retail price, in sealed packets, 2s. 6d. and 3s. 6d. per pkt.

CUCUMBER—Carter's Mouel.

The largest and best exhibition variety in cultivation.
Retail price in sealed packets, 2s. 6d. and 3s. 6d. per pkt.

CAULIFLOWER—Carter's Defiance.

Extra early forcing. The best early Cauliflower in cultivation.
Retail price, in sealed packets, 1s. 6d. and 2s. 6d. per pkt.

CABBAGE—Carter's Heartwell.

The best early Cabbage in cultivation.
Retail price, in sealed packets, 6d. and 1s. per packet.

LETTUCE—Hardy's Northern King.

The raiser says:—"It is very hardy, and will grow 2 feet 6 inches long."
Retail price, in sealed packets, 2s. 6d. per packet.

TURNIP—Carter's Jersey Lily.

The earliest and best white Garden Turnip Grown.
Retail price, in sealed packets, 1s. per packet.

TURNIP—Carter's Golden Rose.

The hardest and best flavoured winter Turnip.
Retail price, in sealed packets, 1s. per packet.

TOMATO—Vick's Criterion.

Awarded First-class Certificate of the Royal Horticultural Society.
Retail price, in sealed packets, 1s. 6d. per packet.

TOMATO—Carter's Green Gage.

Awarded the First-class Certificate of the Royal Horticultural Society.
Retail price, in sealed packets, 1s. 6d. per packet.

BEAN (Dwarf)—Carter's Longsword.

A remarkably productive and fine flavoured variety.
Retail price, in sealed packets, 3s. per pint.

ASPARAGUS—Mammoth Emperor.

The gigantic form of this useful vegetable.
Retail price, in sealed packets, 2s. 6d. per packet.

NOTE.—We are again offering Valuable Prizes at the Summer Meeting of the Royal Horticultural Society, for Dishes of the above New Peas. For Particulars see Society's Schedule.

TRADE PRICES ON APPLICATION.

THE QUEEN'S SEEDSMEN,
237 High Holborn, London, W.C.

SUTTON'S NOVELTIES.

THE BEST OF THE TRADE.

NOTICE.—Messrs. Sutton's Novelties are subjected to careful test trials, and all those offered this season are of sterling merit and perfectly distinct.



Sutton's Reading Exhibition Sprouts.

We have purchased of an eminent gardener the stock of this superb strain of Brussels Sprouts, which we confidently recommend as the earliest in cultivation. It is perfectly distinct; the leaves, which are remarkably small, are of a pale green colour, and stand well out from the stem. The buttons are very large, solid, and of delicious flavour. They come into use from ten to fourteen days before any other kind. As an exhibition variety it is unequalled, and should find a place in every garden.

Price, 2s. 6d. per packet, post-free.



Sutton's Rosy Queen Fern-leaved Primula.

Now offered for the first time. It is a great improvement on other Fern-leaved Primulas, as the leaves are shorter and the habit better. Colour a delicate salmon-rose.

Price, 5s. per packet, post-free.

. See also Messrs. SUTTON'S Advertisements in to-day's *Garden and Gardeners' Magazine*.

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Is now ready, post-free for 15 stamps. Gratis to Customers.

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THE Gardeners' Chronicle.

SATURDAY, DECEMBER 18, 1880.

EGREMONT CASTLE.

ON the coast of Cumberland, 3 or 4 miles from the sea, near Whitehaven and St. Bee's Head, are the ruins of the Castle of Egremont. The castle was built soon after the Conquest by the Earl of Cumberland, to whom William granted the barony lying between the rivers Duddon and Derwent. The adjoining town of Egremont boasts of a population less than 3000 in number, and enjoys the privilege of a market, diminutive in size compared to that of Cocker-mouth, and restricted chiefly to the products of the grass land that covers the spurs of the mountains of Westmoreland in their least attractive western side beyond the "Lake Country," and sloping to the sea.

Few persons visit Egremont, and those who do so, are doubtless attracted either by the story of Eustace de Lucy, Lord of Egremont, which Wordsworth celebrated in one of his poems, or, like the writer, he must be diverted from the usual route of tourists by some particular motive of business, curiosity or pleasure, or by a "truant disposition" such as Horatio confessed to. Some time ago, the present writer described in the *Gardeners' Chronicle* the noble residence of Petworth, which belonged to the most popular man in Sussex in his day, the Earl of Egremont; and which now belongs to his descendant, Lord Leconfield. He mentioned Lord Egremont's munificence, his patronage of art and of artists, of agriculture and of agriculturists, such as Ellman and Arthur Young, and he described the illustrious descent of this noble family of Sussex from the Percies of Northumberland, who long owned Petworth, and made it their southern residence. In travelling through the Lake District he learned at Cocker-mouth from Mr. Murray that the castle there belonged to Lord Leconfield. It is a very fine castle, founded by the first lord of Allendale, of the reign of William the Conqueror, and over the gateway are the arms of the several families of Umphraville, Lucy, Neville, Multon, and Percy, who all owned the castle in turn. Lord Leconfield, the grandson of Lord Egremont, represents the Percies. I had recently met with a Leconfield estate in Yorkshire, which his lordship is unable to let, and is laying down in grass. I knew he had a large estate in Ireland—"half Ireland," a Petworth man said to me once, "belongs to 'un;" and here again in Cumberland land crops up belonging to the same great proprietor, and all lying snug in grass, between the mountains and the sea, and well watered from the Atlantic rain-clouds. I then learned at Cocker-mouth, from the invaluable Mr. Murray, the whereabouts of Egremont, the place from which the great Sussex family took their title.

The castle is now ruined, solitary, silent, and in paying it a visit you must either recall its history from the stores of memory, or feel the disappointment which is not uncommon to those who visit remarkable places. It is, however, rich in history, legend, and romance. There is a pleasing story of an Egremont of other days, endowing the Abbey of St. Bee's. In the year 650 an Irish saint of the softer sex, St. Bega by name, was driven ashore

here in a tempest, with several other ladies, "sisters" like herself, devoted to the service of religion. At the request of the Lady of Egremont they were granted a place of residence, where they "sewed, spun, and wrought carpets, and did other work, and lived such godly lives as got them much love." St. Bega, having at present only a chantry, and desiring to found an abbey, begged land for that purpose of the Lord of Egremont, who, speaking *sans phrase*, did not see it. But he said, laughing, that he would give the sisters as much land as snow should lie upon next morning, the time of year being summer, and the next day Midsummer Day. On the following morning the Lord and Lady of Egremont found the ground white with snow from their castle to the sea! so St. Bega got 3 miles of the best grass land in the neighbourhood, including the site of the present town of Whitehaven, whereupon the Abbey of St. Bees was built and very amply endowed. This, no doubt, is true history.

The story of the "Horn of Egremont" is a legend which gives the truth probably in an embellished form not quite accurate in point of detail. Eustace, Lord of Egremont, and a younger brother named Hubert, left Cumberland together for the Crusades. This must have been 400 or 500 years after the founding of St. Bees. A family horn hung in these days over the gateway of the castle which only the true owner could blow; on quitting home with his brother, Eustace took the horn in his hand, and thus addressed him, "If I fall in Palestine return and blow this horn, on which the true owner only can sound a blast, and take possession of the land and castle, that Egremont may still have a Lucy for its lord." He then blew a blast, and off they rode. During their travels Hubert attempted the life of his brother, and returned to Egremont to take possession, having bribed three ruffians to throw Eustace into the Jordan. He obtained possession, and gave a banquet, but without having ventured to attempt a blast upon the horn. Suddenly as he sat with his guests and retainers he heard the blast of the horn at the castle gate, and starting up, knowing himself a usurper and detected, he left the castle by a postern gate and fled. The true heir then took possession, and the guilty Hubert remained long absent and unheard of; then he came,

"Made confession, asked forgiveness—
Asked it in a brother's name,
And by all the saints in heaven,
And of Eustace was forgiven."

Part of the Castle of Cockermouth has been fitted up for the occasional residence of its owner. That of Egremont is better as a ruin and relic of old times with its legends and its Ivy undisturbed, itself the Ultima Thule of Cumberland. *H. E.*

New Garden Plants.

MASDEVALLIA EDUARDI, n. sp.*

After all the surprises Masdevallias have afforded us, we have in this still another. It is decidedly a good thing, not a grand one, but a most elegant gem. A creeping rhizome produces at intervals of an inch the distant leaves, the blades of which are scarcely more than half an inch long by two-thirds wide. The peduncles are nearly a span high, and bear two or three flowers, which are apparently red. It was sent lately from Columbia by Mr. Eduard Klaboch. Among all the known Masdevallias there are some affinities to be found with the elegant Mas-

devallia amethystina; this is, however, decidedly caespitose. *H. G. Rehb. f.*

MASDEVALLIA ROEZLII, Rehb. f.*

This fine Masdevallia has just bloomed at Mr. Charles Winn's, The Upland, Selly Hill, near Birmingham. I believe it is there flowering for the first time on this side of the Atlantic Ocean. It is a Chimæroid species, of a wonderful dark, blackish, india-purple, with still darker warts, and very few short light purple hairs on the edges of the sepals, the lateral ones of which are spread outside. Petals and lip light mauve, the petals with beautiful dark eye blotches. Column yellowish-white. The plant was originally discovered by Mr. Benedict Roetzl, and afterwards collected by Messrs. Wallis and Boxall.

The plant that has now flowered was obtained from Mr. F. Sander, hence it may have been collected by Messrs. Klaboch, Schmidtcher, and Falckenberg, two of whom fell as victims of collecting for the benefit of those in the trade.

Mr. Charles Winn writes that it has been much admired. This is a great compliment this gentleman pays to his visitor. Our plant is a severe beauty, only to be understood by spectators of a refined taste. It produces more than one flower, as is usual in the group; but they are developed after a long interval. This circumstance might encourage a keen draughtsman to paint a raceme of half-a-dozen flowers neatly developed at one time! *H. G. Rehb. f.*

PAPHINIA RUGOSA KALBREYER, nov. var.

This is a lovely thing, quite similar to Paphinia cristata as to colours, quite distinct as to characters. The ground colour of the sepals is a very light whitish-ochre, with cinnamon-purple hieroglyphical markings. Petals whole coloured of cinnamon-purple, excepting a narrow cinnamon-brown border. Lip with dark purple angles and horns and a few purple spots. It was discovered in New Grenada by Mr. A. Kalbreyer, and has just flowered with Messrs. Veitch. The bulb is longer than in the first varieties, but there is no possibility of distinguishing the two as species. It is well known that the bulbs are exceedingly influenced by the different altitudes at which they are found. *H. G. Rehb. f.*

STANHOPEA CULTURE.

THE most casual observer of epiphytal Orchids, from an artistic point of view, is at once impressed with the rude forms of the permanent parts as compared with the elaborate workmanship and beauty displayed in the floral organs. Take, for instance, Stanhopea, and contrast its wrinkled pseudobulbs, its simple, entire, and plaited leaves, with the singular form and rich colouring of the waxy blooms. The quantity and quality of these and the continued vigour of the plants are much increased by liberal supplies of liquid manure diluted with soft water, and given at all seasons, except during the dormant season and when the flowers expand. In proof of this I give the following results, from experiments and observations carried on for three years:—

Stanhopea oculata.

Scapes 7, flowers 32, leaves 18 × 7 in., number 27.
" 9, " 39, " 17 × 6½ " 26.

Stanhopea tigrina and S. intescens.

Scapes 2, flowers 4, sepals 3½ × 2½, tip to tip 7 in. (2½ × ¾).
" 5, " 25, " 2½ × 2½, " 5 in., labellum.

Another fragrant and free-flowering Orchid, Physosiphon Loddigesii, under similar treatment, showed eleven scapes bearing 122 orange blooms, which hung over the side of a 9-inch pot or flat. On Vanda insignis, V. suavis, Lælia anceps, Cypripedium insignis, C. barbatum, and C. Harrisianum, its effects were most salutary. The stimulants consisted chiefly of guano, urine, soapy refuse, and water which in passing from the roof to a cistern carried a large proportion of soot. The value of these consists chiefly

* *Masdevallia Roetzli*, Rehb. f.—Recedit a *Masdevallia Chimæra*, Rehb. f., and *Walvisii*, Rehb. f. limbo sepalorum lævi, superficie interna hinc marginibus asperulis, pilis paucissimis supra angulos sepalorum; labelli calcei elongato limbis externis integris.—Folium a petioli parte lata dilatatum oblongo ligulatum obtuse acutum. Pedunculum flore uno evoluto, una vice, usque triflorus visus. Bractea cucullata acuta pedicellum vix æquans. Perigonium externum albe apertum. Sepala basi connata, ceterum libera, oblonga in caudis elongatis intercrissis filiformi lineares attenuata calva superficie interna circa margine dense asperi verrucosa, pilis paucissimis brevissimis. Tepala brevius ligulata obtusa apice bivalvia et callo intersecto papuloso utrinque adnato tetraptera si mavis. Labellum brevissime unguiculatum basi angustatum, marginibus subintegrum, costis primariis tarsi elevatis. Columna apice acuta. Perigonium obscure atroviolaceo-purpureum, obscurius quasi tessellatum. Tepala et labellum violacea.—*Masdevallia Roetzli*, Rehb. f., *Novæ Orchidaceæ*, ii., tab. 186: ii., 2, p. 195: *Linnæa*, xli., p. 90. New Grenada. Roetzl! Wallis! Boxall! *H. G. Rehb. f.*

in providing nitrogen and alkali, for, as shown by recent scientific investigations, plants that are deficient in the former constituents do not so readily assimilate the carbon of the atmosphere under the influence of bright sunlight on the leaves, and this fact is also apparent from observations in general practice. It is also worthy of note, that flowers produced on well-fed plants have a deeper dye than those produced on starvelings.

The Stanhopeas occupy an Orchid pot, 18 inches × 12, and baskets of Oak 12 × 6 inches, the pseudobulbs standing well above the rims. The culture of this genus, which is at once simple and sure, but demanding pains and attention, may be summed up as follows:—A medium temperature as regards fire-heat but kept well up by solar rays, abundance of moisture at the roots, and in the atmosphere during active growth, allowing the leaves to dry daily in the presence of sunlight, shading, or in old houses with dim glass and small panes with putty at the overlaps, none at all; admission of air, leaves scrupulously clean, a long winter's rest without water, save what the roots may imbibe in their aerial situation, and a shift into strong fibry peat and charcoal, with a top-dressing of sphagnum say every three years. At the same time if the plants have outgrown their limits, they should be divided or reduced with as little disturbance of the roots as possible. From the size and deep green leathery character of their leaves, we infer that good nourishment and healthy leaf action are the two primary considerations. Since the scapes flower in succession [but soon fade this objection may be met by having a numerous display, or if space forbid then a few large samples, and thus the show will be prolonged. The size, beauty, shape, odour, and pendent habit of the blooms claim for these Orchids a place in every collection.

Stanhopea exhibits a remarkable movement or irritability in its sepals and petals, by which, as soon as the colouring process is complete, the former instantly spring upwards from their envelope state and remain like wings upraised for flight, while the latter soon after gradually assume a reflexed and curled form. The friction caused by the overlapping edges of the perianth in the act of freeing themselves, produces a report sufficiently loud to draw the attention of a bystander unaware of the circumstances. The flowers always open between 6 A.M. and 10 A.M., but generally about 8 o'clock, and the action is brisk or tardy according as the sun beams forth or continues obscured. In the latter case a gentle touch will have the desired effect, though in a manner not so decided as when the solar conditions are favourable. Preparatory to the expansion the rims of the leaves begin with the morning light to depart from their closely adhesive state, but in no case is any perceptible advance made during hours of darkness, as I ascertained by watching the behaviour of a plant all night. *James Scott, Edinburgh Botanic Garden.*

FRUIT IN FLORIDA.

THE following interesting notes on this subject are extracted from a recent report by the British Consul. East Florida is described as having great natural advantages for fruit growing, and especially for the Orange and Lemon, fruits peculiar to warm climates. Large districts in the countries situated between the latitudes of 27° and 29° 40' N., and longitudes 80° 30' and 82° 40' W., seem to be particularly adapted to the Orange and Lemon tree, and little else can be profitably grown on such land at present. Formerly in Florida, as in most of the Cotton States, the whole time and attention of the people were engrossed in the cultivation of the cotton plant and the Sugar-cane. Fruit growing was looked upon rather with contempt, and no value was attached to the wild Orange groves in the State any more than to the same quantity of other timbered lands. In fact very frequently the wild Orange trees were cut down and destroyed to make room for cotton and sugar. Of late years, however, the people of the district named have found out the importance and profits of tropical fruit culture, and the old wild Orange trees are highly prized, and are converted into sweet Oranges by grafting. The difficulty in regard to Orange culture is the impatience for immediate results. The Orange, if raised from the seed, requires from seven to ten years of attention before it begins to bear; and the lack of patience and confidence deters people from starting an Orange grove, and persisting in its care. Experience

* *Masdevallia Eduardi*, n. sp.—Rhizomate repente: foliis distichis; petiolis laminis ellipticis acutis, aquantibus; pedunculis clatis, distanter arctique vaginatis, apice bifloris seu trifloris; bracteis ochreatis acutis ovata, murice data pedicellata non aquantibus, perigonio tenui connato; sepalis impari libero triangulari margine minute serrulato; sepalis condonato apice bifido; lacinis apice brevissime crasseque caudatis, sub caudis abruptis; tepalis a latiori basi attenuatis columnam superantibus: labello flabellato apice obtuse retuso cum apiculo, dente erecto carnosio in basi, androcinio marginato. Probabiliter in Columbia detecti E. Klaboch. *H. G. Rehb. f.*

has proved that there is no fear of frost south of Pilatka.

The quality of the Florida Orange, and the excellent condition in which it reaches the Northern markets, render it a most profitable crop. There can be no fear of an over-production of the Orange or Lemon when it is considered what a vast country has to be supplied. In 1879, 4,000,000 dols. worth of Oranges and Lemons were imported into the United States, and the Orange crop of Florida was valued at over 1,000,000 dols. From information lately published, it is probable that the Orange crop in Florida next season will be 100,000,000 of Oranges for which the dealers will give the growers 1,500,000 dols. The Orange crop will double itself every three or four years, and considering that the reports to the Governor show that there are over 20,000,000 trees in the Orange groves of Florida, in future years the crop will be enormous and exceedingly profitable, and if the 20 per cent. *ad valorem* duty continues it will stop the importation of Oranges from Sicily, Spain, and the West Indies. Persons who engage in the cultivation of an Orange grove in those counties in Florida where frost is almost unknown, proceed there and purchase from 5 to 10 acres of land.

Suitable land for Orange culture costs from 15 dol. to 20 dols. per acre. The growers fence in the land, which can be done for 6 dols. per acre. Cleaning the trees and grubbing out the roots, if done thoroughly, will cost 20 dols. per acre. This work will take some months. Persons are found who undertake to clear, grub, and plough the land, to purchase the Orange trees and set them out. Most people purchase and replant trees three years old. From sixty to eighty trees are planted per acre; 300 trees, and setting them out, would cost 200 dols. In two months after being set out—which is generally done in January or June—the trees are fertilised with guano, the ground ploughed heavily once a year, and lightly six times a year. A crop of southern Peas is raised between the trees, and when ripe ploughed in to enrich the soil. The trees receive two applications of guano per year, and each year after old cow-manure in place of guano. The trees grow little the first year, after that they become firmly established in the soil and grow faster.

There are no serious diseases of the Orange in good soil in Florida. There are a great variety of Orange trees, but, after all, none so good as Florida seedlings or native trees. Trees are set out generally after the rainy season. The land where possible should be cleared and prepared for the trees four or five months before the trees are planted. A person intending to start an Orange grove in Florida should choose high land, dry hummock, or rolling Pine land, naturally well drained. The south-east sides of wide sheets of water are favourable locations. The land must be cleared of everything and well broken up. The holes for the Orange seedlings should be 30 feet apart, 18 inches deep, and 4 feet in diameter. From the foregoing facts it may be safely stated that for an outlay of 100 dols. for 5 acres of land, 30 dols. for fencing, 100 dols. for clearing, 200 dols. for planting 300 three-year-old trees, and 100 dols. for manuring and ploughing the first year, and 500 dols. for care, manuring, and ploughing the next four years, or a total outlay of 1030 dols., a person can have an Orange grove which, if the statements are true, will after the fifth or sixth year begin to yield an income.

During the ninth year the crop might be 200 Oranges per tree, or 60,000 Oranges, which at the price of 1 cent, would bring 900 dols. Next year, if the grove was well cared for and manured, the crop would double itself, and before the eleventh or twelfth year each tree would yield 500, 800, or 1000 Oranges, which for 300 trees would be 150,000, 240,000, and 300,000—2250 dols., 3600 dols., and 4500 dols., with proper care increasing every year and yielding a good income. It must be remembered that an Orange grove of 10 acres, on which 600 trees could be raised, would cost double the foregoing rates, or about 2000 dols. (£400), from the purchase of the land till the end of the fifth year, but the yield would be double if well cared for.

Probably the industries of Florida can be made more varied than in any other State. There are famous estates producing Sea Island and ordinary Cotton, Corn, Oats, and Rye, Rice and Sugar-cane; vegetable farms on which Potatoes, Peas, Beans, Cucumbers,

Tomatos, &c., are produced for the Northern markets. The finest Strawberries are grown in abundance, and sent North; Grapes and Peaches are raised profitably. The Orange business is simply immense; millions upon millions of Oranges are boxed up, and sent by railroad to all parts of the United States. Lemons, Limes, Guavas, and Citrons, are raised in abundance. Bananas and Pine-apples are produced and sold at a profit. There are cigar factories, using native grown tobacco, said to be quite as good as Havannah, shoe factories, marmalade factories, and factories of perfumery.

CLARENDON PARK,

THE residence of Sir F. H. H. Bathurst, Bart., is situate on the banks of the winding Avon, on the Romsey and Southampton road, 4 miles south-east of Salisbury. Clarendon is of great antiquity, from the fact that in past ages a Royal palace stood within its precincts, the ruins of which are standing on the north-western crest of a hill of considerable elevation, overlooking and commanding a fine view of Salisbury and neighbourhood. King's Manor, by which name these Royal ruins are locally known, is about a mile "as the crow flies" north-west of the present mansion, which is a large oblong building of a mixed style of architecture, was in its time a frequent residence of the English kings, and was visited by Queen Elizabeth. In 1163 Henry II. assembled a Parliament here, which enacted the celebrated "Constitutions of Clarendon" to restrain the encroachments of the Court of Rome. The only remains of the palace are parts of an Ivy-clad wall and an arched doorway of the Norman style of architecture in which a stone has been fixed corresponding in size and shape with the doorway, upon which is engraved the following inscription:—

"The building of which this fragment formed a part was long a favourite residence of English monarchs, and has been historically connected with many important transactions and distinguished characters. Amongst others Philip, King of Navarre, here rendered the first homage which was paid Edward I. as King of France; and John, King of France, with David, King of Scots, spent here a portion of their captivity. More especially were here enacted the 'Constitutions of Clarendon,' the first barrier raised against the claims of secular jurisdiction by the See of Rome. The spirit awakened within these walls ceased not to operate until it had vindicated the authority of the laws and accomplished the Reformation of the Church of England. To prevent the entire destruction of so interesting a memorial of past ages Sir F. H. H. Bathurst, Bart., caused it to be supported and strengthened, and this inscription to be affixed, A.D. 1844."

The park, which for the most part is hill and dale, is very extensive and finely timbered with Oak—and such Oak! Amongst the most noteworthy are the "Monarch" and "King John," which are growing within a short distance of the mansion, and measure respectively at 4 feet from the base 18 feet and 19 feet in circumference, and are braced together with iron rods. A short distance from the "King John," on the lawn, in front of the gardener's picturesque and commodious cottage, is another grand specimen (and these in point of size are by no means isolated specimens, inasmuch as the park is principally composed of trees of this description), which, however, is showing unmistakable signs of decaying nature, and in many of the branches the sap has descended never more to rise again. And, again, about 30 yards west of this is another aged monarch of the forest, in every respect a counterpart of the preceding one, excepting that it has not withstood the test of time so well, as it is now in a rapid state of dissolution; yet even in this state one cannot help feeling a kind of reverence in contemplating the wreck of its former greatness.

The principal entrances to the park, which are through avenues of towering Fir, Elm, and Oak, are Alderbury, Pitton, and Salisbury—the latter drive, which with one or two exceptions is up hill the whole length, is 2 miles long from the lodge to the mansion, passing on the way thither in the bend of, and on either side the road, several detached bushes of Rhododendrons, growing in a kind of ravine, each specimen being surrounded by water. A miniature group of islands is thus formed, which breaks the monotony of the drive, charming as it is, and must have a very fine and telling effect when the plants are in flower.

There is also a good-sized lake in the park north-east of the mansion, and to which—

"When winter's frosts have frozen over its glassy waters,
Free access is given to Wiltshire's skating
sons and daughters."

The flower garden and grounds, which are situate opposite the south-west front of the house, are nicely laid out, and in early autumn, when the occupants of the numerous beds (including the carpet-designed beds) are in full flower the effect when viewed from the terrace, from whence striking views of woodland scenery are obtained, must be a pleasing one. In the grounds, which are contiguous to the flower-garden and directly in front of the house, are several fine healthy, well-grown young specimens of the Cedar of Lebanon (*Cedrus Libani*), and evergreen Oak (*Quercus Ilex*). The former, which branch off at about 18 inches from the ground, have stems measuring in circumference from 10 to 11 feet each, whilst those of the latter, at 4 feet from the ground, measure from 6 feet to 7 feet each in circumference. In addition to these there are also several other good specimens of various kinds, amongst which are the following:—*Cryptomeria elegans*, *Picea cephalonica*, *Cupressus Lawsoniana*, *Wellingtonias*, &c. At the bottom of the grounds, running nearly east and west and within 20 or 30 yards of the wire fencing which forms the boundary line of the grounds and park, is a broad well-kept gravel walk, 220 yards long, leading to a kind of temple of the Grecian order. On the south side of this walk are large oblong flower-beds and trees (*Cupressus Lawsoniana*, &c.), alternately, whilst on the north side is one of the finest banks of *Rhododendrons*, hardy *Azaleas*, *Kalmias*, &c., that I have ever had the good fortune to see. It is about 10 or 12 yards wide, and rises gradually, though somewhat irregularly, from the green and elastic sward in front to about 25 feet at the back, with here and there in the background a few tall-growing and choice trees, which add not a little in appearance and effect to the floral display produced by the numerous plants, and their still more numerous shades of colour, in the early summer month, when (I can speak from experience) the picture thus produced is very beautiful. There are about 4 acres of kitchen garden, the greater part of which is enclosed by good walls, to which are trained a good and approved variety of fruit trees. There are also a good and varied collection of Pears, Apples, &c., espalier-trained to a good wire trellis on either side the walks which divide and subdivide the kitchen gardens; these trees, like everything else in these gardens, bear evidence of good management. In addition to the supply of fruit obtained from the trees growing in the kitchen garden, there is a 4-acre orchard in a remote part of the park to supplement the supply thereby obtained.

The glasshouses, pits and frames, are all situate in the kitchen gardens. They comprise four vineries, two Peach-houses, not heated, which yield a good supply of fruit every year, the trees being young and well-established; two small plant stoves, in which were a good and varied collection of decorative and flowering plants. Amongst the latter were some gems of *Celosia pyramidalis coccinea*, in 60 and 48-sized pots. *Browallia elata* in the same size pots raised from seed sown in the autumn were also in fine flower; as a winter-flowering plant this puts the *Eranthemum pulchellum* entirely in the shade. Mr. R. Frisby, the gardener at Clarendon, has a good deal of table-work to do, for which, as a matter of course, he grows a quantity of small Palms, Crotons, Dracenas, Ferns, *Schizostylis coccinea* (of which there is a good batch), *Eucharis*, *Begonias*, &c. A few pots of *Lygodium scandens* suspended from the roof of one of these stoves had a very good and graceful effect. There are also several ranges of hot-water pits, in which Pines, Cucumbers, &c., are grown, in one of which I noticed a small batch of Garibaldi Strawberry in flower in the first week of this month (December). The conservatory may be said to form part of the mansion, the communication from the drawing-room to the dining-room being directly through it. It looked very gay with flowers and Tree Ferns and Palms, and suitable climbers hanging gracefully overhead. Notably amongst the Ferns were *Cyathea dealbata*, *C. medullaris*, *Lomaria gibba*, *Marattia ascensionis* (said to be a good example of the kind); *Seaforthia elegans*, 20 feet high, and in fine condition, had a very good effect as a central plant. Standing

in the centre of this house (conservatory), and looking into either drawing-room or library the Ferns, climbers, &c., are effectively reflected in the mirrors therein, thereby adding additional charms to the scene. In conclusion, I may be permitted to state that the good keep of the whole place reflects great credit on Mr. Frisby. *Visitor to King's Manor.*

NEW PLANTS CERTIFICATED

BY THE FLORAL COMMITTEE AT THE ROYAL HORTICULTURAL SOCIETY'S MEETINGS, 1880.

* F.C., First-class Certificate; S.C., Second-class Certificate; H.C., Highly Commended; B.C., Botanical Certificate; C., Commended.

Abutilon Purity ..	King, March 9—S.C.
Amarilis Empress of India ..	Veitch, March 23—F.C.
Exquisite ..	B. S. Williams, Mar. 23—F.C.
King Arthur ..	Veitch, March 23—F.C.
Lady Bolsover ..	Veitch, April 27—F.C.
Prince George ..	Veitch, April 27—F.C.
Storr's Beauty ..	Veitch, March 23—F.C.
Anagallis Kotschy ..	Veitch, Oct. 12—F.C.
Anthurium Andraeanum ..	Linden, April 13—F.C.
Sch. Rothschildianum ..	Veitch, May 11—F.C.
Aparagus plumosus nanus ..	Veitch, June 25—F.C.
Azalea Rollisonii ..	Veitch, April 27—F.C.
Balsam, for strain ..	F. & A. Smith, Aug. 10—C.
Aster elegans var. ..	Bull, Jan. 13—F.C.
Begonia (tuberous) A. Hemslley ..	R.H.S., July 13—F.C.
Anna Ria ..	R.H.S., July 20—F.C.
Annie Wilkie ..	R.H.S., July 20—F.C.
Countess of Kingston ..	Veitch, July 13—F.C.
Dr. Denny ..	R.H.S., July 20—F.C.
Dr. Hogg ..	R.H.S., July 20—F.C.
Henry Webb ..	R.H.S., July 20—F.C.
Lizzie Smith ..	R.H.S., July 20—F.C.
Lucy Violet ..	R.H.S., July 20—F.C.
Mary Steele ..	King, July 13—F.C.
Mrs. Laing ..	Laing, May 25—F.C.
Mrs. H. Coppin ..	Coppin, July 13—F.C.
Mrs. Sheppard ..	Veitch, Aug. 10—F.C.
Nellie Barron ..	R.H.S., July 20—F.C.
rosea grandiflora ..	Veitch, July 13; R.H.S., July 20—F.C.
Begonia, for strain ..	Sutton, Aug. 24—C.
Holboysium Beccarii ..	Henderson, Aug. 24—B.C.
Bouvardia Dazzler ..	Balchun, Nov. 16—F.C.
Calanthe tricarinata ..	Veitch, April 13—F.C.
Canna Ehemanni ..	Hooper, June 22—F.C.
Princess de Nice ..	H.S., Sept. 7—F.C.
Carnation (Clove) Sir A. Grant ..	Veitch, May 25—F.C.
Cattleya Marstonianae ..	Veitch, Oct. 12—F.C.
Cereus C. M. Hovey ..	Bull, May 25—F.C.
Chionographis japonica ..	Veitch, May 11—F.C.
Choisya ternata ..	B. S. Williams, April 13—F.C.
Chrysanthemum frutescens ..	Howard, April 13—F.C.
Etoile d'Or ..	James, March 23—F.C.
Cineraria Master Harold ..	Greenfield, March 9—F.C.
Mr. Thomas Lloyd ..	Greenfield, March 9—F.C.
Mrs. Thomas Lloyd ..	James, March 9—F.C.
Cinerarias, for strain ..	B. S. Williams, Oct. 12—C.
Cockscombs, for strain ..	B. S. Williams, April 13—F.C.
Coleus George Simpson ..	King, Sept. 14—F.C.
Mrs. W. M. Shireff ..	King, Aug. 10—F.C.
Pompadour ..	Lewis, July 13—F.C.
Sowteri ..	Elwes, April 27—F.C.
Corydalis bracteata ..	Chantier, Sept. 14—F.C.
Croton Baron Franc Selliere ..	Veitch, Dec. 14—F.C.
Cronstadii ..	Veitch, Dec. 14—F.C.
Hawkerii ..	B. S. Williams, May 25—F.C.
Warrenii ..	Gen. Hort. Co., Oct. 12—F.C.
Cyperus laxus variegatus ..	Veitch, Nov. 16—F.C.
Cypripedium Fairrieanum ..	Veitch, July 13—F.C.
Morganianum ..	Keynes, Aug. 24—F.C.
Dahlia Frank Rawlings ..	Keynes, Sept. 14—F.C.
Goldfinder ..	Keynes, Aug. 24—F.C.
James Vick ..	Rawlings, Sept. 14—F.C.
Joseph Green ..	Keynes, Aug. 24—F.C.
Lady Wimbome ..	Keynes, Aug. 24—F.C.
Mr. Harris ..	Rawlings, Sept. 14—F.C.
Mrs. Compton ..	Keynes, Aug. 24—F.C.
Queen of Spain ..	Turner, Aug. 24—F.C.
Reval ..	Turner, Aug. 24—F.C.
W. K. Williams ..	Keynes, Sept. 14—F.C.
William Rawlings ..	Rawlings, Oct. 12—F.C.
(bouquet) Frau Professor Klug ..	Turner, Aug. 24—F.C.
Dr. Rauch ..	Turner, Aug. 24—F.C.
Daphne blagayana ..	Veitch, Feb. 10—F.C.
Delabechea rupestris ..	B. S. Williams, July 27—F.C.
Dendrobium splendissimum ..	Veitch, Feb. 10—F.C.
Erigeron pulchellus ..	Veitch, May 25—F.C.
Erythrina marmorata ..	Veitch, June 22—F.C.
Eucryphia pinnatifolia ..	Veitch, Aug. 10—F.C.
Fritillaria delphinensis ..	Backhouse, April 13—F.C.
Fuchsia Mad. Galli Marie ..	Lemoine, June 22—F.C.
penduliflora ..	Cannell, March 9—F.C.
Gladiolus Anthony Waterer ..	Kelway, Aug. 24—F.C.
Aquino ..	Kelway, Aug. 24—F.C.
Calliphon ..	Kelway, Aug. 24—F.C.
Phormis ..	Kelway, Aug. 24—F.C.
Opiter ..	Kelway, Aug. 24—F.C.
Plumus ..	Kelway, Aug. 24—F.C.
Gloxinia Chiswick White ..	R.H.S., May 11—F.C.
Prince of Wales ..	Veitch, May 11—F.C.
Gomphrena globosa nana compacta ..	Benary, July 20—F.C.
Hedera maderensis variegata ..	Cutbush; Osborn, July 13—F.C.
Hoya globulosa ..	Cranston, April 13—F.C.
Huntleya meleagris ..	Veitch, April 13—F.C.
Hyacinth Cavaignac ..	Veitch, March 23—F.C.
Electra ..	Veitch, March 23—F.C.
Queen of the Yellows ..	Wilson, Aug. 10—S.C.
Hypolepis millefolia ..	Lawrence, July 13—F.C.
Jonopsis paniculata ..	Veitch, July 13—F.C.
Iris Kämpferi Carnation ..	Veitch, July 13—F.C.
Crimson King ..	Veitch, July 13—F.C.
Delicata ..	Veitch, July 13—F.C.
Imperial Wonder ..	Veitch, July 13—F.C.
Kosoburo San ..	Veitch, July 13—F.C.
Magnificence ..	Veitch, July 13—F.C.
striata superba ..	Veitch, July 13—F.C.

Ismene Sulphur Queen ..	Col. Clarke, June 8—F.C.
Jasminum gracillimum ..	Veitch, Dec. 14—F.C.
Lælia elegans prasiata ..	B. S. Williams, Aug. 24—F.C.
Lastrea Maximowiczii ..	Veitch, May 25—F.C.
Richardsonii multifida ..	Veitch, April 27—F.C.
Lilium auratum platyphyllum ..	Veitch, Aug. 10—F.C.
virginale ..	Veitch, Aug. 10—F.C.
canadense splendens ..	Bull, July 13—F.C.
longiflorum verum ..	Veitch, Oct. 12—F.C.
nitidum ..	Bull, June 22—F.C.
Parkmannii ..	Waterer, Aug. 24—F.C.
polypodium ..	McIntosh, June 22—F.C.
speciosum var. gloriosoides ..	Veitch, Aug. 10—F.C.
Lygodium palmatum ..	Wilson, July 27—F.C.
Masdevallia tovarensis ..	Veitch, Jan. 14—F.C.
Microstylis metallica ..	Veitch, July 27—F.C.
Mormodes Wendlandii ..	Veitch, Dec. 14—F.C.
Nepenthes atrosanguinea ..	B. S. Williams, May 25—F.C.
bicalcarata ..	Veitch, Feb. 10—F.C.
Odontoglossum anceps ..	Veitch, Dec. 14—F.C.
blandum ..	Veitch, Dec. 14—F.C.
polyanthum ..	Cobb, April 13—F.C.
hystrix serratum ..	Lawrence, April 27—F.C.
Oleander Prof. Duchatre ..	Huber, July 20—F.C.
Pelargonium (decorative) Attraction ..	Brown, May 25—F.C.
Clipper ..	Weatherill, May 11—F.C.
Decorator ..	Braid, May 11—F.C.
Defiance ..	Braid, May 25—F.C.
Eclipse ..	Brown, June 8—F.C.
Lucie Lemoine ..	Lemoine, July 20—F.C.
Madame Thibaut ..	Lemoine, July 20—F.C.
Mrs. Potten ..	Lemoine—July 20—F.C.
Sunrise ..	Weatherill, May 11—F.C.
W. E. Gladstone ..	Weatherill, May 11—F.C.
Zulu Belle ..	Braid, June 22—F.C.
(Ivy-leaved) Mons. Dubus ..	Lemoine, June 8—F.C.
Mont Blanc ..	Lemoine, July 20—F.C.
Gloire d'Orléans ..	Lemoine, July 20—F.C.
(Silver Tricolor) Mrs. G. Garraway ..	Garraway, June 8—F.C.
Picotee Alice ..	Turner, August 10—F.C.
Clara Penson ..	Turner, July 14—F.C.
Ne Plus Ultra ..	Turner, August 10—F.C.
Pink Mrs. Sinkins ..	Turner, June 22—F.C.
Polystylum tripterum ..	Veitch, March 9—F.C.
Primrose Herman Wilson ..	Wilson, April 13—F.C.
Primula sinensis Annie Hillier ..	Hillier, Dec. 14—F.C.
Meteor ..	Little, March 9—F.C.
Purple Gem ..	Little, Dec. 14—F.C.
Swanley Red ..	Cannell, Dec. 14—F.C.
Pteris internata ..	B. S. Williams, May 25—F.C.
serrulata cristata bella ..	Veitch, June 22—F.C.
Rhododendron Flag of Truce ..	Standish & Co., April 27—S.C.
Snowflake ..	Standish & Co., April 27—F.C.
Rose (H.P.) Duchess of Connaught ..	Noble, July 27—F.C.
Mrs. Harry Turner ..	Turner, July 13—F.C.
Mrs. Jowitt ..	Cranston, July 27—F.C.
Pride of Waltham ..	W. Paul & Son, July 13—F.C.
Saccolabium denticulatum ..	B. S. Williams, Oct. 12—R.C.
Salvia Bethellii ..	Cannell, Nov. 16—F.C.
Pitcheri ..	Cannell, Nov. 16—F.C.
splendens Bruntii ..	Bull, June 8—F.C.
Spiræa Aruncus astiboides ..	Goodacre, Aug. 24—C.
Stephanotis floribunda, Elvaston var. ..	Veitch, May 25—F.C.
Trichomanes parvulum ..	Clarke, May 25—F.C.
Tulipa Gesneriana var. Strangewaysii ..	Clarke, May 25—F.C.
Yucca filamentosa aurea elegantissima ..	Veitch, May 25—F.C.

NEW FRUITS

CERTIFICATED BY THE FRUIT COMMITTEE.

Apple The Queen ..	Saltmarsh, Nov. 16—F.C.
Schoolmaster ..	Laxton, Nov. 16—F.C.
Grape Gros Maroc ..	Rivers, Oct. 12—F.C.
Melon Bellmore Hybrid ..	Ford, July 27—F.C.
Blenheim Orange ..	Crump, Sept. 14—F.C.
Welford Park ..	Ross, Oct. 13—F.C.
Pear Bergamotte Auguste ..	R.H.S., Aug. 24—F.C.
Jurie ..	R.H.S., Oct. 12—F.C.
Vincuse ..	Rivers, Oct. 12—F.C.
Plum Grand Duke ..	Rivers, Oct. 12—F.C.

VEGETABLES.

Capsicum Yellow of Noura ..	Henderson, Aug. 24—F.C.
Long Yellow ..	Benary, Leroy, Veitch, Vil-morin, Aug. 31—F.C.

SHELL GRAVEL.

MR. KEMP asks at p. 749 of last week's *Gardeners' Chronicle* for information about the shell gravel so commonly in use in the neighbourhood of London. As we used it in the Royal Horticultural Gardens at South Kensington for many years, and it is in use there up to the present time, I venture to give the following particulars as to how it may be used successfully. The walks must be well made and drained, and surfaced with a good binding material. The shell gravel is spread thinly over the surface, barely covering it; it is then just scratched over with a rake (a wooden one is best for the purpose), and rolled down, when it gives the walk all the appearance of being newly gravelled, although at a comparatively trifling expense. It is very pleasant to walk upon, and will not soil the most delicate dress. It, however, has no binding qualities, and can only be used for the surface-dressing of well-made walks, but for this purpose it is most valuable.

The walks in the Royal Horticultural Gardens had had nothing done to them since they were made, in 1860, beyond a dressing or two of shell gravel

annually. The floor in the large conservatory has been kept much in the same way. The gravel used being of a loose sandy nature we mixed a quantity of the subsoil, which was of a beautiful warm brown colour, with the gravel; this rolled down made a surface perfectly smooth and hard, and with a thin coating of shell gravel left nothing to be desired. After a flower show, when large numbers of visitors have paraded the conservatory, it is surprising how little the surface has been unsettled; and when all has been cleared away and the surface swept and watered, a slight surfacing of shell gravel and a good rolling has made all appear new again.

Used in the way I have described shell gravel is invaluable, but as it does not possess any binding properties it could not be used as a substitute for gravel. We used to get it from Mr. Smee, of Sittingbourne, Kent, delivered in barge loads; and it cost us a little under 4s. per yard delivered into the gardens. *G. Eyles, Mortlake Road, Kew.*

SALVIAS.

PERHAPS at no time of the year do gardeners find it more difficult to keep up a display of flowers than about the commencement of October, but by growing the following *Salvias* this difficulty would at once vanish, and there would be no more scarcity of either the most intense blue, scarlet, purple, or rose, or of several other intermediate colours—no more difficulty, in fact, than there is in having the conservatory full of *Chrysanthemums* in November. *Salvias* are, indeed, much easier to grow, and even to propagate, than *Chrysanthemums*. An old stock plant during April, May, and even June, will give large quantities of cuttings, which should be struck in the same way as *Verbenas*. After a sufficient time has elapsed they should be potted on and placed in any shady position until they are established; afterwards shift them into 5, 6, or 7-inch pots, according to the size required. The latter size, if supplied with liquid-manure twice a week, will produce plants 3 feet through and not more than that in height, if the points are taken out of the longest shoots once or twice during the month of August. They simply require ordinary good soil, but I may mention that sea-sand is much preferable to any other if the soil is in any way inclined to be heavy. When grown out-of-doors they should be placed in a sheltered position, but removed on the first appearance of frost.

S. Pitcheri.—This is one of the most desirable plants in cultivation, the colour of its flowers being of a most beautiful deep blue. The leaves are covered with stiffish white hairs, and are very narrow, and at the margins slightly serrated. It forms a very ornamental plant, with branching stems 2–3 feet in height, and produces a quantity of flowers all the autumn.

S. splendens Bruntii was raised in France, and is much dwarfer than the old variety; the flowers are also much brighter in colour and produced in greater abundance. In the South of France and Italy it is highly valued. Its value and beauty are greatly enhanced by elegant foliage of a pleasing fern-like colour, and for autumn blooming in small pots it is one of the most charming plants that we possess (see fig. 152, p. 781).

S. Bethellii (involucrata) has rose-coloured flowers shaded with white, and both flowers and foliage are very lovely. It is rather subject to red-spider, but if kept free from this pest it has quite a neat and attractive appearance. When growing it throws up its large round buds (somewhat resembling a *Camellia* about three parts expanded), and will gradually unfold until it develops itself into quite a large spike of flowers of the most attractive size and colour.

S. Hoveyi or *iantha* is similar to the preceding except in colour, which is a bright and distinct purple. It produces large spikes of flowers in great quantities, but is rather a taller grower than the others.

S. rutilans (Apple-scented).—The growth of this is neat and graceful either before or after blooming, and its foliage is delightfully scented. It produces large quantities of very pretty neat spikes of flowers of a lovely magenta colour. For general purposes it is an invaluable plant.

S. coccinea grandiflora has deep reddish-salmon coloured flowers, which somewhat resemble in shape those of *S. Pitcheri*. It has a dwarf and branching habit, and is very pretty.

S. leucantha (barbata) has a very woolly appearance. The base of the tubes is rosy-mauve, and the tube proper pure white. The leaves are long and deep green. *Henry Cannell, Swanley.*



FIG. 152.—*SALVIA SPLENDENS*, VAR. *BRUANTII*: FLOWERS SCARLET. (SEE P. 780.)

HEDGES.

THESE, whether needed for simple use, as in the division of the land throughout the country generally, or in the more limited space of gardens, where they are required to fill the combined purpose of use and ornament, are a most important feature, and, according to the condition they are in, add to or detract from the general effect of the whole surroundings. Taking a broad view of the subject, by looking at hedges in the state usually found existing as employed in the partition of cultivated land over the face of the kingdom, there is in them too often to be met with an absence of the care and judgment present in the cultivation of the crops and holdings they play such an important part in enclosing and separating. That this is correct, there is ample sustaining evidence afforded by the vastly better condition of the hedges in some districts or estates than in others, and this not through the soil being of a nature more suited to the growth of the plants of which the hedges are composed, but solely due to a better and more intelligent system of management from the first preparation of the ground and through all the subsequent treatment in the stages of growth. The best hedges that have come under my notice are on some of the estates in the Northern districts of England and the East Lothians of Scotland. There are no doubt many exceptions to be found in almost every county, many of which I have had an opportunity of seeing; but in forming an estimate it is certain that hedge management is not nearly so well understood or carried out in the South of the kingdom as in the North. From a picturesque point of view, the up-and-down, in-and-out hedges that occupy much of the country are no doubt right and proper, and in keeping with the hollow-ridged tumble-down shanty of a cottage or farmhouse, which painters love to depict in their landscapes, and which, so introduced, are equally correct. Yet few people who can help themselves care to live in them. But as hedges exist for use and not to adorn the landscape, to which they must ever be more or less of a dis-sight, it follows that to have them in the best condition to fill the object for which they are required is desirable. There are no doubt parts of the country where soil and other local conditions are such that hedge plants of any description cannot be made to grow in a way to answer the purpose required; but these are outside what I have to say on the subject. There is, however, sufficient evidence that in many places where hedges have failed to grow satisfactorily, the cause is traceable to the preparation of the ground, or after treatment.

For the simple purpose of forming a fence there is no doubt that the Whitethorn or Quick is by far the best, as it will grow in almost any kind of soil, from that which is of a retentive, heavy character to pure peat, providing it is naturally sufficiently dry, or made so by draining. Too much importance can scarcely be attached to this matter, for this Thorn will not thrive where there is stagnant water present in the soil, although it is often seen making a successful struggle under the opposite condition of a too dry medium for its roots, as where only a few inches of soil rest on rock, when its roots penetrate and traverse every fissure, yet the plant frequently in such a situation attains the dimensions of a small-sized tree, where few shrubs or trees can succeed. This was evidently understood in times long past, when little or nothing was known of the present system of land drainage beyond getting rid of surface water by open drains or ditches, as shown by the deep, wide ditches which were made, the material removed from them forming the banks on which the old hedges we so often see were planted, the said banks helping to still further elevate the roots from the influence of wet. In the present generally fairly drained state of agricultural land there is no need to make ditches so deep, with their correspondingly high banks. But so far as my own experience and observation go, a moderate-sized ditch sloped well out in the opposite side to that on which the hedge stands, and with the excavated soil placed so as to raise the position of the roots—somewhat, is preferable to planting on the flat for two reasons. First, if ordinary drains are depended upon, unless placed so far away as not to be effective in keeping the roots sufficiently dry where the land is heavy and retentive, the pipes are liable to get blocked by the roots; and a ditch, although of moderate dimensions, accompanied by the increased elevation which the soil taken from it

gives the hedge, enables it not only sooner after planting to become a fence that will turn cattle, but also maintains it as such from the lower footing the cattle thus have on either side of the hedge. The ditch does not require to be more than a foot deep, sloping for 3 or 4 feet gradually out to nothing on the opposite side to that on which the hedge stands. By this arrangement, when the hedge has grown sufficiently to do without the railing that up to this time has done double duty in acting as a fence and protection to the young plants, the ground can be cropped or grazed as close in as the breadth of hedge at bottom will permit. Such a ditch as this helps the hedge in its early growth, secures the sufficiently dry position for the roots for all time, and wastes no land.

Cases often occur where, in addition to the ditch as a means for drying the soil, it is requisite to run an ordinary pipe-drain parallel with the hedge at a distance of 8 or 10 feet from it on the opposite side to that which the ditch is at. Under the improved condition of agriculture at the present day it is usually found necessary to remove a much greater extent of old hedges than to plant new ones, as there obviously cannot be worse economy than to retain, where not wanted, the rough wide old fences that frequently are so seen encumbering the ground, and in very many cases it would be much cheaper in the end to plant new ones than to keep the old. A hedge, like most other things, thrives a deal the best on fresh ground; so true is this that we often hear it said it is useless to plant young Quick on the site where an old hedge has stood perhaps for generations, yet such I have found is by no means the case, except where there are numbers of trees retained that so smother the young plants with their heads, and, still worse, rob and impoverish the ground with their roots, as to make it a difficult or impossible matter to get the young Quicks up to the size and condition requisite for a fence. Where trees exist in this way it is well, where possible, to remove the position of the new hedge so far as to avoid their injurious influence; it is always, especially where the new hedge has to be planted in exactly the position occupied by the old one, necessary that the ground should be well and deeply dug, and in the latter case the old effete soil that has been nearest in contact with the roots of the old hedge should be incorporated with as much of the new soil dug up to the surface as possible, working in a heavy dressing of ordinary farmyard manure. So seldom, or in such small quantities is manure applied to the ground in which Quick is to be planted that it would almost seem as if it was not generally known or admitted that manure is of use to the plant, yet there is nothing that I could name in ordinary cultivation which is more influenced by or will repay better being liberally dealt with in this matter; so far is this correct that although ordinary farmyard manure is the most suitable for Quick Thorn, it is by no means particular as to this kind of food, for I have found that good Peruvian guano wonderfully promotes its growth, and where a young hedge does not thrive freely through poverty of soil, there is no readier or cheaper way of attaining the desired end than by a surface-dressing of guano: this is especially the case where the land is at all impoverished by the roots of trees.

Those about to plant Quick, who have not had much experience in the selection of plants, will do well to remember that the largest are not the best. When railway making was at its height the demand was such that prices ran up to a figure which had never before been thought of; the supply, nevertheless, for a time was not equal to the demand. After this tons of haws were sown where bushels had previously been sufficient, the result of which was, that when the railway requirements fell off, Thorns were a complete drug, standing in the hands of the growers until they attained a size that made them of no use for planting, although they tempted inexperienced buyers, who ultimately found out that plants half the size would make a fence sooner. The old stereotyped recommendation of having been twice transplanted is right enough if the second removal is not delayed too long after the first, and also not too long before they are finally planted where they are to remain. Short bushy medium-sized plants are cheaper at the price they cost than straggling tall ones with correspondingly indifferent roots are if obtainable for nothing. Like all other deciduous plants, Thorns cannot be planted too soon after the leaves have fallen; therefore the ground should always be prepared early in the autumn, so that the planting can be

completed early in the winter, and not left as it is often until the buds are swelling, for where this takes place the root-power that it is necessary they should get the first season is never what it ought to be.

For ordinary Quick hedges one row of plants is sufficient standing at a distance of about 6 inches apart; for a garden hedge a double row at 9 inches apart; angling the plants, will perhaps be better, the difference is that the double rows are more difficult to clean from weeds, as is required in their younger stages, but when the hedge is only of limited extent the difficulty is not great. Whitethorn is naturally an erect growing plant, to counteract which disposition in a way to give the hedge a permanent full close bottom, it is necessary to head the plants down, no matter how bushy they are when planted; this is an absolute necessity or the hedge will never be so close at the base as it should be. Under the mistaken impression of saving time many people cut the heads off at the time the Quick are planted, instead of putting them in as received from the nurseries, and letting them have a season to make root and get established. The practice is opposed to all that is taught by experience, which goes to prove that it is wrong to mutilate both the head and roots at the same time of any plant of a like nature to Quick. I should advise any one having doubts on this matter to try a few with their heads cut off at the time of planting against others left with their tops untouched, and then in the autumn to take some of both up for comparison: it will be found that the uncut plants have made three times the quantity of new roots that the cut-back portion have got, and that the former, after having the heading-down deferred until the first summer's growth was completed, very much outgrow the latter the second season. The heading-down may be performed any time from the fall of the leaf before the buds begin to move, severing them with a clean cut upwards about 4 inches above the ground. Each winter, until the hedge has grown to the full size, it should be cut down to within 9 inches of where it was reduced to the preceding year, encouraging the growth to extend in breadth by reducing the side shoots proportionately less than the main upright ones, all the time keeping the young fence to the approved shape, that is, widest at the bottom, gradually sloping up to a point at the top. T. Baines.

(To be continued.)

BROWNEAS.

IN reading Sir Joseph Hooker's description which accompanies the plate of *Brownea Ariza* in the *Botanical Magazine* (t. 6469), it has occurred to me that a few remarks gleaned from personal observation of this remarkable plant may not be unacceptable to your readers. Many are familiar with *Brownea grandiceps* grown in our hothouses, so curious a plant from the appearance of the young leaves, which are bent downwards, of a pale green colour spotted with purple, and ultimately becoming horizontal. Sometimes also its flower-heads, which are of a bright reddish-crimson, may be seen.

B. coccinea is sometimes met with in collections, but the inflorescence, although of a very brilliant colour, is not so striking. Other species, as for example *B. racemosa*, *capitella*, *rosa*, and some others (the characters of which have been badly defined by Jacquin and others), are natives of New Grenada and Venezuela, as also are *grandiceps* and *coccinea*. They are met with here and there in the virgin forests of the hotter regions, and they are found all along the eastern Cordillera of the Andes, even to the south of Bogota. I have mentioned them in the account of my travels, published in the *Tour du Monde*, part 895, p. 135. The majority grow at an elevation of 400 to 600 metres, and constitute small slender trees slightly branched, supporting themselves against their neighbours in the thick forests. If their stems be cut across there may be seen in the centre the figure of the cross of a darker colour than the rest of the wood. On this account the natives give to the *Browneas* the name *Palo de Cruz*. Their beautiful flowers are but rarely seen. Generally they are produced on the old wood, and their brilliant effect is unfortunately diminished by the small stature of the tree. I saw on several occasions such *Browneas* near the bank of the River Méta, in the basin of the Orinoco, and at the foot of the eastern Cordillera of Columbia. My herbarium specimens are numbered 1063 and 1153. What was my astonish-

ment when, in February, 1876, as I was going towards the mountains of Quindío, I found myself on the banks of a little river, the sides of which were adorned with magnificent bushes of *Brownea Ariza*, covered with thousands of scarlet flowers. This sight is one of the finest I ever saw, and it will never be effaced from my memory. On both banks of the river (the name of which is Quebrado Cochimbulo) these fine plants formed a thick dome of verdure over our heads as we were pursuing our way along the bed of the river, which here served as the road. Innumerable flame-coloured balls with projecting stamens hung down on every side. The trees no longer presented slender trunks, but a dense mass of shoots, producing the noblest effect. Flocks of brightly-coloured parrots chattered in the midst of the foliage, and thousands of birds—tangaras, dacnis, pyrangas, pipras—rivalled them in brilliancy. On the shady banks amongst the undergrowth of *Selaginellas* grew a number of beautiful plants, amongst which I gathered *Eucharis candida* and the finest of the *Adiantums*, *A. grossum* of Mettenius, with its circular pinnules as large as a five-franc piece. This superb Fern has not yet been introduced in a living state into Europe. The specimens I sent died, and the spores taken from my herbarium specimens did not germinate. As to the *Brownias*, the practical conclusion to be drawn from what I have said is, that *B. Ariza* should alone be cultivated, or at least in preference to the others. It is of good habit, flowers abundantly in the young state, and is altogether a plant of first-rate excellence. Hartweg discovered this beautiful species at Guaduas, on the road from Honda to Bogota, at an altitude of about 450 metres, forming small trees 30 to 40 feet high. The Quebrado Cochimbulo, where I met with it, is near Viota, New Grenada, and I recommend travellers who may be in the neighbourhood to seek out this charming spot. *Eduard André, Paris.*

[The collection of *Brownias* grown by Mr. Crawford at Lakeville, near Cork, is one of the most remarkable in the country. Nothing can compare with the grandeur of colour of these trees when in bloom. A figure of one of them was given in our pages, 1873, p. 779. Eds.]

ALARMING, EXTRAORDINARY, AND UNHEARD OF CATASTROPHE.

ONE THOUSAND PERSONS SEIZED WITH DEATH
AT THE DINNER-TABLE!!

THE most dreadful calamity it has ever been our lot to report occurred at the dinner of the Artificial Flower Makers' Company, which is at once the oldest and wealthiest of the City guilds. It is famed far and wide for the splendour of its annual dinner, to which the greatest statesmen, philosophers, divines, and authors of all countries are invariably invited. On the occasion of this horrible affair there was assembled at the glittering table of the hospitable guild the most brilliant company ever seen within four walls, including not only a few crowned and many bald heads, but the ambassadors of all the European powers, the American President, and the Plenipotentiary of Basutoland; besides generals, majors, ensigns, newspaper reporters, ballast boys, unlicensed victuallers, the Emperor of China's favourite confessor, Yakob Khan's masters of the ceremonies, and Thomas Talbot, the good missionary who converted a policeman and a black by his powerful discourse at the Stoneyard penitentiary. The honourable and generous members of the Artificial Flower Makers' Company had been exerting themselves far beyond their strength for months previous to the magnificent banquet at which this frightful catastrophe occurred, and the result was that at the last moment the whole of the stewards were sent to the Carbolomew Hospital, to be put on milk diet and kept in perfect darkness and quietude until the affair was over. But of course the festivities went on. Nothing could stop them: nothing ever does stop them. The invitations numbered 1001 persons, and all of them accepted. The odd one is a singular fact, and in the sequel it proved almost more so, as by the unofficial record will be seen.

It is not for us to delay by delicate descriptions of the splendours prepared for the distinguished company the narrative of agony it is now our special pleasure and privilege to unfold. The company are assembled. The gas is turned on regardless of expense, the band plays "Here we are again," with

a richness of effect that must be seen to be understood. Alas! there was one mistake made in the preparations. The masters of the guild thought it would be a good idea to turn the banquet to account as an advertisement of the business; and the stewards being on milk diet, and therefore *pro tem.* milkshops, they were enabled to carry their idea into effect, and the result was an effect of another kind altogether. Messrs. Twill, Jute, Pasteboard, and Gum Arabic, were commissioned to dress the table superbly with artificial flowers. Now it so happened that certain gardeners, who had been previously employed, had already received a commission to provide real flowers; the stewards, now under milk diet and just about to enjoy the tonic of spelling-bee pills, having taken upon themselves the responsibility of ordering "floral decorations as per usual." It was necessary therefore for the masters of the guild to rule with a firm hand, and so, as the artificial flowers were brought into the hall by the south door, the gardeners with their delicate flowers were kicked out by the north door, and we regret to say that one young man took his kicking with so bad a grace that he was heard to say, "If there's much more of this I shall punch somebody's head."

But these trifling incidents are of but small account when a great banquet is "on the tapis." To be sure, this, properly speaking, was not on the *tapis* at the commencement, but a large proportion of it was before the affair had proceeded any reasonable distance from Fish Street to Pye Corner. The tables were loaded not only with delectable food, but with a wonderful display of artificial flowers. These were so skilfully prepared that none of the guests could determine whether they were grown in a garden or in a gas-lighted room, and therefore everybody felt bound to smell them. We say "everybody," but in truth there was one gay guest who refrained from this pastime, and he now lives to tell the doleful tale of the death of the thousand and the escape of the odd one.

Yes! They put their noses to the artificial plants, and they inhaled arsenic, vermilion, verdegis, chromate of lead, lamp-black, powdered glass, smalt, ultramarine, Prussian blue, nitrate of bismuth, cobalt, and other deadly poisons that had been used to give to the leaves and flowers the brilliant colours they bore, and which it was agreed were far superior to Nature's colours, which are softer and somehow indescribably blended without hardness, and always with an objectionable delicacy and transparency. As the inhaling of the poisons went on, a general sneezing commenced, and about ten persons had sneezed their heads off when some mischief-maker raised the cry, "Here comes Death on the pale horse." Thereat several of the company knocked their heads together and died embracing, others threw up what they had eaten, and then, thinking the fresh air would restore them, endeavoured to rush out; but Death on the pale horse was actually in the lobby, and they fell at his feet by hundreds, and at the present moment are still there; for we have not waited for them to be swept up before hastening to write this veracious report. But why lengthen out the agony? Let it suffice then to say that the writer of this alone escaped, and he owes his singular good fortune to the fact that he did not smell the artificial flowers, and consequently did not inhale any of the deadly mineral poisons with which such things are commonly coloured. But he saw a waiter in the flurry of the extraordinary scene turn over a great plant of *Mignonette* made of calico and scented with frangipanni. By the side of the plant was a dressed tongue from the land at the North Pole, whereon the British flag will be planted when the balloons reach that undiscovered country, and the result was the delicious tongue was covered with green dust, and a gentleman asked for a cut of that Cauliflower, thinking the tongue was a freshly-cooked Cabbage made of mashed Potatoes. But the gentleman had already eaten enough, and expired in the arms of the reporter, five minutes previously, saying, "I always loved the dear bright green things, but I was a delicate child and my mother had me christened Joseph James John."

In a future extra and special impression, printed in advance of events, we shall report the dying speeches of the victims and our interviews with the doctors and undertakers, as also the coroner's inquest, which will be held in the bar parlour while the jury sit on the bodies. We are, however, enabled to announce the verdict, which will be "Natural death through

arson. They ought not to have sniffed at the artificial flowers, and it is hoped they will not do it again." *From the Christmas number of the "Gardeners' Magazine."*

PLANT PORTRAITS.

ECHEMA HYSTRIN, E. Morren, *Belg. Horticult.*, t. 13, 1880.—A caulescent *Bromeliad*, with leaves densely crowded, ascending, linear lance-shaped, saw-toothed; floral leaves and bracts scarlet; flowers in very dense oblong spikes. The beauty consists in the scarlet bracts.

ANTHURIUM WAROCQUEANUM, *Illustr. Horticult.*, t. 392.—Said to be a variety of *A. crystallinum*, with deeply cordate, lanceolate leaves of a rich lustrous green, the nerves picked out with white. Introduced by Messrs. Veitch.

ASPARAGUS PLUMOSUS, *Illustr. Horticult.*, t. 394.—See *Gard. Chron.*, p. 749, vol. xiii.

AURICULA, HORNER'S HEROINE, *Florist and Pomologist*, December, 1880.—A certificated flower of much beauty; ground colour rich velvety umber-brown with pure white paste; form excellent.

CALOCHORTUS PULCHELLUS, Douglas, *Bot. Mag.*, t. 652.—This species differs from most of its congeners in its robust habit and numerous, large, drooping, yellow flowers, which never expand fully, and are much less fugitive than in the more brilliantly coloured *C. venustus* and its neighbours. Kew.

CANNAS, large flowered varieties, *Revue de l'Horticulture Belge*.—1, Nardy; 2, Surprise; 3, Aurora. F. Maquaire.

CASTILLEJA INDIVISA, *Florist*, Nov. 1880.—A hardy annual of the *Scrophularia* family, with erect stems 12—18 inches in height. The lower leaves are bright green, sessile, lanceolate, pinnately lobed, the upper oblong entire, except at the apex, which is three-toothed and bright scarlet, as also are the oblong entire bracts; flowers yellowish. Native of Texas. Introduced by Mr. W. Thompson.

CEPHALOTUS FOLLICULARIS, *Illustr. Horticult.*, t. 391.—The well-known Australian Pitcher-plant.

CHERRY BLACK TARTARIAN, *Florist and Pomologist*, Nov. 1880.—Considered by Mr. Miles to be the best black variety; well adapted for culture under glass or for forcing.

CHIONOGRAPHIS JAPONICA, Maximowicz, *Bot. Mag.*, t. 6510.—One of Mr. Maries' introductions from Japan. It has the habit of *Samolus Valerandi*, but belongs to a widely different group—*Melanthaceae*. Its tall spike of white flowers, with narrow segments, is very pretty. Japan. Messrs. Veitch.

CHRYSAETHUM FRUTESCENS VAR. *ETOILE D'OR*, *Belg. Horticult.*, t. 12, 1880. See *Gard. Chron.*, p. 561, vol. xiii.

COLOCASIA NEOGUINEENSIS, *Illustr. Horticult.*, t. 380.—Leaves cordate-ovate, acuminate, dark green, mottled with white. New Guinea. Hort., Linden.

CRINODENDRON HOOKERIANUM, *Garden*, Nov. 27.—A beautiful Chilean evergreen shrub with lanceolate serrate leaves, and solitary pendulous bell-shaped scarlet flowers, rather more than 1 inch in length. The plate, having no analyses, gives no indication whereby the botanical position of the plant may be ascertained, nor is anything said of it in the accompanying text. Bentham and Hooker (*Gen. Plant.*) say that *Crinodendron* is not different from *Tricuspidaria*, a *Tiliaceae* genus.

CROTON BERGMANNI, *Illustr. Horticult.*, t. 389.—A robust growing variety, with thick yellow petioles, oblong-ovate shortly acuminate leaves, with a green ground mottled and barred with yellow, especially along the midrib and edges. Raised by MM. Chantier.

CYPRIPEDIUM DRURYI, *Floral Magazine*, t. 425.—See *Gard. Chron.*, p. 471, vol. v. Mysore. Mr. J. Day.

DRACENA LINDENI, *Illustr. Horticult.*, t. 382.—A beautiful form, with narrow lanceolate leaves, banded longitudinally with green and white.

EPIMEDIUM PERRALDERIANUM, Cosson, *Bot. Mag.*, t. 6509.—The North African representative of *E. pinnatum*, and a very ornamental herbaceous perennial, with 3-foliolate leaves and erect racemes of yellow flowers. Hardy at Kew.

ERICA, *Revue Horticult.*, November 16.—1, translucent, flowers slender, tubular, pink; 2, vestita grandiflora, flowers curved, trumpet-shaped, white; 3, affinis, flowers tubular, contracted at the throat, greenish-yellow; 4, Ewersiana, flowers dilated at the

base, contracted at the throat, limb flat, scarlet-rose; 5, mirabilis, flowers with the tube dilated at the bottom; limb flat, pink.

FRITILLARIA RECURVA, *Garden*, Nov. 6.—Three to four feet high; leaves linear-lanceolate; flowers racemose, each 1—1½ inch, orange-scarlet, bell-shaped, segments recurved. California.

GEISSOIS RACEMOSA, *Illustr. Horticole*, t. 385.—A handsome Saxifragaceous tree, with leaves like those of a Horse Chestnut in miniature, but with red leaf-stalks and midribs, and broad stipules. New Caledonia. Hort., Linden.

IXORA PILGRIMIT, *Floral Magazine*, t. 428.—A garden variety, with enormous globular trusses of orange-scarlet flowers. Mr. B. S. Williams.

JUNCUS ZEBRINUS, *Illustr. Horticole*, t. 393.—See *Gard. Chron.*, p. 399, vol. vii.

MERTENSIA SIBIRICA, *Garden*, Nov. 20.—A beautiful Boraginaceous herbaceous plant, with ovate, entire, pale green leaves, and drooping clusters of pale blue tubular flowers. Native of Western North America.

NEW FUCHSIAS, *Floral Magazine*, t. 426.—The varieties figured are:—1, Mrs. Hooper, white tube, pink petals; 2, Mr. Hooper, red reflexed sepals, violet petals; 3, Fairy Queen, white reflexed sepals, violet petals.

ONCIDIUM GUTTATUM VAR. *ROSEUM*, *Illustr. Horticole*, t. 390.—A cool Orchid, with oval acute leaves and large, loose, many flowered panicles with rose-coloured flowers of moderate size, mottled with white and edged with yellow. Mexico.

PEAR DURONDEAU, *Bulletin d'Arboriculture*, November.—Fruit large, pyriform, stalk long, set obliquely; eye small, open; skin russet-brown, speckled; flesh white, melting, sugary. Season, October.

PELARGONIUM EDWARD PERKINS, *Floral Magazine*, t. 427.—One of the decorative section, with large circular flowers of a scarlet-crimson colour, the two hinder petals blotched. Raised by Mr. E. Perkins, of Leamington.

POTHOS AUREA, *Illustr. Horticole*, t. 387.—A climbing plant, with leaves cordate, ovate, acute, thick, fleshy, green, mottled and blotched with yellow. Solomon Isles. Hort., Linden.

RASPBERRY BAUMFORTH'S SEEDLING, *Florist*, December, 1880.—A seedling from Northumberland Fillbasket, but more prolific, and ten days earlier; fruit larger, deeper crimson.

ROSE MADAME JOSEPH SCHWARZ, H.P., *Journal des Roses*, November, 1880.—A new Rose raised by Mr. Joseph Schwarz, of Lyon. A variety very highly spoken of, with cream-coloured petals, flushed with yellow, and bordered with pale rose; central petals rose; form regular. Flowers abundant, and produced till stopped by the frost.

SARRACENIA CHELSONI ×, *Illustr. Horticole*, t. 388.—A hybrid between *S. rubra* and *S. purpurea*, often mentioned in these columns.

SCABIOSA PTEROCEPHALA, Linn., *Bot. Mag.*, t. 6526.—A very pretty, densely tufted grey perennial, with pale lilac flowers, quite hardy, and each year a striking ornament in the herbaceous ground at Kew. It is like our common field Scabious, except in its dwarf habit. It is a native of the Ionian Islands.

THE SPREAD OF THE POTATO DISEASE.

IN the middle of August, 1876, I instituted the following experiment, with the object of determining the mode of diffusion of the [bud-spores or] conidia of *Phytophthora infestans*.

The method of procedure was to expose on the lee side of a field of Potatoes, of which only about two per cent. were diseased, ordinary German microscopic slides, measuring 2 inches long by one inch broad, coated on the exposed surface with a thin layer of glycerine, to which objects alighting would adhere, and in which, if of the nature of conidia, they would be preserved in a condition suitable for examination. The slides were placed on the projecting stones of a dry stone wall which surrounded the field, and were distant at the portion to which I refer at least 5 yards from the nearest Potato plant. During the five days and nights of the experiment a gentle wind blew, and the weather was, on the whole, dry and clear. Every morning about 9 o'clock I placed fourteen slides on the lee side of the field, and every evening about 7 o'clock I removed them, and placed others till the following morning at 9 o'clock. Each slide was carefully examined with the microscope immediately before being placed in its position, and I took the precaution of spending the greater part of each day in

the neighbourhood to prevent disturbance or communication between the Potato field and the slides by any discernible agency except the atmosphere. So far as it was conceivable and possible to me, the slides were isolated during the period of exposure from every agency but the atmosphere. After the slides were placed in position they were never approached until I did so to replace them by others, and this I was careful to effect from the side of the wall more remote from the Potato field. The examination of them began within thirty minutes after their removal from the wall. The field was not watched during the night; but as no conidia fell on the slides during that period, the absence of this precaution cannot invalidate any result. On no occasion, however, did I discover any sign of the slides having been disturbed. The fourteen slides exposed during the day, when examined in the evening, showed (among other objects) on the first day, fifteen conidia; on the second, seventeen conidia; on the third, twenty-seven conidia; on the fourth, only four conidia; and on the fifth, nine conidia. On none of the five nights did a single conidium alight on the slides. This seemed to me to prove that during the day the conidia, through the dryness of the atmosphere and the shaking of the leaves, became detached and wafted by the wind; while during the night the moisture (in the form of dew, and on one occasion of a slight and gently falling shower) prevented the drying of the conidia, and thus rendered them less easy of detachment.

I determined the authenticity of the conidia (1) by comparing them with conidia directly removed from diseased plants; (2) by their being attached to some of them portions of the characteristic conidiophores; and (3) by cultivating them in a moist chamber; the result of which was that five conidia, not having been immersed in the glycerine, retained vitality, which was shown by their bursting and producing zoospores in the manner characteristic of these organs.

The fact that on the limited space thus exposed seventy-two conidia fell during fifty hours from a field bearing about 2 per cent. of diseased plants shows, in my opinion, that the diffusion of the conidia by the atmosphere is an ordinary mode of spreading the disease.

There were perceptibly more diseased plants in the field on the fifth day than on the first, but fewer than might have been expected from the number of conidia presumably in the atmosphere. For about a week after these experiments I cursorily examined the field each day, and on the fourth day a sudden increase in the amount of disease was apparent. During the previous day and night the weather had been damper and warmer, and on the day but one previous a high wind had blown (the weather being dry) for several hours. *George Murray*, in "*Journal of Botany*."

QUERCUS GLABRA.

THIS is a Japanese evergreen Oak, which we can hardly recommend too highly. It is perfectly hardy, and its broadly lanceolate leathery Laurel-like leaves, dark green above, paler beneath, render it very desirable as an evergreen shrub in the young state. In its native country it forms a tree, the foliage of which is very variable. Our illustration (fig. 153) was taken from a plant growing in the arboretum of the Royal Gardens, Kew.

COLONIAL NOTE.

MALAYAN PALMS.—This plant has been sent from the Singapore Gardens to several places in England and on the Continent under the provisional name of *Areca malayensis*, Griff., and my object in sending you the following notes about it is to prevent, if not too late, its being widely distributed under a wrong name. Whether it will prove as ornamental under cultivation in Europe as under a tropical sun is doubtful, but as seen in its native habitats it is undoubtedly the Prince of Malayan Palms, far outstripping all its rivals. Its correct name was for a long time a much-longed-for desideratum, and during the past five years it has been saddled with several different ones, which would doubtless have caused considerable confusion had the plant been easier propagated. It appears to agree in some minor particulars with the description of *Areca malayensis* in Griffith's *East Indian Palms*, and there the matter was allowed to rest for some time until information reached Singa-

pore that it was growing in the gardens at Buitenzorg, where it was labelled *Bentinckia rubra*, followed by informant number 2, who gave Dr. Scheffer as his authority for naming it *Ptychosperma coccinea*, the "Pinang riembo" of the Athineses. Whether it has been introduced into cultivation under all these names I am unable to say. In this instance, as in numberless other cases, lovers of Nature so far removed from home as those in the Straits have to take a good deal of the information they receive on trust, as they have no means of verifying a good deal that is casually collected, where books of reference are scarce articles.

In the autumn of last year, when Dr. King called here on his way to Java, I called his attention to this Palm, and asked him to endeavour to clear up the question of its nomenclature while at Buitenzorg, as it appeared almost impossible that such a striking and distinct plant should have escaped the keen researches of Blume, Griffith, Lobb, and others who have explored the Malayan flora. When Dr. King returned he gave its correct name as *Cyrtostachys Rendah*, Bl. So far good, but this information we had no means of verifying, as no reference or description could be found in any of the books in the Raffles or Gardens Library. It is not mentioned in Teysmann and Binnendyck's *Catalogue of the Plants in the Buitenzorg Garden*, published in 1866—the latest edition available in the Straits; and the first time I saw the name was in a list of Palm seeds offered in exchange by Dr. Scheffer last year. If any of your readers would be good enough to give us the desired information as to where or when it was described, they would confer a favour on a large number of lovers of Nature in this colony, and also any recent information about Griffith's *Areca malayensis*.

The magnificent specimens in the gardens of the late Mr. Whampoa have acquired a world-wide celebrity, which is little to be wondered at, as they are, perhaps, the most striking objects in the way of vegetation to be seen in the colony, and many of those who have seen them and who knew little and cared less about the names of plants generally, have asked for their botanical names, in order to inform their friends in Europe. Very soon after I reached the Straits, in 1875, I received letters from the Continent, England, and America, asking for plants of Whampoa's Palm. The Malays in Singapore appear to have no other name for it besides *Pinang meerah*, which means literally red Betel-nut, and it was not until Mr. Burbidge returned from Borneo that I heard the name Malawarin. Perhaps Mr. Burbidge will be kind enough to inform us if this name is restricted to any particular part or tribe of Borneo, as Malays and Javanese that I have interrogated know nothing about it; and also give us any other information that he is able to give about the plant, as he has probably seen it under many different circumstances. It appears to be very locally distributed; the only place in Singapore where it grows in quantity is in the jungle on each side of a country road leading from Siragoon to Changie, about 8 miles east of the town of Singapore. Here for about 3 miles it can be seen in all its native beauty, growing with *Podocarpus polystachya*, *Lumnitzera coccinea*, *Allophylus Cobbee*, *Elæocarpus subvillosus*, *Ixonanthes icosandra*, *Calami*, and *Oncospermas*, both in the sun and under the dense shade of taller trees, through whose umbrageous heads hardly a ray of sunshine can penetrate. The ground is very wet and boggy—*Nepenthes Rafflesiana*, *N. ampullacea*, *N. phyllamphora*, and *N. laevis* being found here in abundance, with the pretty little blue-flowered *Utricularia Griffithii*, *Lindsæas*, *Polypodium streptophyllum*, &c., thousands of plants may be seen here with stems from 40 feet high to plants only emerging from the soil, the bright colour of the cylindrical bases of its leaf-stalks being shown off to advantage by the dark green foliage of the plants above mentioned.

The bases of the leaf-stalks, which are rolled up around the trunk for about 18 inches below the blade of the leaf, are of a beautiful red colour changing to orange-red, the same colour extending the whole length of the foot-stalk and to the midrib of the leaflets. In this way from 5 to 7 feet of the top of the trunk is entirely covered with the encircling sheaths, rendering it a striking object. Its foliage is pinnate and rather more graceful than that of the *Pinang* (*Areca Catechu*), and its flowers are produced in the same way, that is, in panicle spikes from the scars of recently fallen leaves. It produces fruit sparingly, and I have never been fortunate enough to observe perfectly formed female flowers. I have on several

occasions sown what few seeds I have succeeded in collecting, but at the end of three years none had germinated, nor have I seen seedling plants in its habitat. Numerous plants are, however, produced by its soboliferous stems which sometimes run for some distance underground where the soil is light, but these require very careful handling; of about

clumps of its beautiful slender red-crowned stems. I have seen single specimens on the banks of the Scudai River in Johore, but I did not see one specimen in either Penang, Laroot, Perak, Kinta, Selangor, or Malacca during my trip in 1877. I once saw it used in Singapore for decorating the Town Hall, when it formed a scene

that the idea on the occasion referred to originated with me.

Another beautiful Palm of Singapore, but of a different type, is *Ptychosperma singaporensis*, described by Beccari in his *Malaysia*. It is surprising that such a beautiful and widely-spread Palm should not have been described by earlier explorers. Its plume of finely



FIG. 153.—*QUERCUS GLABRA*, A HARDY JAPANESE EVERGREEN OAK. (SEE P. 784.)

3000 that I had carefully removed in 1877, only about 200 survived the operation. Where large clumps are established, like those in Mr. Whampoa's garden, the best and surest method of propagation is to layer the young stems in deep pans, and after they have taken firm hold of the soil, the connection with the parent plant can be gradually severed. In its native habitat it is inclined to be straggling, the stems springing up at some distance from each other, but when established in firmer soil it forms large

that will long be remembered by those who saw it. The plants, or rather stems, were brought in from the jungle and cut down so that the base of the lowest sheath appeared level with the top of the balustrades on each side of the staircase, the foliage meeting overhead, through which the gaslight shone, showing off the red leaf-sheaths beautifully. I trust that by recalling the recollection of the sight I shall not be inducing others in Singapore to repeat that act of Vandalism, although it is imperative on me to confess

pinnate leaves is even more graceful than that of *Cocos Weddelliana* (*Leopoldinia pulchra*), to which it should form a fine companion-plant for dinner-table and other decorations. When at home it forms clumps of from five to ten stems, larger than a medium-sized Malacca cane, and about 8 feet high, each crowned with numerous gracefully arching pinnate leaves about 4 feet long. It fruits freely, and numbers of young seedlings may be collected all the year round, but ripe seeds are difficult to procure, as they are covered

with a sweet bright red pulp, of which monkeys, squirrels, &c., are fond, and being easily detected by these enterprising spider-monkeys, &c., are removed as soon as ripe. It is a "miffy" subject when young, and will not stand the blaze of a tropical sun, being found in shady jungles in light soil, consisting mostly of decayed vegetable matter. It has been sent to Kew and several other places in Europe, and I trust that the young plants will ere long give a good account of themselves.

The "Duan sang" of the Malays is the noblest of all the Malayan Palmaceæ, which I have only seen in Kinta and Perak in the peninsula as described in the report of my trip through those States in 1877, some extracts from which were published in your columns soon after. Since then Mr. Low has succeeded in getting fruits of it, which he was good enough to send me, but on examination the albumen proved to be soft and watery, and none germinated. In size and form they are much like a Litchi fruit, but the protuberances are spinylike those of a miniature Durian. While on the subject of Malayan Palms allow me to throw out a suggestion as to the origin of the name "Penang Lawyer" as applied to *Licuala acutifida*. Now Penang or Pinang is the Malay name for the Betel-nut (*A. Catechu*), hence the name *Pulu Penang*, the Island of Betel-nuts, and the Malay word *layar* signifies wild in contradistinction to cultivated or domesticated subjects, and it appears to me that the name "Penang Lawyer" is but a corruption of "Pinang layar" or wild Betel-nut. True that one has pinnate leaves and the other peltate, and that the Malays are hardly likely to class such dissimilar plants together under the same generic name; but I have often known them to draw on their imagination to a far greater extent when I have been seeking information about the native names of plants, as, for instance, Bidara being given to *Diospyros* and *Zizyphus*. The fact that the structure of the wood is the same, especially at the top of the stick, showing the marks of adventitious roots, would favour my idea, and but few of those who "loaf" about the town selling the sticks know anything of the appearance of the plant producing them. I have not seen this plant wild in Singapore, but it is abundant all through the peninsula, especially at *Pulu Pankor* and the *Dindings*.

Is *Licuala longipes* in cultivation in England? This is undoubtedly the most ornamental of the genus, as in addition to its ample peltate leaves it produces panicles of bright pink coral-like berries in abundance, which stand out clear of the foliage.

There is doubtless much to be done in connection with Malayan Palms, and the information already extant is fragmentary and scattered, so that it is difficult for those who are amongst them every day to acquire anything like a botanical knowledge of the subject, and the publication of the characteristics of the genera only when the authors of the *Genera Plantarum* have elaborated the material at their disposal will be a much longed for boon. Little can be done by flying visits like mine to Perak in 1877, as flowers and fruit must be obtained, and many a fine Palm of the peninsula is as yet unknown to English horticulturists, for the simple reason that they have not been met with in the right season.

There is a very distinct-looking plant on *Gunong Pulai*, *Johore*, the counterpart of a *Chamaedorea* in appearance, besides a dwarf one with beautiful *Perrettia*-like berries. Some Palms are very local in their distribution, and I have nowhere else seen those two. *Pinanga maculata*, abundant everywhere in Perak, Selangor, *Johore*, *Muan*, *Sungie*, *Ujong*, and the *Dindings*, I have never met with within the boundaries of the Straits Settlements.

Doubtless many interesting facts would be collected if those to whom such plants are everyday objects would record their observations in your columns, and I shall be glad to furnish my small quota as time and opportunity permit. *H. J. Murton, M.R.A.S., Straits Branch, Singapore, Oct. 29.* [We trust our correspondent will continue his valuable and very interesting notes. Eds.]

CINCHONAS IN JAVA.—It seems that the Government quinine crop of 1878, from the Java Cinchona plantations shipped to Holland during 1879, amounted to 91,649 kilos., and netted 179,700 fl., while the total expenses of culture amounted only to 52,862 fl. It is further stated that there are now 397,550 Cinchona plants of various sorts in the nurseries at *Bandong*, and 1,678,670 trees planted out.



Notices of Books.

Duty; with Illustrations of Courage, Patience, and Endurance. By Samuel Smiles, LL.D. John Murray, Albemarle Street.

Mr. Smiles has published another of his pleasant books, with a preface in which he tells us how and why he first became an author. The present volume is full of anecdotes, and is admirably adapted for a present to young people at the season now approaching. We must, however, object to some of the stories told as likely to mislead enthusiastic young folks as to what is and what is not duty. Take this anecdote for instance:—"There was a man of delicate constitution who devoted a great deal of his time to philanthropic work. He visited the sick; he sat by them in their miserable homes; he nursed them and helped them in all ways. He was expostulated with by his friends for neglecting his business, and threatened with the illness he was sure to contract by visiting the fevered and dying. He replied to his friends with firmness and simplicity, 'I look after my business for the sake of my wife and children, but I hold that a man's duty to society requires him to have a care for those who are not of his own household.'" Now we hold that this man had a mistaken sense of duty, since, if he attended properly to his business, and the education and care of his own children and household, he would have had quite enough to occupy him, and was not doing his duty by unnecessarily risking his valuable life in fever-stricken houses. If he found in it his pleasure and the satisfaction of his conscience, well and good. Certainly it was his duty to his wife and children and to "society," who might have to take care of his belongings, not to do it, unless some special reason demanded it of him. But the book is full of valuable maxims and proverbs, to which it is impossible to make any objection; for instance—"No good thing is ever lost;" "Nothing dies, not even life, which gives up one form only to resume another;" "No good action, no good example, dies—it lives for ever in our race;" "A single virtuous action has elevated a whole village, a whole city, a whole nation."

Cassell's Cookery. With numerous illustrations. London: Cassell, Petter & Galpin.

This is the first part of a dictionary of cookery, containing a very large number of recipes which ordinary people want, and a very large number which they are not likely to want; for instance, very few persons will care to make essence of anchovies, Banbury cakes, a Chantilly basket, a bouillabaisse, liqueur bonbons, or Bologna sausages at home. On the other hand, the directions for making useful everyday sorts of dishes are practical and simple. In many cases a reliable set of prices of the cost of the articles to be used is affixed. The work opens with a common-sense chapter on roasting, boiling, stewing, and frying, with a list of cooking utensils. The directions given are not, it is true, very original; but it seems that to teach cooks now-a-days repetition is never out of place. Some allusion, we think, might well have been made to the useful little American egg-whisk, in this chapter, and to the still more useful mincing machine, which will surely furnish a more appetising dinner from the end of a sirloin of beef than the very disagreeable plan of soaking it in salt-and-water, and serving it boiled. We cannot endorse the opinion that "with the assistance of some boiled greens and Potatoes, this forms an agreeable dinner."

The Rose Annual for 1880-81. By William Paul, F.L.S.

The Roses figured are—I, H.P. Lady Sheffield, a seedling of Mr. Postans' raising, with globular flowers of a rosy-cerise colour. The form is good,

and the plant described as of good constitution. 2, Princess Mary Dolgourouky, H.P., raised from seed of Anna de Diesbach; flowers very large, cupped, satiny-rose. 3, Madame Oswald de Kerchove, H.P.; flowers medium-sized, white, the centre salmon-rose. 4, Red Gauntlet, H.P., a large globular crimson Rose, adapted for bedding: it was raised by Mr. Postans. The articles include a review of the current year from the point of view of the Rose grower. Roses suffered less at Waltham from the effects of the severe winter than in some other places. Roses on their own roots, even when killed level with the ground, pushed vigorously from beneath. Every sort that can be so grown is accordingly kept to provide against such contingencies. A descriptive list of the new Roses of the year follows, and then an interesting chapter, entitled "Recollections of Roses," and embodying much of the author's personal history and experience. We are sorry to see, here and there throughout the publication, disparaging remarks about the Pedigree Roses. We are only concerned here with the principle involved. There may be Roses with a bad pedigree, and Roses with a good pedigree, and a Rose is not good because it happens to have a pedigree. It is with some feeling of disappointment that we find the Editor, who has obtained so just a repute for the scientific views he has taken of horticultural practice, slighting the careful intercrossing with a definite object in view, and the judicious selection which the pedigree system, properly carried out, necessarily implies. Hap-hazard or promiscuous impregnation may indeed give good results, but how much more certain and speedy are likely to be the results obtained by the forethought, experience, and judgment, of such a man as Mr. Paul himself. The promiscuous plan secures, for the most part, mere kaleidoscopic changes, rearrangement of old constituents; but if real progress or a new break be needed—and these are needed while we have no good white H.P. for one instance—then we must resort to other means than hap-hazard seedling raising.

Garden Operations.

KITCHEN GARDEN.

The state of the weather which has prevailed during the chief part of the current fall has been most favourable towards developing a wonderful growth in most kinds of vegetable subjects, and at the present time (December 13) we are favoured with a bountiful supply of produce of all kinds in season. In contrast the appearance of the crops of winter Greens, &c., and other subjects which belong to the Brassica tribe, this year with those of the preceding one at this period, we are most favourably impressed with their superiority, and improved matured state of the tissue and growth of such plants this year. It will, however, be prudent to go through the plots of these plants now, and free them from all decayed and useless leaves for the sake of more fully exposing and subjecting them to atmospheric influence. The circumstance of beheading Brussels Sprouts and winter Greens recently came under my notice, and the destructive nature of the wound caused by the operation so forcibly impressed upon me the consequences that must inevitably ensue when severe and inclement weather comes, as to induce me to notice it here, and to point out the necessity of keeping winter Greens, which yield crops of sprouts from the stems, preserved in their entirety until such time as these are gathered, or no longer required, when they may be decapitated and afterwards conveyed to the refuse heap. Besides the usual operations which ought to be in progress, as trenching, digging, wheeling out manure, &c., the living edgings beside the walks should also in favourable weather have a share of attention. Spring may probably in some respects be a more suitable time for this work being done, but the advantage is so small that it is hardly worth deferring the matter until such a busy period; let therefore all defective places in Box and other edgings be repaired and put into order forthwith, and the clipping be done. If any new lines are to be made these might also be advanced in like weather. The best plan is to take up old edgings when they become large and out of proportion, and to divide them and replant. Any walks which may require turning over or new gravelling should also be seen to now; a thin sprinkling of salt carefully applied, will do much towards adding to the appearance as well as in destroying moss or other weeds which are in an incipient state. Before a more busy period comes a portion of the bed of Horse Radish should be trenched over, and in this process every particle of a root should be picked out: select that which is in a useable condition and lay it in properly in a cool place in readiness for use as wanted; then from the rest make choice of the second-size roots for planting again, which should be done as soon as the place

is manured, trenched once again, and made fit to receive the plants. These latter should comprise strong pieces from 2 to 3 feet long which should be put in with a long dibber in their entirety, in rows 18 inches apart, and 6 or 8 inches from plant to plant. Look sharply after rising crops of Peas, Lettuce, &c., as at this season birds and other vermin may naturally be expected to be troublesome. Sparrows are sometimes very destructive to the crop of Lettuces; where it is not extensive, a few lines of twist placed over the beds will act as a deterrent. Remove or protect Broccoli by tying up the leaves of those which are heading in: the latter plan should be adopted when they are not sufficiently advanced to be taken up entirely and removed elsewhere. At those times when operations out-of-doors cannot be proceeded with, let the stores of roots, &c., be examined, and such other matters pushed forward.

FORCING DEPARTMENT.—As time and opportunities occur, plentiful supplies of leaves should be got together in the frame ground, or some other convenient spot. If they are used for Pea or other beds in which the heat is required to be steady and prolonged, they should be collected and stored in a place where they will keep moderately dry; for these purposes those of Oak or Beech are to be preferred, common mixed sorts of other leaves will answer for other requirements. By no means fail to keep up the store heap of warm materials whilst the forcing season lasts. Manure in proportion should also be accumulated for many purposes. No further delay should be allowed before making up the requisite number of beds for early crops of Potatoes, Carrots, Radishes, &c., and let the soil be placed on them when they are completed, so that it may become warmed. Potato sets should be planted in decayed leaf-mould in boxes or otherwise, for lifting into the beds and frames prepared for them immediately the shoots are 2 to 3 inches long. Carrot seed should also be sown in drills about 9 inches or 1 foot apart in the rows, and where conveniences of this sort are not plentiful, the spaces between the Carrots can be occupied with a row of an early kind of short-topped Radish. We, however, elect to have them separate if possible, as the Radishes will, unless well ventilated, draw up so weakly, and the admission of so much air arrests the growth of the Carrots considerably. Successional supplies of Rhubarb and Seakale roots, and of Asparagus, should be introduced from time to time as required. Asparagus after it comes up should on favourable occasions be well ventilated. Maintain a supply of moderately rich soil where its condition will be suitable for the frequent pottings and sowings which are necessary in order to keep up the supply of French Beans. Along the sunny side of a Pine-bed, where sunshine can be had, is a capital place for a single row of this subject; by removing a square foot of the material, and relaying it with soil, which can easily be effected, a fine crop can be produced. Mint and Tarragon in quantity ought now to be ready; much more of the former as a rule is required, therefore larger quantities of roots will be necessary. Both can be brought on in any ordinary forcing-house. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

VINES.—Look over late Grapes twice a week for decaying berries, and keep the house as dry and cool as may be consistent with the safety and preservation of the fruit. When thoroughly ripe and the Vines are clear of foliage a mean of 50° is a very good temperature for late Grapes until the time arrives for cutting, as anything much below this is liable to foster fungus and decay, and fire-heat to maintain a night temperature exceeding it, will most likely cause the berries to shrink immediately after the fall of the leaves. If not yet prepared no time should be lost in getting the Grape-room ready for the reception of the stock as the latest may be cleared off the Vines not later than the first week in January, and a week's steady firing with ventilation is necessary, in many places, to draw out damp and dispel it from the room. The method of bottling and managing Grapes is now so well understood, and the certainty with which they may be kept for four or five months, in better condition and at less expense, will now inspire the most timid with confidence in a system which gives relief and rest to the Vines, while it sets a house at liberty for other purposes and relieves the attendant of a load of anxiety. One of the most remarkable Grapes we have to grow and keep is Gros Colmar, as it requires a long time on the Vines, lays on colour after the foliage is ripe, and, owing to the soft fleshy nature of the stalks, which are liable to rot, it keeps best in the warmest and driest part of the Grape-room, where it soon throws off its disagreeable earthy flavour and improves in quality. To grow it well it should have its roots inside a house that is started before the end of January, when the fruit will be in good condition by the month of September. It is by no means particular as to the stock it is worked upon—Lady Downe's with me giving the largest bunches and berries, while Venn's Seedling produces the most compact bunches and the best quality of fruit. Alnwick Seedling,

Ingram's variety, the best coloured Grape we have, although hanging close to the pipes, is keeping well. It is the exact counterpart of the Grapes shown by Mr. Bell in 1879, but not quite so large in the berry as the bunches he has produced this year. If the unusually fine weather has been turned to account for carrying on outdoor operations the work in succession and late vineries may have been allowed to fall into arrears. Pruning should not, however, be neglected, as Vines break and show so much better when they can have a good season of rest. Young pot Vines intended to be grown into fruiting canes may be cut over close to the pots, dressed with styptic, and placed in the succession-house ready for starting in January. Single eyes may also be potted in small pots or sods, and kept cool for two or three weeks before they are placed in bottom-heat. Where young Vines have to be planted in the spring advantage should be taken of this fine weather for getting the compost mixed, and the borders made up ready for their reception. Good clean drainage being the first essential this part of the work should be well done, the depth of the border being regulated by the situation and surroundings. In high and dry gardens external borders may be nearly 3 feet deep near the front of the house, and 6 feet wide to start with, but in low damp places an extra 6 inches of drainage and 2½ feet of good compost will be sufficient. *W. Coleman, Eastnor.*

CHERRY HOUSE.

Our Cherry-house was closed the first week in the current month, all preliminary matters in the way of cleaning the trees and the house, also warming and mulching being, of course, completed beforehand. During the present month the night temperature in it will be maintained at 40° by fire-heat if it be necessary, and under the force of more favourable influences 50° will be the standard during this period in the daytime. Fifty degrees also will be sustained regularly, and 55° will be allowed under the influence of natural causes; if the temperature rises above this degree a little air will be given and be kept on until such time as it recedes to it again, when the house will be closed. Scarcely any syringing will be needed to be done more than once every day unless sunshine prevails, when an extra application may be requisite. If the trees are cultivated in pots the watering should not be neglected, but the customary examination should be regularly seen to. Although trees in pots under skilful management produce excellent crops of good Cherries we give the preference to the system of planting-out, because the trees are less liable to suffer from inattention in watering and other circumstances. *G. T. Miles, Wycombe Abbey.*

ORCHARD HOUSE.

The fine weather we have been having for the last few weeks has been a great boon to those who have started a house or compartment early, as the trees can be pushed into flower without using much artificial heat. The buds will now be showing very prominently, and if any thinning out of the branches is required, and has been neglected up to this time, it may yet be done. A moderately moist atmosphere is desirable, but too much should be avoided. See that the trees are supplied with sufficient water at the roots, and it is best to use it some degrees warmer than the atmosphere of the house. If the trees are in pots and have been top-dressed, it is very easy to make a mistake in the watering, as the rich dressing on the surface absorbs a large quantity of water, and it contains few active roots to extract it; while the roots at the under surface of the ball being in a very active state, it is important to see that this under portion is kept quite moist, because if it gets dry sufficient sap is not sent up, and the flower-buds drop off. If the trees have been planted out in a well-prepared border, there is not much danger of the trees being injured, if ordinary care is exercised, as two or three good soakings of water will make the trees safe for the season, although in most cases it is desirable to apply water four or five times. Many persons who started to grow Peach and Nectarine trees in pots have become tired of it, and have planted the trees out in well prepared borders. It is only feasible that good results will follow this treatment, with much less anxiety as regards watering. There is one objection to the planting-out system, and that a serious one to those fond of flowers—the trees are all cleared out just as the Chrysanthemums are ready to be placed in it. If the trees are planted out this would be impossible unless they were trained to a trellis overhead, in that case the plants could be arranged underneath. Strawberry plants in pots on the shelves near the glass will now be making plenty of young roots; if they show but little growth they ought to be aided by manure water about once a week—that would be at each alternate watering, as they would not require water more than twice a week at present. The plants in the house where there is no artificial heat will require to be looked over about once a week only. The trees in pots that will not be forced are still plunged out-of-doors where they will remain this year until after Christmas, as the flowers will con-

tinue in good condition on the Chrysanthemums until quite the end of the year. *J. Douglas, Loxford.*

ORANGE TREES IN POTS.

It may be well at the end of the year just to briefly run over the general details of the culture of these. At present the trees should be bending with the weight of the luscious fruit. Where this is ripe the trees should be removed to a cooler house, and the fruit will hang in good condition for two months at least. When the fruit is removed the trees may again be placed in heat and started at once. As soon as growth begins the flower-buds appear, and they will soon be in flower. If the trees require repotting that may be done just before they are started, but the trees continue in good health, and bear freely for a number of years by merely surface-dressing with rich loam mixed with finely crushed bones. The trees are rather eccentric in their times of flowering. They may be had in bloom any month in the year, but January, February and March are the best months, as the fruit has all the summer to ripen in, and it is of the best quality when ripened in the autumn, and much more rich in flavour, as well as more juicy than imported fruit. The little Tangierine compares very favourably indeed with the best to be obtained in Covent Garden Market from abroad. Water must be cautiously applied to trees with ripening fruit, as too much of it causes the fruit to burst. *J. Douglas, Loxford Hall, Ilford.*

PLANT HOUSES.

ORCHIDS.—Those noble growing plants, *Vanda suavis* and *V. tricolor*, although not really difficult Orchids to cultivate, oftentimes give growers a good deal of trouble to keep them the whole year round in a flourishing and satisfactory condition. The majority who fail in their culture do so through keeping them too close through the summer months and too hot during winter. Although East Indian plants, they do not appear to appreciate what cultivators term an East Indian temperature, or rather atmosphere, but thoroughly enjoy themselves the whole year round in company with the long-bulbed *Laelias* and *Cattleyas*, or on the shady side of a house where *Dendrobiums* flourish suspended from the roof. They are not the least afraid of sun-heat, but they certainly are very easily injured by direct sunshine playing upon their foliage. More than this, it is quite possible to get them in a position where, without direct sunshine, the light is so intense and the evaporation so great, that growth is made very slowly. Such plants are totally unable to bear the strain of the over-abundant spikes which such a treatment causes them to throw. The spikes will carry their flowers all right, and the latter will expand properly, creating such a grand display that the grower may possibly be congratulated from all sides on his success in flowering *Vandas* so freely, but after this flowering period, or just previous to the plant starting into growth, there comes a reckoning. Nature quickly strikes a balance in the shape of half-a-dozen pairs of the plant's lowest leaves, which rapidly part with their vitality, and, to the grower's chagrin, likewise with the stem they so beautifully adorned. Providing such a plant stands in a moist growing atmosphere, there will be emitted from the portion of stem thus made bare a whole host of roots, and the plant once more starts to add another link to the chain of its existence. For aught I know *Vandas* may act exactly like this when growing in their native habitat, but I do know that Orchid owners in this country strongly object to such maypole-like objects, and that they are all perfectly in unison as regards their demands concerning *Vandas*, which simply amount to abundance of foliage and a fair supply of flowers. There are two methods of growing these *Vandas* thoroughly well: the one is to keep them in the East Indian-house from March till December under thorough growing conditions, and the rest of the year to keep them in a light airy position where the night temperature descends to 50° under resting conditions. In the latter case water is given only at long intervals, never often enough to keep the sphagnum growing. This is an excellent plan for exhibitors, as it brings the plants to throw a liberal set of spikes through May and June. The other method is to keep them the whole year round in a moist airy intermediate temperature, drying them slightly at the roots from December till March, but never so that the moss dies; at other times keeping them moist, but on no account continually wet, or the roots are certain to perish. Grown in this way the owner of even a small selection will seldom be without a well-developed spike. The potting in both cases should be the same—the pot, nearly full of crocks and charcoal, should be topped with a cone of sphagnum. There should never be too much hurry to lower *Vandas* just for the sake of hiding their bare stem, as it is from this part that breaks come away and in time cover the defect. There must also be taken into account the necessity of propagating the best varieties, and it is in these lower offsets that the propagator sees his best chance. *J. C. Snyers, Dorking.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Dec. 20	Last Sale of the season of Dutch Bulbs at the Auction Mart, by Protheroe & Morris
TUESDAY, Dec. 21	Sale of Roses, Fruit Trees, Shrubs, &c., at the City Auction Rooms, by Protheroe & Morris. Sale of Growing Timber, Fruit Trees, Rhubarb, &c., on Clements' Estate, Ilford, by Protheroe & Morris.

THE successful introduction and cultivation of the CINCHONA in India and in various of our colonies is a veritable triumph for British enterprise and British gardeners. It is one of those feats of which the nation as a whole and the gardeners and botanists as a class may well feel proud—proud, not because of difficulties overcome—proud, not because of commercial success secured, but proud on account of incalculable benefit to the human race, a result brought about by British pluck and endurance together with the skill and intelligence of the gardener and the botanist.

When, in 1859, Mr. MARKHAM undertook the task of seeking in their native forests the Cinchona trees then deemed to be on the point of extinction from the recklessness and greed of the South American Governments concerned, objections were raised in these columns to the selection of this gentleman on the ground, among other things, that he was neither botanist nor gardener. Years have rolled on, and Mr. MARKHAM has answered all objections that could fairly be raised. He had special qualifications, special knowledge of the country, the manners and languages of the inhabitants; and he availed himself fully of the aid of botanists, gardeners, and chemists. Whatever, therefore, may have been the duty of our predecessors, ours unquestionably is to congratulate Mr. MARKHAM on his success. We must also acknowledge the handsome manner in which he has adverted to the work done by his companions and fellow-labourers in South America—SPRUCE, WEIR, CROSS, PRITCHETT, and LEDGER, and to the support and assistance given him by WEDDELL, HOWARD, KING, the authorities at Kew and others. In a book recently published* Mr. MARKHAM has drawn up for general reading a history of the whole enterprise, from the time when Dr. ROYLE first pressed the subject on the attention of the Indian Government to the time at which Indian grown bark was sold in the London market at 15s. 8d. per pound, and the sum of £176,036 realised from the Cinchona culture on the Nilgiri hills only. The general financial result is, indeed, such that in the present year the whole capital account has been paid off with interest, and the plantations have begun to yield a clear annual profit, while, in addition to quinine for the European market, a cheap and efficient febrifuge has been placed within the reach of the people of India. Although the main facts of Mr. MARKHAM'S expeditions and the labours of his associates have been made public piecemeal—many of them indeed in this journal—yet he has done well to condense them into one whole, for the benefit of the public at large, and we shall be much surprised if, when the whole story is laid before it, a feeling of admiration will not spring up, and some pressure be put upon the home and Indian Governments, so that some adequate recognition may be made of the services of those who, for beggarly remuneration, have sacrificed comfort, time, money, and health in this great enterprise. Mr. MARKHAM'S book is very readable, but, as we have said, our readers may be presumed to be fairly acquainted with the early history of the Cinchona plants and the general character of the forests of the Andes. The adventures of Mr. MARKHAM himself have been told in another volume, while much of the

travelling experiences of Messrs. SPRUCE, CROSS and WEIR has been given in our own columns, and for various important details as to cultivation, and as to the peculiar quality of special varieties, we have been indebted to Mr. HOWARD. It is, therefore, unnecessary for us now to enter into these matters; suffice it to say that Mr. MARKHAM tells the tale clearly and generously as regards all who have afforded him aid, and that his book will amply repay perusal. The history is a striking illustration of the value of enterprise, aided and controlled by science and skill. Mistakes and blunders have been committed, chiefly on account of red-tape restrictions and official stupidities. Errors of judgment were made from inexperience, but whosoever intelligence and skill have had free play the results have been highly satisfactory. Plants in danger of total or temporary extinction in the forests of the Andes had to be conveyed across the snowclad mountains, through every variety of climate and amid all sorts of obstacles, to the coast, thence shipped, not to India direct, but to England, and thence to India. When, after numerous quests for different species in different localities in South America, the plants were introduced into India suitable sites had to be found, and suitable modes of cultivation discovered. A wildling had to be converted into a cultivated tree. It was soon recognised, as it has been in so many similar cases, that in order to be of substantial use the tree must be cultivated. The art of the gardener was, therefore, called into play, and with such success that not only in quantity but in quality the supply from India and our colonies has become most important. In the Andean forests a large variety of these trees grow, and these vary so much and cross so freely that the trained eye of the bark collector and the skill of the botanical specialist are required in many cases to discriminate the forms. How necessary this minute discrimination is, is shown by the fact that some forms, worthless as regards their products, are in outward characteristics so closely allied to others of greater value as to be almost indistinguishable from them. The early attempts to cultivate the Cinchona in Java were vitiated by this very circumstance.

The history of the formation of the valuable alkaloids in the bark has exercised the talent and skill of chemists like DEVRY and HOWARD, and their researches have added considerably to the comprehension of the physiology of the Cinchona plants, and that again has been rendered available for cultural purposes. In these ways great benefits have been conferred directly on the people of India, and the mortality from fever reduced (it was estimated that two millions of Her MAJESTY'S subjects died annually from this disease in India), and the misery resulting from this disease, even when not fatal, materially diminished. The stock of knowledge in general available for future purposes has also been largely augmented. In India alone more than 8000 acres are planted with Cinchonas, upwards of 5000 in Ceylon. In Jamaica, under the care of Mr. MORRIS, the product bids fair to increase rapidly. In St. Helena the experiment has been allowed to lapse, while in some other colonies the cultivation is apparently less diligently pursued than is desirable. What has been done by the Dutch, who preceded us by a few years, may be gathered from the note on p. 786.

Mr. MARKHAM'S book has many passages relating to the vegetation of the Andes and of various parts of India, to which we may call attention on another occasion. Mention also is made of various other products besides Cinchona, such as Caoutchouc, Coca, Cotton, &c. A bibliography of the Cinchona genus—which, however, might be extended—is given, and a very full index. We have confined ourselves now to a general mention of the book

and its contents, but the whole history is so interesting and so satisfactory, from the point of view in particular of the gardener and the botanist, that we shall probably find opportunity to revert to it.

— LATE GRAPES AT MR. LADDS', BENLEY HEATH.—Grape growing is the most recent feature of Mr. LADDS' enterprise, and, like the other matters he undertakes, it is done in a way that would be difficult to surpass. The house shown in our illustration (fig. 154), which is taken from a photograph, is 252 feet long by 25 feet wide; the berries in the foreground are out of focus and appear larger than they really were. The Vines, 180 in number, are planted on each side; they are one-half Black Alicante, the other Lady Downe's, and average about eighteen bunches to a Vine. This is the second season of their bearing; last year they were fruited about two-fifths of their length. They are a magnificent crop, as black as it is possible for Grapes to be, and unusually heavily covered with bloom. The photograph does not give an idea of the great length of the house; but standing at one end, and looking down in the opposite direction, the impression conveyed to the eye is, that from the middle of the house to the extreme end the bunches are literally touching each other. Mr. LADDS likes the Alicante much better than Lady Downe's; the latter is to be inarched with the former variety during the ensuing spring. Two more houses have this year been planted, one with Muscat of Alexandria, the other with Alicante: both have made excellent progress.

— FUNGI, INFLUENZA, AND DIPHTHERIA.—In the year 1838, when influenza was so fatal on the Continent, there was a prevalent opinion at Lille that it arose from the dispersion of the spores of some species of Coprinus. This notion has been recalled to mind by a communication recently received of several cases of diphtheria occurring in a house which had suffered much from damp, in consequence of which the plaster wall had produced in abundance a form of Coprinus domesticus. The species of Coprinus are very rapid in growth, and several instances have been recorded of their occurring in the bandages of purulent wounds. This appears to be more common on the Continent, probably from increased temperature, than in this country, but we recollect a case which occurred in St. George's Hospital some fifty years since, which caused a great deal of discussion at the time. We are not inclined to believe that the Coprinus has anything to do with the diphtheria, the damp of the house being quite sufficient to account for the outbreak of disease, but it is well that such notions should be recorded, especially when they are broached by persons of admitted position and character, as in the case before us. M. J. P.

— ROSE SHOW IN THE MIDLANDS.—A great Midland Counties Exhibition of Roses is to be held about the third week in July next, under the auspices of the Sutton Coldfield Crystal Palace Company, in their grounds at Sutton Coldfield, close to Birmingham. The directors of the company, in conjunction with the Rev. T. A. WILLIAMS, of Yardley Wood Vicarage, a gentleman well known to rosarians, have arranged a liberal schedule of prizes, which will shortly be issued, and the date of the exhibition will be fixed when the dates of other great exhibitions are ascertained, so as to steer clear of any other Rose gathering. The intention of the promoters of this exhibition is to give the Midland and Northern growers a still further opportunity of meeting together and testing their strength.

— M. HILDEBRAND.—We regret to hear that this energetic collector has been murdered in Madagascar, but trust the report may prove without foundation.

— CHRYSANTHEMUM LILAC GEM.—This is another pretty little Pompon variety of the same type as Snowdrop, noticed at p. 756, and is from the same source. It is of a pale rosy-lilac, very full, with reflexed petals, forming a semi-globular flower-head, 1½ inch across, that is, a trifle larger than Snowdrop. These very small-flowered sorts will not only make pretty pot plants for decorative purposes, but must also be very useful for bouquet-work, especially for button-hole bouquets.

* *Peruvian Bark: a Popular Account of the Introduction of Cinchona Cultivation into British India.* By Clement Markham, C.B. Murray.

— *GRIFFINIA HYACINTHINA MICRANTHA*.—A lovely new miniature form of the typical species is now in flower in the Pine-apple Nurseries. It evidently possesses freer flowering qualities than this species, as in a small batch upwards of 150 flower-spikes are already up, and some of the bulbs, which are only 1 inch in diameter, have three flower-spikes with all the flowers expanded. The flowers are clear blue and white in the centre, but there is a pure white variety among them.

— *THE PLANE TREES AT VIENNA*.—The death of numerous Plane trees and Ailantus in the streets of Vienna has excited much comment. M. NAUDIN is of opinion, like M. REGEL, that the mortality among these trees is due to the excessive cold

tributions to garden botany are so highly appreciated, and whose patience and willingness to assist inquirers largely entitle him to the gratitude of horticulturists and botanists.

— *NATIONAL ROSE SOCIETY*.—The annual meeting was held on December 9, at the Horticultural Club, Arundel Street, Strand, the Hon. and Rev. J. T. BOSCAWEN in the chair. The report showed a balance in hand of £104. It was determined that three shows should be held in 1881—the metropolitan one at the Crystal Palace on July 2, the provincial one on July 14, at Sheffield, and an additional or autumn show at Manchester in September, in connection with the Great International Fruit and Flower Show, under the patronage of the QUEEN. It was also determined

rounding objects the protection it evidently needs, it has been killed more than once. We do not, however, remember having seen it grown for cool conservatory decoration, and were therefore pleased to find some plants in pots in the winter garden at Kew bearing a profusion of waxy blossoms. Another point of interest in the species is its tendency to dimorphism. An illustration of dimorphic branches is given in the *Gardeners' Chronicle* for 1878, p. 243, vol. ix.

— *THE MANCHESTER SHOWS*.—As there appears to be some misapprehension on the point, we are requested to state that the annual Grand National Horticultural Exhibition will be held next year, as usual, at Whitsuntide; and that the Great Interna-



FIG. 154.—VINERY AT BEXLEY HEATH: FROM A PHOTOGRAPH. (SEE P. 788.)

of the last winter. This may well have been the case, as in Central and Eastern France and Belgium large Apple, Pear and Cherry trees were entirely destroyed, Oaks even were killed. At Fontainebleau the thermometer registered -32° C.; in Burgundy, -31° C.; equal to -23° to -25° F., that is to say, 40° – 42° frost F°. Western France escaped these Siberian rigours, and Southern France (Provence) was only a little colder than usual.

— *THE BOTANICAL MAGAZINE*.—The 106th volume of this periodical is completed with the present part. Its value and interest, botanically speaking, are well maintained, but the execution of the plates has lately fallen below the old standard. The plate of *Disa polygonoides* in the present issue is a case in point. The present volume is appropriately dedicated to Mr. J. G. BAKER, whose numerous con-

tributions to garden botany are so highly appreciated, and whose patience and willingness to assist inquirers largely entitle him to the gratitude of horticulturists and botanists.

— *LACHENALIA GIGANTEA* is one of the finest of the genus. One bulb alone is sufficient to make a good 40-sized pot plant; the flower-spike is 18 inches high, and bears twenty-one large scarlet, purple, and green-tipped flowers and buds. The leaves are bright green and unspotted.

— *COLLETIA CRUCIATA*.—The strange aspect of this sturdy Chilean shrub, with its thick, flattened, spinous, mostly leafless branches, and its clusters of pretty white flowers, much resembling those of some of the Heathworts, causes the species to be looked upon with more than ordinary interest. As a wall plant it succeeds in the open air at Kew, but in some places in the open, where it does not obtain from sur-

rounding objects the protection it evidently needs, it has been killed more than once. We do not, however, remember having seen it grown for cool conservatory decoration, and were therefore pleased to find some plants in pots in the winter garden at Kew bearing a profusion of waxy blossoms. Another point of interest in the species is its tendency to dimorphism. An illustration of dimorphic branches is given in the *Gardeners' Chronicle* for 1878, p. 243, vol. ix.

— *BANANAS IN PANAMA*.—In an official report on the trade and commerce at Panama, it is stated that from one Banana plantation, owned by a German, 250 tons of Bananas are sent by railroad to Colon, and shipped thence for New York, every week. Nearly 400 Jamaica negroes are employed daily on this plantation.

— *CURMERIA WALLISII*.—A very interesting and highly ornamental Aroid, of neat habit and small size, first described and figured in the *Gardeners' Chronicle* for 1877, p. 108, vol. vii. It has a rosette of dark velvety green leaves splashed with creamy-yellow,

and from the centre of these springs the short spathe, which is ventricose at the base and constricted above the middle. This singularly elegant and graceful little plant is, like the rest of the genus to which it belongs, a native of Columbia, from whence it has been recently introduced to cultivation. It is now flowering in the Kew collection.

— DR. REGEL. — The twenty-fifth anniversary of Dr. REGEL's settlement in St. Petersburg has lately been made the occasion for a demonstration in honour of the celebrated botanist, who has done so much for Russian botany and horticulture. Deputations from various societies, from the Russian and from the German gardeners, presented addresses or sang chorales in his honour, while photographic albums, silver inkstands, cups, and other substantial marks of esteem, were freely forthcoming.

— PRITCHARDIA FILAMENTOSA. — M. NAUDIN tells us that at Golf Juan, between Cannes and Antibes, he lately saw fine specimens of this Palm four to five years old, but already with a stem a foot in diameter, and leaves more than 7 feet in length, with a stalk as thick as a man's arm.

— A SEEDSMEN'S DINNER. — On Saturday evening last the *employés* of Messrs. WAITE, NASH, HUGGINS & Co. celebrated the amalgamation of the houses of MINIER, NASH & NASH, and WAITE, BURNELL, HUGGINS & Co., by dining together at the Imperial Hotel, Southwark Street. Mr. J. C. CHAPMAN presided, and Mr. R. W. JACK occupied the post of vice-president. A very pleasant evening was spent.

— CECIDOMYIA ORYZÆ. — The Calcutta correspondent of the *Times*, writing on December 12, says:—"The last Calcutta *Gazette* contains some official correspondence regarding the insect lately discovered in Monghyr, which threatens to become very destructive to the Rice crops. The specimens forwarded to Mr. WOOD MASON, deputy superintendent of the India Museum, have been identified by him as belonging to the genus *Cecidomyia* and as related to the Hessian fly which ravaged the Wheat fields in the United States. This genus, Mr. MASON says, has never before been found in India, and he proposes to call the species *Cecidomyia oryzae*, or the Rice-fly. He goes on to say that it is likely to prove a most formidable pest, and recommends that the district officers should be instructed to make further inquiries and carefully watch its progress.

— A BIG WEATHERCOCK. — *The Builder* states that one of the largest linen-drapery establishments of Paris is constructing, near the Champ de Mars, where land is comparatively cheap, a vast building which will serve as coach-house and stables for the numerous horses and waggons belonging to the firm. There is nothing peculiar about these stables; the spirit of novelty and originality has manifested itself solely in the erection of a gigantic weathercock, which will be as remarkable in the artistic character and execution of its design as in its size. In height it will measure 26 feet, and its width no less than 13 feet. Nor will the design resemble that of ordinary weathercocks. It will consist of an heraldic lion rampant, holding up with its fore legs a gigantic initial; and the design of this monster has been entrusted to one of the most able heraldic engravers of Paris.

— POLYGONUM CAPITATUM. — We have had sent us from the gardens, Southwood, Bickley, a very pretty variegated sport of *Polygonum capitatum*. The leaves were prettily mottled with yellow, and some had a pinkish tinge. It would be desirable to propagate the sport, as it is of an attractive character.

— BATH AND WEST OF ENGLAND SOCIETY. — An adjourned Council meeting was held at the Charing Cross Hotel, London, on the 8th inst., when Mr. JONATHAN GRAY reported a correspondence which had taken place between himself and the authorities of Cardiff with reference to the Society's meeting in 1882, and the Secretary presented a letter from the Town Clerk on behalf of the Mayor and Corporation, inviting the Society to visit their borough in the year stated, and undertaking to render every possible support in bringing the show to a successful issue. On the motion of Mr. GRAY, seconded by Colonel LUTTRELL, it was resolved that the invita-

tion from the Mayor and Town Council of Cardiff be accepted, and that a deputation be appointed to visit the town to inspect the proposed sites and make preliminary arrangements, subject to the approval of the January meeting of the Council of the Society.

— MENINIA TURGIDA. — In its native country, Cochinchina, this *Acanthad* is a celebrated febrifuge, and is known to the inhabitants by the name of Thuang-son. As a decorative plant it will not take a high place, but its pretty dark green foliage, its neat habit, and its contracted, dense-flowered panicles of short, stout, tubular, white and yellow, pink-veined blossoms are far from being unattractive. It is quite a recent introduction to European gardens. A figure appeared in one of the later volumes of the *Botanical Magazine*.

— EXHIBITION MORALITY. — It is one of the frequent characteristics of managers of exhibitions, that they shut their eyes against all peccadilloes of exhibitors until they are found out. In their anxiety to ensure perfect honesty on the part of competitors they make certain rules or publish certain conditions, and then seem to imagine that they have done all that is required to ensure the perfect probity so much desired: in almost stereotyped words, it is declared that "the specimens exhibited must be the *bona fide* property of the exhibitor or his employer, or must have been grown by the exhibitor, or have been in his possession three months," and so on; all of which directly assumes that in exhibiting the flesh is weak, and that exhibitors, unless held in check by the stern and firm rules laid down, would do all sorts of dishonest things. Now, either these rules and declarations are necessary, or they are not. If the former, they indicate a state of things for the which all horticulturists, who are not exhibitors, may well blush; if the latter, why are such competitors by their inclusion in schedules made to appear dishonest? But if managers and committees think these rules are absolutely needful, why are no steps taken to enforce them? Perhaps they will reply that it is not their business to suspect any man with wrongdoing until it is so proved; but this would be an illogical course, because they have previously, by the insertion of certain specific conditions shown that every exhibitor ought to be suspected. If the entire truth were freely stated, no doubt plenty of little exhibition peccadilloes would be brought to light, but most probably in every case so trivial as to merit no consideration. The very fact that, with so many shows, and so many thousands of exhibitors throughout the year, so few complaints of anything wrong are made, shows that there is little reason to publish rules that are either not required or cannot be enforced. It is a rare virtue on the part of the grower of anything good that he permits others to obtain all the honour and credit due to its possession and growth; and it may be accepted as a rule that the grower who has a good thing prefers to exhibit it himself.

— LANKESTERIA BARTERI. — This—like several other almost totally forgotten *Acanthads* which have been recently noted in our columns, and which are not now to be found even in many botanic gardens—is a charming species worthy of very general cultivation. It is a native of West Africa, and has charming orange-yellow flowers. As a decorative stove plant it is superior to *L. parviflora*, another West African species, of which—some four-and-thirty years ago—Mr. GLENDINNING, of Turnham Green, wrote as follows:—"A pretty, useful, winter-flowering species, with bright yellow flowers, contrasting well with that valuable old plant, *Eranthemum pulchellum*, . . . with blue flowers. On this account it is more especially desirable, because, in the beginning of winter, at which period it flowered in my stove, we have little really to adorn such places." Both *L. Barteri* and *L. parviflora* are in the Kew collection.

— A SCHOOL OF FORESTRY. — The *City Press* states that Mr. ALEXANDER MACKENZIE has by request reported to the Epping Forest Committee of the Corporation on his suggestion that a School of Forestry should be established in connection with Epping Forest, for which he says there are a combination of circumstances in connection with the forest, all of which it appears tend to indicate a hope of success. There are about 6000 acres of land, all more or less forest, neglected, detached, and inharmonious

in effect, by reason of its having been, from well known circumstances, so very much subdivided that an effort must be made as soon as the outlying portions are restored to the care of the committee, to blend them all into one harmonious, albeit diversified, whole. The execution of all these works would form the best possible groundwork for the practical training of the foresters in the future. Instead of the present system of educating Indian foresters Mr. MACKENZIE suggests that candidates be selected from the middle classes—the sons of farmers, foresters, and such practical men; they should have received a fair education and possess a little practical knowledge of soils, trees, and botany; their training at the School of Forestry should include practical forestry, mathematics, engineering, and architecture to a limited extent, surveying, levelling and land measuring, book-keeping and geology; also they should have facilities for acquiring at their option Latin, French and German. The course of study should extend over four years, the first two to be spent at Epping Forest, the third year in the New Forest, and the fourth year at Windsor, where may be seen the full development of the principles commenced by the student at Epping. After this course of training those pupils who have diligently applied themselves to their studies during the four years should be drafted off to other fields of usefulness, either at home or abroad. Mr. MACKENZIE urges the committee to secure the powerful influence of the Corporation in inducing the Government to assist in the establishment of such an institution.

— EUPHORBIA COTINIFOLIA. — The genus *Euphorbia*, which embraces more than 700 species, and has an extremely wide geographical distribution, exhibits a marvellous range of differences in size and habit and in the structure of its vegetative organs. A goodly series of species, mimicking plants belonging to widely removed natural orders, may be seen in the Succulent-house at Kew. The subject of the present note, though hardly a plant to be recommended for general cultivation, is a rather pretty shrub, with purplish tinted green leaves very like those of the Venetian Sumach, *Rhus Cotinus*, hence its specific name. It is a native of South America, and was introduced to this country by the Earl of PORTLAND in 1690. In the *Thesaurus* of SEBA the author states that the natives of Curassoa poison their darts with the milky juice of this shrub, and thus render the wounds inflicted by them speedily mortal on account of the violent inflammation which so soon ensues. HUMBOLDT and BONPLAND remark that they had not seen the flowers, although they found it in woods near Cumana, Bordonos and Caracas. The Kew plant flowers freely enough, but its panicles of greenish-white blossoms are somewhat inconspicuous in size and colour.

— THE OCOTILLA. — The singular genus *Fouquiera* consists of three described species, to which the Mexicans give the name "Ocotilla." Although associated in the same natural order with *Tamarix* by botanists, one would not guess their relationship from their aspect, especially as they have long showy tubular corollas. Mr. E. L. GREENE, in a narrative of a botanising tour in the Colorado desert (*The American Naturalist*), describes *F. splendens* as follows:—"Extremely odd-looking, and not more odd than beautiful, is the small tree locally known by its Mexican name, Ocotilla. It grows to the height of from 8 to 12 feet, and in outline is quite precisely fan-shaped. To show how this may be, let me describe more particularly its mode of growth. The proper trunk, usually 10 or 12 inches in diameter, is not more than 1½ foot high. At just a few inches above the surface of the sand this trunk abruptly separates into a dozen or more distinct and almost branchless stems. These simple stems, rising to a height of 8 or 10 feet, gradually diverge from one another, giving to the whole shrub the outline of a spread fan. Each separate stem is clothed throughout with short gray thorns and small dark-green leaves, and terminates in a spike, a foot long, of bright scarlet trumpet-shaped flowers. This splendid oddity flourishes in great abundance in many places. The stems are not so thickly armed with thorns but that a man may handle them if he will seize them circum-spectly with his fingers, and being very hard and durable, as well as of a convenient size, they are much employed for fencing purposes about the stage stations and upon the ranches adjoining the desert.

Give a skilful Mexican Ocotilla poles and plenty of raw hide-thongs, and he requires neither nail nor hammer to construct a line of fence which for combined strength, neatness, and durability, fairly rivals the best work of that kind done in our land of saw-mills and nail factories. As a tree or shrub of strange peculiar beauty the cultivators will vainly desire to add this to their list of varieties, unless their art can reproduce the parched and sterile gravel-heaps, and the dry withering atmosphere, which it finds congenial." With the last sentence we do not altogether agree, because plants do not always grow wild where they would flourish best, and because under cultivation many plants will succeed under conditions totally different from those obtaining in their native habitats. The Ocotilla would probably require no more skilful treatment than many succulent plants.

— *NERINE ELEGANS* is now flowering in the Pine-apple Nurseries. It is a valuable addition to our December flowering plants, bearing large showy blossoms amidst abundant foliage. The flower-spike, which rises 2 feet high, is surmounted by a head of bloom 8 inches in diameter, the individual flowers being nearly 3 inches across. The colour is bright pink, with clear white centre. It is one of half a dozen lovely hybrids which are the result of Mr. J. O'BRIEN's skill and patience.

— *STANDARD GOOSEBERRY TREES ON RIBES AUREUM*.—A correspondent in *REGEL'S Gartenflora* states that he obtains finer standard Gooseberry trees grafted on stocks of *Ribes aureum* than he can from cuttings or suckers. We should expect the trees to be of short duration.

— *ERYTHROTIS BEDDOMEI*.—Few stove subjects are more easily grown than this little Indian Commelynaceous plant, which in some Continental gardens is cultivated under the name of *Cyanotis villosa*. It was discovered by Colonel BEDDOME on the Myhendra Mountains of South Travancore some half dozen years ago, and from seeds sent home by that gentleman the Kew plants were raised. It affects dry bare rocks at elevations of from 3000 feet to 4000 feet above sea level. The flowers are small, but the red calyx and corolla form a striking contrast to the bright blue bearded filaments; the brilliant colouring of the under surface of the leaves, too, together with the neat habit of the plant and the little space and attention it requires, render it a desirable acquisition. It would make a good edging as a basket plant; at Kew some good examples are grown in small pots suspended near the glass.

— *ABUTILON ESCULENTUM*.—This yellow-flowered species, the *Benças de Deos* of the Brazilians, is now in bloom in the Palm-house at Kew. Although surpassed in beauty by many others of the genus, it is interesting from the fact that in its native country its flowers are used, cooked with meat, as an article of food.

— *MELONS RIFENING UNDERGROUND*.—There are many plants that thrust their seed-vessels into the ground, where the seeds are matured. *Trifolium subterraneum* is an example of a British plant that constantly exhibits this phenomenon. Others again develop flowers and seeds entirely underground, whilst most aquatic plants ripen their seeds under water. According to a writer in *REGEL'S Gartenflora*, the Persians, who extensively cultivate Melons, cover the fruits with earth at a certain stage. This method is practised by Persians in the neighbourhood of Tiflis, in the Caucasus. Only the choicest and best keeping variety, the true Dutma, is grown. It is a long smooth kind, which attains a weight of 15 to 20 lb., and will keep until Christmas. The deeply tilled ground is thrown up into beds a foot wide in spring, and the seed sown in a drill along the centre. Finally the plants are left at a great distance apart, and irrigation is effected through the channels between the beds, so that no water touches the plants. The fruit sets in June, and only one or two are left on each shoot. When the fruit has reached the size of a man's fist the earth is hollowed out, and the shoot (with the exception of the tip), together with its fruit, is buried therein to a depth of 1 to 1½ inch, where it remains until the fruit is almost ripe. Considerable practical experience is necessary to be able to determine the exact moment when they should be unearthed. When the cultivator thinks the time has

arrived, he withdraws the shoot and its fruit from the ground. This is done towards evening, and the fruit is left on the surface of the ground, attached to the shoot, and exposed to the dew of one night; but care is taken to cut the fruit the following morning before the sun can reach it. It is then hung in a cool, dark, dry place, until ready for eating.

— *FOREST PRODUCTS OF BOSNIA AND THE HERZEGOVINA*.—In spite of destruction and mismanagement, these countries still possess considerable wealth in their forests, which since the Austrian occupation have been the object of investigation. It is estimated that half the area is wooded; and there is about 1,250,000 acres of mountain forest, containing about 140,000,000 cubic metres of timber, whereof 78,000,000 belong to deciduous trees, and 62,000,000 to coniferous trees. The prevailing trees of both provinces are the Beech, Oak, Pines, and Firs. With the exception of the low country of the River Save valley, the Beech is general, and the Oak is next in order of dispersion. Larch was nowhere seen, but the Pine and Fir forests are fine in many places. Trunks 3 to 7 feet in diameter, and 130 feet high, are not uncommon. *Rhus cotinus* is very abundant in some districts, and its wood is crushed and employed in tanning. This, it is supposed, will in time form an important article of commerce.

— *ORCHIDS IN FLOWER WITH MR. B. S. WILLIAMS*.—There is a grand show of Orchids just now in the Victoria Nurseries at Holloway. The *Calanthes* are in great beauty, and are represented by about 200 spikes of the different species and varieties. *Saccolabium giganteum*, with thirty-six spikes, is a deliciously scented Orchid, and is a great favourite, flowering as it does in the dead of winter. *Dendrobium superbiens* is in flower, as usual. Mr. WILLIAMS informs us that since he imported this plant, some few years ago, he has never been without flowers, indeed it may be said to be a perpetual flowerer. The following is a list of the plants in flower:—

<i>Angræcum eburneum</i> super- bium, three spikes	<i>Lycaste Skinneri</i> gloriosa debata
" <i>sequipedale</i> , three spikes	<i>Mesopidinium vulcanicum</i>
<i>Burlingtonia decora</i> picta	<i>Masdevallia amabilis</i>
<i>Barkeria Lindleyana</i>	" <i>Estrade</i>
<i>Bulbophyllum siamense</i>	" <i>igneæ</i>
" <i>Thouarsii</i>	" <i>macrura</i>
<i>Cattleya exoniensis</i> , four spikes	" <i>radiosa</i>
<i>Calanthe Veitchii</i>	" <i>tovarensis</i> , forty spikes
" <i>vestita</i> luteo-oculata, 200 spikes	" <i>Wagneri</i>
" <i>rubro-oculata</i> , 200 spikes	" <i>Veitchii</i>
<i>Cymbidium ensifolium</i> , nine spikes	<i>Odontoglossum Alexandræ</i>
" <i>giganteum</i>	" <i>Anderonianum</i>
" <i>Mastersii</i>	" <i>cristatum</i>
<i>Cypripedium Ashburtonæ</i>	" <i>cirrhosum</i>
" <i>barbatum</i>	" <i>Rosii</i> majus
" <i>Boissii</i>	" <i>roseum</i>
" <i>concolor</i>	" <i>gloriosum</i>
" <i>Dauthieri</i>	" <i>maculatum</i>
" <i>Sedeni</i>	" <i>tripudians</i>
" <i>selligerum</i>	<i>Oncidium crispum</i>
" <i>Harrisianum</i>	" <i>cheiroporum</i>
" <i>niveum</i>	" <i>anomalum</i>
" <i>insigne</i>	" <i>cucullatum</i>
" <i>Maulei</i>	" <i>Forbesii</i>
" <i>Chantii</i>	" <i>ornitho-hynchum</i> , fifteen spikes
" <i>venustum</i>	" <i>Kramerii</i>
<i>Dendrobium chrysanthum</i>	<i>Pleione maculata</i> humilis
" <i>superbiens</i> , three spikes, thirty-one flowers	<i>Phalenopsis amabilis</i> , eight spikes
" <i>teretifolium</i>	" <i>grandiflora</i> , seventeen spikes
<i>Lælia Perrinii</i>	<i>Restrepia antennifera</i>
" <i>autumnalis</i>	<i>Rodriguezia secunda</i>
" <i>atrorubens</i>	<i>Saccolabium giganteum</i> , twenty-six fine spikes
" <i>anceps</i> , thirty-eight spikes	<i>Sophronitis grandiflora</i>
" <i>albida</i> , sixteen spikes	<i>Vanda tricolor</i>
" <i>Dayana</i>	" <i>insignis</i>
" <i>prestans</i>	" <i>superba</i>
<i>Lycaste Skinneri</i>	<i>Zygopetalum Mackayi</i>

— *ASPIDIUM (POLYSTICHUM) MUNITUM*.—This perfectly hardy and very ornamental evergreen Fern should not be overlooked by any one possessing an outdoor fernery. The two last winters have failed to injure in the slightest degree the plants in the open air at Kew, indeed the species now noted—a native of Western North America from Nootka to California—is quite as hardy as our British Holly Fern, *Aspidium Lonchitis*; indeed it possesses a good many points in common with that species. Like it, the fronds are simply pinnate, dark green in colour, and almost coriaceous. The stipes, a few inches long, are clothed with brown scales, and the fronds measure about 1½ foot in length by from 3 to 5 inches in breadth, the numerous narrow pinnae being beset with small spinose teeth. DOUGLAS states that the roots are roasted by the Indians, and form an article of food. Although the species has long been cultivated at Kew it is far

from common, and a year or two since, when a supply of plants was imported by a British firm, it was advertised as new. *A. acrostichoides*, another North American, simply pinnate, evergreen Shield Fern, is worth a place in any hardy fernery, though it is not so handsome as the last-named. It has less numerous serrated, scythe-shaped pinnae, and the general aspect of the plant is not so striking as that of *A. munitum*. It is rather a taller species, too, and the fertile pinnae of the upper half of the frond are much smaller than the barren lower ones. A variety of this (*A. Schweinitzi*, Beck.) has more or less lobed pinnae, but seems hardly worth even a varietal name.

— *HOPLOPHYTUM CALYCATULUM*.—There are many extremely handsome Bromeliads of the easiest culture which seem to be quite passed over by the general run of cultivators. Many possess brilliant colours, last a long time in bloom, and stand well as "furnishing plants." The latter quality is now being duly acknowledged and taken advantage of in certain quarters, so that before long we may see some of the most showy and distinct kinds receiving the attention they undoubtedly deserve. The subject of this paragraph was sent to M. LINDEN from the interior of the province of Santa Catherina, in Brazil, nearly a score years ago. It is remarkable for its dense heads of beautiful citron-yellow flowers—a rather uncommon colour in the Bromeliaceæ—borne on leafless scapes, about 9 inches or a foot in height. The finely-toothed, pale-green leaves measure from 6 to 9 inches in length. The specific name is given on account of the presence of a whorl of bracts which subtends the flower-head. In the Palm-house at Kew there are some nice plants now in flower.

— *ARCTIC VEGETATION*.—We have received a reprint of Mr. CHICHESTER HART's excellent memoir on the Botany of the British Polar Expedition of 1875-6, which has appeared in TRIMEN's *Journal of Botany* during the current year. The publication has been delayed thus long through the ill-health of the author, who was botanist to NARES' Arctic Expedition. Some of the particulars are of general interest, and we reproduce them here. Even botanists, says Mr. HART, who are familiar with the alpine flora of Europe, cannot easily form an idea of the peculiar conditions of an arctic flora. It is only on the low ground of the more southerly parts of Greenland that the surface is uniformly covered with vegetation for any extent, and this consists of small tufted perennials of low matted growth, through which the Willows and Ericaceæ trail and extend their branches, the first alone rarely rising under the shelter of a cliff to a height of 3 or 4 feet. Through this brownish-green carpet conspicuous and beautiful blossoms of *Rhododendron*, *Azalea*, *Diapensia*, *Pyrola*, and other ericaceous plants, are lavishly scattered; while the cream-coloured *Dryas*, the snowy-white *Cerastium* and *Stellaria*, the pink *Silene*, and the gorgeous red-purple *Saxifraga*, often form luxuriant sheets of colour, the latter being comparable to our Scotch Heather, though richer in its effects. True blue flowers, as *Veronica alpina*, rarely occur; true reds are never met with; and most of all is felt the absence of a greensward such as the eyes are accustomed to at home. Northward the vegetation (except, perhaps, Lichens) rapidly diminishes both in variety and growth; and after leaving Upernavik ground covered with herbage is rarely seen, and only at low levels. Foulke Fiord (78° 18' N. lat.), a few valleys along Hayes' Sound, and Discovery Bay (81° 42'), were much the richest stations explored; yet even in these favoured localities the plant-bearing surface is very limited, patchy, and easily distinguished at a distance. Mr. HART spent nearly twelve months in Discovery Bay, and thoroughly explored the country around within a radius of about fifteen miles of the *Discovery's* winter quarters. He collected sixty-six flowering plants (forty-nine dicotyledons, seventeen monocotyledons), one Fern, and two Horse-tails. Almost all of them were to be found close to the harbour, and several not elsewhere; and with one or two exceptions the whole flora of Grinnell Land is to be found on Bellot Island in Discovery Bay. In this latitude many plants, especially cruciferous, bring their fruits to apparent perfection; but from the absence of any seedlings, and the failure of all the seeds brought home to germinate, Mr. HART is of opinion that the duration of the sun's power is not sufficiently long to ripen seeds thoroughly. Ripe seeds of various plants carried there germinated and

grew. The commonest plants in Discovery Bay were *Saxifraga oppositifolia*, *S. cæspitosa*, and *Dryas integrifolia*, and their flowers were most abundant, those of the first covering many square yards with sheets of red-purple. These two species of *Saxifraga* were found in company with *Draba alpina* and *Papaver nudicaule* up to an elevation of 2000 feet. *Saxifraga oppositifolia* and *Papaver nudicaule* were collected by Lieutenant ALDRICH beyond 83°. *Oxyria reniformis* was the plant that grew most luxuriantly, and at the highest elevation, around Floeberg Beach (82° 27' N. lat.).

— *LÆLIA ANCEPS ROSEA*.—This new and extremely rare Orchid is now in flower at Mr. WILLIAM BULL'S establishment, King's Road, Chelsea, S.W.

— *TURRAEA OBTUSIFOLIA*.—This pretty, dwarf, white-flowered shrub is a native of woods and bushy places in the eastern districts of South Africa extending from Albany to Natal. It has bright green, entire or obtusely three-lobed leaves, and blossoms which measure 1½ or 2 inches across. The capsules when mature are about the size of a Hazel-nut, the outer surface of the valves being green and the inner white; when these recurve and expose to view the seeds (about half a dozen in number), covered with a beautiful scarlet aril, the effect is certainly pleasing. A flowering specimen was figured in the 1876 volume of the *Botanical Magazine*, and a fruiting one is now in the Palm-house at Kew.

— PUBLICATIONS RECEIVED.—*Rambles Among the Hills*. By Louis J. Jennings. (Murray.)—*The Professional Pocket-Book*, or Daily and Hourly Engagement Diary for 1881. (Rudall, Carter & Co.)—*The Garden Oracle and Floricultural Year-Book*. By Shirley Hibberd. (Gardeners' Magazine Office.)—*The Gardeners' Year-Book and Almanac*, 1881. By Dr. Hogg. (Journal of Horticulture Office.)

— RAZOR-STROPS.—From the Kew Report for last year we learn that H. E. W. ROBINSON, the Governor of the Bahamas, sent to Kew for report specimens of "perpetual razor-strops," which were apparently cut from the dried flowering-stem of *Agave americana*. On inquiry in London they were not found to meet with much favour. They, however, afforded a striking instance of Governor ROBINSON'S determination not to overlook the development of any product of the colony he administered, however apparently insignificant. Sir JOSEPH HOOKER adds that a razor-strop of this material, imported from Peru, now many years ago, was in daily use by a member of his family for a very long period, and highly approved of.

— THE WEATHER.—General remarks on the weather during the week ending December 13, issued by the Meteorological Office, London:—The weather has again been very dull, but mild and dry in all places. Towards the close of the period, however, it was becoming much less settled, and a little rain fell at nearly all stations. The temperature continued above the mean in all districts, the excess being about 5° in all parts of the country. The highest reading recorded occurred at Manchester and Marlborough, where the thermometer rose to 58°. The lowest of the minima were registered on the 11th, when the temperature fell to a little below freezing point at some of the inland English stations; but at Glenalmond the minimum reading was recorded on the 7th, and at Landale on the 13th. The rainfall was less than the mean everywhere, especially over our south-western districts. Bright sunshine shows a slight decrease in prevalence over most districts, the percentage of total possible duration varying from 24 in "Scotland, E." and 18 in "England, E." to 9 in "Scotland, W." and 8 in "Ireland, N." The wind on the 7th was very variable over our southern counties, and fresh or strong from south-west elsewhere, but during the remainder of the period westerly or north-westerly winds prevailed in all parts of the kingdom, blowing freshly generally, and occasionally increasing to a strong gale on our extreme north-western and northern coasts.

— GARDENING APPOINTMENTS.—Mr. ROBERT SCOTT, late Gardener to F. FEATHERSTONHAUGH, Esq., Roker House, Sunderland, has been appointed Gardener to — PRIESTMAN, Esq., Moorfield, Man-ningham, Bradford.—Mr. J. E. SKILLING, late Gardener to A. R. WAYNE, Esq., has been appointed Gardener to Lord ALGERNON PERCY, Merrow Grange, Guildford.

Home Correspondence.

Tomato Disease.—In effect "A. D." says that culture has nothing to do with either the production or prevention of the Tomato disease, and in concluding his remarks upon this subject admits that "culture may alleviate but cannot prevent disease;" if this be true, the axiom that "prevention is better than cure" does not hold good any longer. These are—even for "A. D."—strange, not to say non-practical, remarks. However, I may as well inform "A. D." at once that his remarks have not shown whether I was right or wrong in the conclusion at which I arrived respecting the cause and cure of the disease in the plants here, and that I still firmly believe—and have good reason for doing so—that the Tomato disease is the result of overcrowding and atmospheric influence. I may be allowed to ask "A. D." if he has ever known Tomato plants to become diseased during an ordinary dry summer, that had their shoots and leaves kept well thinned and stopped? "A. D.'s" statement that overcrowding in animal life is not productive of disease, is, I think, also an erroneous idea. *H. W. W.*

Megarrhiza californica.—This is a new and remarkable Cucurbit, for the illustration of which (fig. 155) we are indebted to Messrs. Haage & Schmidt. The roots are perennial and tuberous. The stems attain in one season a length of 20–30 feet. The leaves are glossy, silvery, palmately lobed, the male flowers small, in racemes; the female flowers are solitary, produced on stalks at the base of the raceme of male flowers. The fruits are Gourd-like, roundish or



FIG. 155.—MEGARRHIZA CALIFORNICA.

oblong, about 2 inches in length, and studded with spines. The seeds are as large as a Bean, and the mode of germination very curious, the seed leaves being retained within the seed, which is thrust up aboveground by the growth of the stalks of the seed leaves. These stalks are united together, leaving a chink at the base through which the plumule emerges, as in some *Delphinium*s and *Umbellifers*. The plant is a native of California. By Bentham and Hooker the genus *Megarrhiza* is included in *Echinocystis*.

Turnips.—I have found this season the very best of all small Turnips wherewith to get a catch crop is the early American Strapleaf. Seed of this was sown the last week in August on soil of moderate quality, and then quite dry, with seed of Early White Dutch, Golden Ball and Early White Stone. The weather remained hot and dry for three weeks, and the seed germinated but slowly—just the sort of season, in fact, that at times puts out all the calculations of the gardener. The result is that the American Strapleaf kind has turned in with moderate sized bulbs of beautiful quality, whilst the others are nowhere, in fact, have not made a bulb. All are good Turnips, and the yellow one, though objectionable to many on the score of colour, is yet probably the best flavoured of all. Sown a fortnight earlier these would have given admirable crops, but when a late sowing is a necessity, and only a catch crop can be had, there is no better kind than the Strapleaf. For general winter culture and cropping our market farmers care only for the White Stone, for, good and even hardy as coloured topped kinds may be, they are not one half so highly valued in the market as are pure white sorts. This is a mere matter of prejudice, but it is one which has to be catered for. Fortunately there are not many distinctive kinds of Turnips, and what we have are all good. Even the green and purple-topped

agricultural kinds are, as Turnips, but little inferior to our best market sorts if pulled in a young state. That they are grown as cattle food, however, necessitates that they develop size, and with that comes coarseness and lack of flavour. The Turnip does not require a soil that is too rich; the produce of such land is often too much leafage, and the bulbs watery. More moderate soil produces better flavoured bulbs and less leafage; at all points such a crop is the most profitable. *A. D.*

Nesbit's Victoria Tomato.—I can endorse every word your correspondent, Mr. E. Morgan, writes in favour of the above. I have grown every variety that has come under my notice, and I have no hesitation in saying the Victoria is the earliest, hardest, most prolific, and best for winter use I have yet seen. It is very useful for decorative purposes, and excellent for pot culture. *W. G. Pragnell, Castle Gardens, Sherborne, Dorset.*

Early Peas.—The following remarks will, in all probability, be considered by some who read them, somewhat preposterous. Be that as it may, I venture to apply the argument in reference to Peas for early sowing, with a view to prove the disadvantages to which gardeners subject themselves by sowing to so large an extent those varieties which claim the appellation of first earlies. Whilst admitting the high esteem with which a dish of green Peas is looked upon in early spring—and the earlier the greater the appreciation—still I fail to see the necessity for devoting so much attention to this class of Pea as one invariably witnesses in almost every garden. I will instance, for example, such sorts as Sangster's No. 1, Dillistone's Prolific, Dickson's First and Best, and many other of this type, which are far too numerous, and which claim the attention of gardeners far more than their merits deserve, especially when compared to the superior quality of the majority of those sorts that are regarded as being second and mid-season crops, and not quality only, but productiveness—an item of no mean importance. And now comes the point for discussion, viz., their earliness. I must confess I am inclined to the opinion, although without wishing to be considered dogmatic on this point, that were a fair and impartial trial allowed, many of the varieties now catalogued as second crop Peas would be equally eligible under the same heading as those above referred to. The difference in point of earliness would, I think, be very trivial, while the returns would be considerably augmented. In the month of February of the present year (I cannot furnish dates), from motives purely accidental, as far as making a trial was concerned, I sowed, within a few days of my first sowing of Dickson's First and Best, Ring-leader, and Kentish Invicta, five or six varieties of the second earlies, amongst which was Telegraph and its worthy companion, Telephone. I need not say the result at gathering time caused me no little surprise, especially with regard to the two above-mentioned, they being fit for table only a week after the first sowing, which fact, I think, speaks in favour of my argument, especially as those first sown were favoured, with regard to position, by the shelter of a high wall, whilst Telegraph and Telephone were sown in the open garden. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Araucaria excelsa.—In answer to the inquiry of your correspondent on p. 729, about the hardness of this tree, I think it will be quite useless for him to plant it out, even in the most favoured spot in the British Isles, without protection. We have for several years been trying to acclimatise it here in the South of Ireland, and have at last given it up as a failure. Last winter a fine tree, 10 feet high, was killed by 14° of frost; 10° will kill all young growth, but not the hard wood, after a dry season. When killed back to the old wood it will throw out numerous young branches, showing that it would bear the knife well if necessary. *W. O., Fota, Cork.*

Christmas Decorations.—Whilst the general scarcity of Holly berries, alluded to by Mr. Fish last week, is unquestioned, it will be difficult to find any feeling of profound sympathy with those who seem to think the only good purposes which Holly berries serve are to enable them to make long strings or festoons of red berry and green leafage wherewith to decorate church pulpits, fonts, pillars, and other prominent objects. To employ bushels of berries for this object, for the which red beads made for the purpose would be far more suitable, is not doing that which calls for approbation. The style of decoration is tawdry and childish, it is even inferior to that shown in the dressing of a Christmas tree; it is altogether unnatural, and is never in keeping with the nature of the building or the sacred purpose to which it is devoted. It is still more the reverse of humanitarian. Few amongst the very religious and very sentimental young ladies and Ritualistic clergy who so enthusiastically enter into the composition of these decorations ever bestow one thought upon the poor feathered

songsters whose food, perhaps through a long and hard winter, they have so unceremoniously appropriated and wasted. Within a few days these berries become discoloured, and their beauty is gone for ever. The richly berried bough of Holly is less open to objection on this latter score, because the berries will in such case keep fresh and bright for many days, whilst there is in its natural form some evidence of the beauties and charms which Nature can produce for us even in mid-winter. Sprigs of the grand old winter shrub, whether found in church, in the shop, or in the domestic circle, seem ever welcome and seasonable amidst the festivities of Christmas, but nowhere are Holly berries more beautiful or more fittingly displayed than when seen on the bushes and trees, whether in our gardens, or in woods, or by the roadside. Surely there they will not fail to remind us that it is Christmas, and that the season of hospitality is with us. *A. D.*

Pelargonium Freak of Nature.—We were asked a few days since what was the origin of this novel and pretty variety of variegated Pelargonium. On enquiring of Mr. Cannell, by whom it was sent out, and whose woodcut (fig. 156) we now introduce, we were referred to the raiser, Mr. W. Gray, Florist, Thorngumbald, Hull, who informs us (1) that it was a sport and not a seedling; and (2) that it was a sport from a very old plant, of the name of which he was uncertain, but he believes it was Unique. From the description given the variety was evidently Mr. Kinghorn's Cerise



FIG. 156.—PELARGONIUM "FREAK OF NATURE."

Unique, as Mr. Gray remarks "it was brought out above twenty-five years ago, has a very dark zone, with pale footstalks, the stem very pale green with scarlet stripes on its younger parts, at times almost transparent"—a description which exactly fits Cerise Unique. Mr. Gray continues: "The sport was very delicate at first, and I was about seven years before sending it out, but its constitution gradually became stronger." The various opinions of it given by our great florists were amusing. Some said it was identical with Happy Thought; others thought nothing of it; some said it might be worth a trial; and now, we may add, it is admired by lovers of the pleasing and curious amongst plants.

Benthamia fragifera.—Some thirty years back, when on a visit at Mr. W. H. P. Carew's, Antony House, Torpoint, Cornwall, I well remember the number of trees in the grounds, and at that time in full fruit, raised from seed brought to this country by Mr. Buller, the brother of Mrs. Carew. I have also seen it fruit in the Belfast Botanic Garden on a south wall; the fruit was small and deformed. I have also seen it flower profusely in Carnarvonshire, but never fruit. It evidently prefers a situation near the sea, and is quite useless in the Midland Counties; at the same time, it has been fruited successfully as far north as Morayshire. *Ebor.*

—There are many trees here which were planted previous to 1860, and which are now in robust health. The tips of the branches bear each a flower-bud, one of which I have sent for your inspection. Our best specimen is a low-

spreading tree, 30 feet high, with a spread of branches sweeping the ground, 138 feet in circumference, with a bole 8 feet in circumference at the base. We have many others much higher, but not so well furnished. These were never injured by frost until last winter, and this was more in consequence of the extremely wet summer of 1879 than from the frost of last winter, as we registered 20° of frost in the winter of 1878 when the trees were not injured; we had 16° last winter only for a few hours, when the points of many of the banches were killed. There was not a flower on any of our trees this summer, but all are now in better health than I ever saw them, showing how much they enjoy a dry summer and a rest from their loads of fruit, which generally bend their branches to the ground. I know of no tree more worthy of a place in every garden suited to its growth. Here the birds feed upon its ripe fruit, and numerous young seedlings spring up from self-sown seeds. *W. Osborne, Fota, Co. Cork.*

Callas at Christmas.—No plant in cultivation enjoys a wider reputation for usefulness than does this elegant Egyptian plant. I say elegant, because its bold massive leaves of rich green supply an acknowledged desideratum in foliage at this dull season which is equalled by few plants that will bear rough treatment with impunity. The flowers are in striking contrast to the foliage, and no finer objects could be wished for the embellishment of show houses, conservatories, front halls, or staircases, than a few well-

grown Callas having from four to six of their beautiful expanded flowers majestically borne above their leaves, and associated with tall Poinsettias, which are indispensable companions for producing a telling effect. The simplest way to grow Callas for private purposes is to plant them out in trenches during the summer like Celery, and lift and repot at the end of September, or early in October. A north house suits them best for a time after they are lifted, and when the roots begin to act afresh they may be taken to a temperate-house and placed as near to the glass as possible. When they enjoy a position of this kind both leaves and flowers keep erect, and are invaluable for almost any purpose of grouping or furnishing. A whole batch now in flower have been grown under the above simple conditions; the soil in the pots is a complete network of roots, and the maximum temperature in which they have been forced has not exceeded 55°, hardly a figure that comes under the category of forcing in these fast days. *Cultivator.*

Late Wasps.—On the south side of a mansion in this neighbourhood wasps may be seen actively engaged at their nest. I would like to ascertain if any of your correspondents have ever known one so late as this. I have long been accustomed to see swallows far into November, but never remember a wasps' nest so late as December 13. *W. E. T., Stanmore, N. W.*

Luculia gratissima.—There is at present in the central portion of the Flower-house at Kew Gardens a very large tree of the *Luculia gratissima* literally covered with its beautiful flowers, the bunches of

which are from 3 to 4 inches in diameter, and deliciously fragrant. The plant in question must be of considerable age. The shoots are cut back after flowering so close to the old wood as only to leave one or two eyes; from these a vigorous growth is produced, which is this season covered with flowers. The plant is a native of Nepal, and was, according to Paxton's *Dictionary*, introduced in 1823. It is not, however, by any means a sure bloomer, and oftentimes gets a check either from cold draughts of air or other causes which destroy the blooms, and no doubt this is the reason it is not so extensively cultivated as it otherwise would be. *G. E.*

Forcing Lilies of the Valley.—Few flowers are in greater demand during the winter and early spring than Lilies of the Valley. The difficulty, however, of starting them into growth in the early part of the year, say November and December, has often proved a disappointment to many. Some cultivators are loud in their praises of the imported clumps for early forcing, while others as earnestly assert that home-grown plants are equally good if not better for the purpose. My experience is decidedly in favour of the former, and I doubt not that overwhelming testimony could be furnished in favour of imported roots. As a rule, private growers are badly equipped for forcing, and consequently have to resort to a good deal of scheming and makeshifting to keep on terms of equality with those who have special means provided for forcing. Nurserymen who make any pretence to forcing such roots in quantity have a knack of going about their business differently from the majority of gardeners, and seldom force clumps, but pick the finest individual crowns and arrange them as thickly together as they will stick in a strong bottom-heat, which is usually supplied from hot-water pipes, with steaming-troughs, so that the temperature can be kept up to any figure that is desired. When clumps are forced all the crowns do not start away at the same time, even under the favourable conditions of forcing I have mentioned. It will, therefore, be evident that selecting the single crowns is the most economical plan to adopt. But in case a vase or pot requires to be filled, how then? There are two ways of accomplishing the object—either by forcing a few clumps and selecting one or two of the best and filling in the blank places with single crowns, or by using all single crowns when they have pushed fully into flower and leaf and it is seen which crowns are likely to produce the best flowers. Of course, after potting, the plants should enjoy a warm temperature for some time, and afterwards be gradually hardened off. Several years ago I had a batch of imported clumps which I failed to start into growth after having tried them in every forcing house on the place. I was naturally both annoyed and disappointed at the result, and as a final effort I had a frame raised on a bed of strong fermenting dung and leaves, and into this I plunged the pots. I then put some mats over the glass to protect it, and put from 1 foot to 18 inches thick of the fermenting materials over the glass—just enough to draw up the heat. I had a peep into the frame nearly every day, and from the density of the volumes of pent-up steam that met me upon each occasion I had little hope but that the roots of the plants would be injured. I believe (writing from memory) that the bottom-heat exceeded 100°, but I had flowers after all, and such a show as I have never had before nor since. Every crown seemed to yield a flower, and there were also plenty of leaves along with them. *W. Hinds, Canford Manor.*

German and English Gardeners.—There can be no two opinions as to the advantages of travel to the young gardener, whether English or German, or any other nationality. Having spent some time in the Jardin de la Ville de Paris in 1869, under the late M. Barillet, I had a fair opportunity of finding out the conditions under which gardeners from this country could gain a knowledge of Continental gardening, and whether there were any inducements to remain long in the country after getting there. The staff in these gardens usually numbered about ninety, fully one half of which were Frenchmen, on an average about twenty Germans, from eight to twelve English and Scotchmen, and a few Belgians and Dutchmen. These Germans might fairly be taken as an average sample of their countrymen, and during the time I spent there with them I gathered some useful information about the condition of gardening in Germany, and as to whether their prospects of success were better at home or abroad, and the object in view many of their countrymen had in coming to England and France. When the German leaves his own country he has many more chances in his favour than an Englishman under the same conditions. The gardener in Germany is much worse off as regards remuneration in his own country than his English confrère; and, as you have pointed out, the number of gardening establishments of any note on the Continent is relatively less than in this country. If the German goes to Belgium or

France he gets probably as good wages as in his own country. If he goes to France he makes strenuous efforts to master the language and the gardening of the country as soon as possible. Few of them tarry long there, however, as gardeners—not longer than suits their purpose. Many of them come to this country, and if they get taken on the staff of any of the nurseries or public gardens for a time, until the language is partially mastered, they are probably better off as regards wages even than they would have been in Germany. And by the time they know the language sufficiently well to take more responsible situations, their remuneration is probably considerably better than it would have been in their own country in a like post. Besides, in this country, where gardening establishments and nurseries are so much more numerous, they have a much better chance of turning their abilities to profitable account. It is, however, after the German has been for some time in the country and well mastered the language that his efforts are usually crowned with success. Well educated for a gardener, master of two or three languages, familiar with the system of gardening on the Continent and in this country, and with an easy address, the result of travel, he has more strings than one to his bow. He goes in for the Indian Forest Service, or as a plant collector to any of our large firms, or as a corresponding clerk in a mercantile house with foreign business. If he sticks to the country and gardening he goes in for anything that may turn up, but frequently as propagator in one or other of the nurseries, and we shall probably soon meet with him in charge of many of the private gardening establishments in the provinces. If he fails to suit himself in this country, he has still a good chance in America, and if he returns home he has a better chance of success than those whom he left behind. If the English gardener goes to the Continent he does not have the same relative advantage as the German; to begin with, he will most likely have to be contented with a less rate of remuneration than he had at home, and he will also soon find out that after he has mastered the gardening of the country and the language—if he wants to—that there is small chance of anything turning up to tempt him to stay. It is only as a bird of passage that the gardener from this country can usually look for benefit abroad. Let him go abroad by all means if he has an opportunity; let him see what he can in his profession, learn the language, educate the eye to appreciate good art in all its forms, learn the management of colours, study men and things; but if he is to make the most of what he has learned he will probably find he cannot do better than return to his native country. If he has worked himself up in languages like his German *confère*, he will run him hard for any of those appointments where the German has the advantage of us now. *D. Melville, Castle Gardens, Dunrobin.*

Hybrid Calanthes.—I send for your inspection some blossoms of a hybrid *Calanthe*, which is not wanting in interest botanically, and might almost be named *C. mutabilis*. It is supposed to be the first hybrid raised between *Calanthe Turneri* and *Calanthe vestita luteo-oculata*, and there is considerable difficulty in effecting this cross. It was raised here seven years back, and has bloomed for the past four successive winters; the first autumn that it flowered the pink colour in the eye, derived from *C. Turneri*, was much stronger in shade than it has been subsequently, the primary hue being of a pinkish-coppery tint, all the remaining parts of the flower being of a very pure white, which remains permanent. The pseudobulbs are intermediate in form, showing the features of both parents, *C. Turneri* female, and *C. vestita luteo-oculata* male; the constriction which is remarkable in the pseudobulb of *C. Turneri* is, however, about vanishing in the hybrid, the flower-spike is altogether like that of the female parent, quite upright, and the unexpanded buds drooping, and taller than in *C. luteo-oculata*. What is most remarkable is the variation in the colour of the eye-spot, which appears to indicate a great tendency to revert to that of *C. luteo-oculata*, for the pink-coloured mixture each year seems to approximate more and more towards that of the male parent; and there is, moreover, the additional peculiarity that the blooms upon the same spike also vary, some expanding with the coppery hue, and some with the yellow, but in all cases the yellow of the eye is ultimately wholly predominant, and intensified in tint after the flower has been open from four to five days. Some blooms of *C. vestita luteo-oculata* are sent for comparison, when the typical form of the base of the labellum in *C. Turneri* at the eye-spot will be instantly recognised in the hybrid. I also enclose a singular form of *C. Veitchii* with two perfect labella. *John T. Barber, Spendon, Derby.*

Celery.—I did not write last week, thinking that some abler pen than mine would sound the praises of Celery. Messrs. Editors, I know it is a most daring thing to question your decision on this or any other

matter, but I am going to do so: and when you say the medical opinion would probably be "Put not your trust in Celery," I say the medical authority can know nothing about it. I have suffered much from rheumatic gout and functional weakness of the heart, but have derived immense benefit from eating stewed Celery. I have it at dinner four or five times a week when in season, and for this purpose I grow it largely, and have it early and late. All I can say to Mr. Horsfield (p. 730), or any one else, is "Try it." To stew Celery very little water is required; it should be broken into small pieces. Serve it in the liquor in which it is stewed, the latter being a most powerful antirheumatic. *John Matthews, Weston-super-Mare.* [We hope our correspondent's assertion will be substantiated. His evidence, in the way given, would not be convincing to a medical man, who would require clear proof that the good results depended on the Celery and on nothing else, and would require evidence from a large number of sources before he would or should venture to give an opinion. Still it is quite likely that it may have some medicinal properties, and there is in this case no harm in trying. Eds.]

Root-Pruning.—I have read, and no doubt many others have done the same, the leading article on root-pruning with great interest, and the writer seems to have come to much the same conclusion as myself—"it all depends," which no one, I think, who knows anything about the management of a garden will gainsay or dispute. It has been remarked that circumstances alter cases, and in nothing does this apply more forcibly than to the treatment of trees in different soils, localities, &c., as in some land their whole aim and effort seems the production of wood, whereas in other they assume just the reverse habit and produce plenty of fruit. Now to interfere with such as the latter would be sheer folly, and it would be just as much so to let the others grow at random unless time and space were no object, for there can be no question that if any one can afford to wait Nature after a course of years would right herself, and once a crop—given of course favourable seasons for the same—always a crop, as nothing tends so much to sober down any undue redundancy as the laying on of a load. The set conditions, then, to be laid down are very simple and easy to understand, and they resolve themselves into this, that if trees have to be limited in size, or time is an element in consideration, restrictive measures must be adopted, and these may be carried out in two ways, the one by nipping or stopping the young shoots during the summer, and the other by assailing the trees below, and there manipulating the roots. It is more than likely I think that there are two kinds of these, for we know that the large ones with goose-quill ends are sad gourmands—scavengers, as it were, taking up and devouring all that comes in their way, besides which, they answer the purpose of stays or anchors to steady the trees; but the fibres seem to have an instinct of their own, and to be more particular in their diet, for were it not so the multitude of mouths, if they may be so called, would take in far more than the others, and the result of their increase would be to aggravate and not cure the evil of barrenness, but instead of this, it is a well-known fact that the more fibrils a tree has the more fruitful it becomes. This has been demonstrated again, and again, and if you want to produce flower-buds you have only to root-prune or transplant, which is much the same thing, except that in the majority of cases the check is too much, and the end in view may be brought about with far less labour and disturbance than would be entailed in lifting the plant. As to grafting to produce fertility, that is seldom or never advisable, unless it be to substitute a kind that the district or soil suits better [Which was the purpose we intended. Eds.], as it is not the grafting that works the desired change, but the check caused by beheading, which is too violent, and incurs a great loss of time, which in these fast days has to be considered and taken into account. *J. Sheppard.*

Florists' Flowers.

CHINESE PRIMULAS AT SPARK HALL NURSERY, BIRMINGHAM.—Monarch, Mr. Tomkins' newest variety, is a very fine thing, a short stout-foliaged variety of the Fern-leaf section and quite distinct in its growth, the flowers white, of great substance and size, resembling the Princess Louise. This is a great acquisition, and like all the varieties sent out from here is a free and vigorous grower. In the Fern-leaved class Sun-ray is a grand bright reddish-scarlet variety. For intensity of colour in which scarlet is conspicuous, Scarlet King stands out prominently, and is all that can be desired in form, habit, and profuseness of flowering; and here again substance is remarkable. New varieties are sought after by Mr. Tomkins, and careful impregnation produces year after year

new colours; so that a visit to these nurseries, which are close to Birmingham, will reward a visit when the Primulas are at their best. Princess Louise, Princess of Wales, and the Marquis of Lorne are grown extensively here; and what a grand type of the Chinese Primula they form, for they excel all others in substance whilst remarkable also for size and form. The double forms of the Chinese Primula receive from Mr. Tomkins as much attention as the single form, and his Magnifica is a very fine variety, which is finer than Gilbert's White Lady. Henderson's King of Purples is extensively grown here, as it is one of the very best; and plants 2 feet through, and in the finest possible character, can be seen here which were struck from cuttings last spring. Henderson's Emperor is a very fine light purple Fern-leaved variety, and Smith's rubra grandiflora, which is a little lighter in colour than King of Purples, is a good variety. *W. W.*

GOLD-LACED POLYANTHUS.—It is a matter of common observation that in the spring months, when the flowers of the gold-laced Polyanthus are fully developed, that those grown in northern districts show more purity of colour, and more clearly defined marginal lines, than do those grown in the south. That this diversity is the result of diverse modes of culture no one imagines; its real cause is to be found in the diversity of temperature, as in the south a few warm sunny days prove most demoralising to the flowers, causing the rich deep-coloured grounds to pale and run, whilst the beautiful lacings become dull and clouded. We have just seen growing in the open border, and quite in shade, a quantity of plants of these Polyanthuses in flower, not one of which can be termed good, only fair seedlings, and yet the colours shown are as clear and as beautiful as can well be conceived. These same flowers in the spring, though good border flowers, would not pass muster anywhere as exhibition plants. But the coolness of the position has largely helped the foliage as well as the flowers, for that is green, fresh, and vigorous, and has been remarkably so all through the summer. No doubt heat and thrips are potent enemies of the Polyanthus, and where the foliage is affected and partially destroyed during the summer, the flower-heads must suffer also. Were the plants we saw but of choice show kinds, and in pots, the grower would lament thus to see them expending their energies in the production of flowers, even though so beautiful, thus out of season. Most probably these would be picked off without remorse. No such trouble need exist in this case; for, seen in the clear yet subdued light of the fine cool December days, they are veritable garden gems, the more beautiful that just now outdoor flowers are so scarce.

Forestry.

THE TIMBER LINE OF HIGH MOUNTAINS.—Mr. Meehan, in discussing this subject lately, remarked that on the tops of most high mountains we find a total absence of ligneous plants. The highest alpine vegetation consists for the most part of acaulescent perennials. Lower down we may find some woody species, and often we come to dwarfed forms of trees of species which, still lower down, form forests of considerable height, and which as timber trees make what is known to mountain travellers as the "timber line." Thus in the mountains of Colorado the forests commence at about 7000 feet above the sea level, and continue up to about 11,000 feet, where they suddenly cease, and form at that elevation what is there known as the "timber line." On Gray's Peak he found *Pinus aristata*, *P. flexilis*, *Abies concolor*, and *A. Engelmanni*, with some Willows forming the timber line. The coniferous trees were probably 30 or 40 feet high, and it was interesting to note that this tall timber as suddenly ceased as if a wood had been cut half away by a woodman's axe. But at once commencing where the tall timber ceased, the same species exist as dwarf stunted shrubs seldom exceeding 3 or 4 feet in height, and often but a foot, though trailing widely over the ground. In this stunted condition the species would often extend some 1500 feet higher up, or half way from the recognised timber line to the top of the mountain.

So far as he knew this peculiar timber line has been referred wholly to climatic conditions, of which temperature and moisture have been regarded as the

chief elements in producing the results. That admirable botanist and energetic collector, Dr. C. C. Parry, in a paper on the Rocky Mountain alpine region, published in the *Proceedings of the American Association for the Advancement of Science* for 1869, p. 249, remarks that the most satisfactory explanation is that the so-called timber line marks the extreme point of minimum temperature below which no exposed phænogamous plant can exist. All that survives above this point does so by submitting to a winter burial of snow, beneath which protecting cover it is enabled to maintain its torpid existence.

The great objection which this purely meteorological view presented to Mr. Meehan's mind was that the dwarfed and gnarled *Coniferæ* extending so many hundred feet up the mountain sides, never produced seed, and we are reduced to the alternative of believing either that the seeds have been carried up the mountain sides in enormous quantities and to enormous distances from the fruiting trees below by winds, or else that there were seed-bearing progenitors of these scrubby Pines, beneath the tall protecting branches of which they had their earliest stages of growth. He was satisfied from subsequent observations in the mountains of North Carolina, and in the White Mountains of New Hampshire, that this last view is the correct one, that large timber trees at no very remote period extended much further up the mountain sides than they do now, and that they have since disappeared for reasons presently to be stated, leaving only the younger trees to struggle on as best they may.

Roan Mountain in North Carolina is about 6300 feet above the level of the sea. Timber extends to its summit on some parts of it, while in other parts it is destitute of timber for many hundreds of feet down its sides. The species on the summit are *Abies Fraseri*, and *A. nigra*. Oak and other trees come occasionally to near the top, and at about 6000 feet he measured a Black Oak—*Quercus tinctoria*—that was 5 feet in circumference at 3 feet from the ground, and was perhaps 40 feet high. The places destitute of trees were the steep declivities, while those on which the trees were growing were of a more level character. Further down the mountain sides the steep inclines would be clothed with forest growth, as well as those of a more gradual ascent. It is of the summit only that the differences in inclination presented different forest aspects. But in the spaces clear of "Balsam," as the *Abies Fraseri* is popularly known, an occasional one of good size would be seen. In the close Balsam woods, both on the summit and lower down the mountain sides, crops of young plants would be found under the mature trees, but, what was very remarkable, there had evidently been no young trees started till the parents were near maturity. A large area with trees 30 or 40 feet high would have an undergrowth of young ones a foot or so high, while another area of younger trees would have innumerable small seedlings growing among the damp moss beneath them; and it was further interesting to note that in most cases the crops of young plants in each area were about the same age in each case, as if the seeds in the several locations had all started to grow together in some one particular year, and probably at no other time. On the naked places, where few or no trees were now found, the surface would be closely covered by a matted growth of a grass almost peculiar to that region, *Danthonia compressa*, but a close examination of the surface showed occasional tracts of deep vegetable mould which had been formed by ages of decaying Hypnum or Sphagnum moss, and the evident remains of roots, just as we now find under the Balsam trees; and there is no doubt from these facts that these steep upper declivities were once clothed with trees and mosses, to which the grass previously named succeeded.

With these facts in mind he examined the arboreal features of the White Mountains in New Hampshire. On Mount Washington, which is a little over 6000 feet, the timber runs up to about 4000 feet; while Mount Webster, a mountain forming the southern peak of the same chain, and about 4000 feet high, has little timber above 3000 feet. Clearly, climatic reasons will not account for these peculiarities. On Mount Washington there is much of the same character as distinguishes the forests of the Rocky Mountains. As already noted the timber line becomes marked at about 4000 feet. For at least another thousand feet we meet with scrubby bushes of *Abies balsamea*, *A. nigra*, and *A. alba*, with some *Betula papyracea*. Beyond this, and almost to the summit, an occasional specimen of one or another of the *Coniferæ* may be seen. As noted in regard to the Colorado scrubby growth, none of these had ever produced seed; nor was it at all probable, from a careful survey of the locations, that many of the areas could have been seeded by the winds, however strong, bringing the seeds up these mountain heights. Moreover, there were many cases where there were intermediate areas

clear of all scrubby Spruce plants, and where seeds could be brought by winds in these modern times much easier than to the heights above. Besides this, it was evident that many of these dwarfed specimens were of immense age. Some that he examined were certainly fifty years old, though the stems at the ground were no thicker than his wrist, and, trailing on the ground, occupied but 16 or 20 square feet of space. There seemed to be but little doubt that at some time in the past Mount Washington had forests of *Coniferæ* at much higher elevations than at present, if not perhaps clean up to the summit; that the scrubby plants now there were seedlings that had sprung up under the older ones, and that in time the older ones were destroyed, leaving the small ones beneath alone to their fate.

An examination of different parts of Mount Washington shows not only that this is the true explanation of the absence of good timber beyond what is known as the timber line, but that the same law is in progress to-day as in centuries past. Illustrations of this are numerous. There is now a railroad running straight up the mountain side from the base to the summit. Near the timber line, a cut had to be made through an area covered by mature Balsam Firs. This cut was about 8 or 10 feet deep. Under the trees moss and dead roots and old Fir leaves had made an earthy strata of a foot or, in places, more in depth. The moss was still green from the rains, melting snows, and fogs of this elevated region, and sustaining the various kinds of low vegetation common to these alpine heights. Young Firs were springing up in great abundance. But all the larger trees were dead, though here and there might be seen a branch with a few lingering green leaves. This mass of dead, standing timber occupied several acres. The reason for their death was evident. The railroad cut showed that the forest stood on a mass of large but loose gneiss rocks, through which the waters from the 2000 feet of loose rock above rushed as soon as the railroad cut was made, carrying with it all the earthy matter on which the larger trees subsisted, but leaving the tough turfy matter at the surface, on which smaller trees of the same sort may live for many years, though the larger ones cannot longer exist. With the death of the larger trees there is, of course, an increase of light, and then the Hieracium, with other grasses and sedges, speedily take possession, holding together the loose soil, and even permitting in many cases an increase of the earthy layer, by holding much of the disintegrated rock which may be washed or blown on from above. Carefully examining patches of scrubby Spruces above the timber line, it is not uncommon to find dark patches of vegetable mould evidently the remains of large trees that have been growing where now only the masses of small scrubby plants exist. In some places a sharp stick may be pushed down among the scrubby Firs and Spruces, and the earth found to be but a foot or so deep over the loose rock below, from which the earth has been wholly washed away. Again, there are some places, often nearly an acre in extent, where the scrubby Firs are still standing, dead, from the earth having been washed away from below upwards, not leaving enough for even the moderate demands of these little bushes.

In conclusion he would say briefly that the "timber line" of high mountain tops results from the washing down of the earth from the higher elevations. From the *Proceedings of the Academy of Natural Science of Philadelphia*, Sept. 14, 1886.

Reports of Societies.

Royal Horticultural: Dec. 14.—The Rev. H. Harpur-Crewe in the chair. The Rev. George Henslow first alluded to Poinsettia and to a large plant of *Euphorbia jacinthiflora* as illustrating coloured bracts assuming the "attractive" functions of a corolla, and in the latter plant closely mimicking a flower as well. He further illustrated this with *Salvias*, exhibited by Mr. Cannell, the coloured bracts of which much enhanced the brilliancy of the inflorescence. *Darwinia*, *Cornus*, and various "Everlastings" also closely mimic true flowers by means of their coloured or white bracts. He pointed out the "homology" between bracts and leaves and the manner in which Nature can utilise any one organ for other purposes by causing it to grow out into any other form. Primroses were next the subject of the lecturer's remarks. The original type of *P. sinensis* was exhibited, while the many varieties present showed the effects of cultivation and of "inter-crossing." With regard to the latter process, the "dimorphic" character of "heterostylism" was described and the benefits that result from "crossing." On the other "homostylism"—i.e., the stamens and pistil being of the same length—occurred normally in certain species of *Primula*, though probably any dimorphic species might become so just as *P. sinensis* does, and then they set seed freely without crossing. But if allowed to do so generation after generation they would probably degenerate in a horticultural

point of view, but the plant would remain perfectly healthy and probably become far more prolific. The lecturer then described by the aid of diagrams some changes undergone by Primroses. Just as bracts may become "petaloid," so the calyx may exactly resemble a second corolla, giving rise to a "hose-in-hose" form of flower. Another form of the latter is seen in the case where a second corolla is formed within the first, the calyx still retaining its green colour. A third variety occurs when the calyx "retrogrades" into a foliaceous condition, which forms the so-called "Jack-in-the-Green" variety. *Helleborus niger*, or Christmas Rose, was next commented on; the white calyx illustrates the remarks already made, that the same organ can undertake two or more functions; for it is at first protective of the stamens and carpels within, then attractive, with its large white sepals; and, lastly, nutritive, for they become green again subsequently, and so prepare nourishment for the ripening pods and seeds. The corolla is represented by a whorl of minute honey-bearing tubers; and the lecturer explained Dr. Masters' discovery, that the interior surface of these tubes could assimilate nitrogenous matters when presented to them. He described the process of "aggregation" of the protoplasm as a proof of digestion proceeding in the Sundew, a similar process being witnessed in the Hellebore. He offered the suggestion that possibly all plants could thus assimilate organised food if presented to them in a suitable way, though the so-called "insectivorous" plants were specially adapted to derive benefit from such food.

A plant of *Mormodes Wendlandii*, exhibited by Messrs Veitch, exhibited a very remarkable case of insect fertilisation, described by Mr. Darwin in his *Fertilisation of Orchids*, and explained by the lecturer by aid of diagrams on the black board.

SCIENTIFIC COMMITTEE.—Sir J. D. Hooker, K.C.S.I., in the chair.

Gall on Oak.—Mr. MacLachlan showed fine specimens of a Pear or top-shaped gall from the leaves of a Portuguese Oak, *Quercus pseudo-coccifera*?

Abies Concolor and Lowiana.—Dr. Masters read the substance of a letter from Dr. Engelmann, relating to these plants, in which the historian of the American Conifers stated, that he had now seen the species *concolor* extensively distributed in a living state from Oregon to Arizona, and especially in California, and that he had only occasionally met with the variety with long straight leaves (the form *Lowiana*). Dr. Engelmann is unable to separate *Lowiana* as a species, but refers it to *concolor* as a variety. In cultivation the form *Lowiana* is much more widely represented than the species.

Proliferation in Spermaceæ.—Dr. Masters showed a drawing of a specimen of *Spermaceæ* sp. from Port Darwin, and which he had received from Baron Müller, in which the flowers were the subject of median proliferation. The flower-tube, sepals, and corolla were normal, the stamens sometimes normal, or more or less atrophied or leaf-like. The ovary in all the specimens examined was destitute of ovules, in other cases it was replaced by two narrow leaves, from between which sprang a branch bearing opposite leaves. This branch in other specimens divided in a cymose manner, the sub-divisions bearing leaves and imperfect flowers.

Sport of Chrysanthemum.—Dr. Masters showed a *Chrysanthemum*, in which the flower-head was divided into two different halves, the florets of the one half being yellow, and corresponding to the variety known as Mrs. Rundle, the florets of the other half being longer, of a pink colour, corresponding to those of Mrs. Dixon. Thus, within one and the same involucre were florets of two separate varieties, apparently without any intermediate florets.

Agricultural and Horticultural Society of Roumania.—Dr. Masters announced the formation of this Society at Bucharest, and mentioned the desire of the Society to open up communication with this Society.

New Vine Mildew.—Mr. W. G. Smith showed specimens of Vine leaves, recently collected by Dr. Maxime Cornu in Spain, infected with *Peronospora viticola*. The disease is causing great destruction amongst Vines in the South of Europe, and its presence here is greatly to be feared.

Plants exhibited.—*Mormodes Wendlandii*, *Primula* sp. from China, referred to Kew; *Jasminum gracillimum*.

A vote of thanks to the Chairman was passed by acclamation.

FLORAL COMMITTEE.—Dr. Denny in the chair. This was the last meeting for the year, and decidedly one of the best held during the winter season. First-class Certificates were awarded to Messrs. James Veitch & Sons for *Jasminum gracillimum*, a valuable winter-flowering plant, closely allied to *J. pubescens*, and introduced into the Chelsea nursery by Mr. Burbidge, from Borneo, and which produces terminal trusses of fine white flowers on every young shoot. It appears to be a free grower, and certainly is

a very floriferous plant, and should become a great favourite for winter work. For *Croton Cronstadii*, a handsome plant, with long narrow spirally-twisted leaves, which in the young state are of a rich deep shade of orange, and in the older ones presents a combination of bronze, green, crimson, and gold. For *Croton Hawkeri*, an apparently free growing plant, with bold ovate yellow leaves, slightly tipped with green. For *Mormodes Wendlandii*, a singular plant, with one spike of eight curiously formed greenish-yellow flowers. For *Odontoglossum blandum*, a small-growing species with short spikes of small but pretty flowers, which are white, spotted with chocolate in all parts but the lip; and for *Odontoglossum anceps*, a species with chocolate-brown sepals and lip, and the petals green, spotted with brown on the basal half. The Messrs. Veitch also contributed a small group of interesting Orchids, and a capital batch of *Cyclamens*. Mr. H. B. Smith, of Ealing Dean, contributed an exceedingly fine batch of *Cyclamens*, mainly white-flowered, in which section he appears to be well ahead of other growers. Messrs. Smith & Larke, of Ashford, sent a nice wreath each of natural and artificial flowers; also a small group of *Cyclamens*, and a bunch of the dried flowers of *Astelma eximia*, an old but pretty everlasting, not much known but worth looking after on account of its red bracteate heads, which have some resemblance to the fruits of the Strawberry, hence its popular name of Strawberry Everlasting. Mr. Green, gr. to Sir Geo. Macleay, showed a nice flowering plant of the yellow *Oxalis Ortigiesii*; and from Mr. Hillier, nurseryman, Winchester, came some well grown plants of a pretty double pink *Primula sinensis* named *Annie Helier*, which, on account of its free-growing and free-flowering habit, and flowers of fine quality, was awarded a First-class Certificate. Mr. Wiggins, gr. to H. Little, Esq., Hillingdon Court, Uxbridge, also received a similar award for a very highly coloured single variety named *Purple Gem*—a flower of wonderful depth of colour, and invaluable for breeding. Mr. Cannell also received the coveted award for a fine, high-coloured variety named *Swanley Red*—a good step onwards. Mr. Pratt, gr. to Lord Hill, Hawkestone, sent some fine heads of *Poinsettia pulcherrima*; and Sir Trevor Lawrence sent cut blooms of a fine spotted variety of *Odontoglossum Londeboroughianum* named *punctatissimum*. *Dendrobium bigibbum album*, *Cœlogyne barbata* and *C. assamica*. Mr. Cannell put up another of his fine stands of cut blooms of single and double flowered *Zonal Pelargoniums*, fine in size and very rich in colour; also another fine stand of the pretty *Salvia Bethellii*. Mr. Allan, of Gunton, brought up some of the finest blooms of *Neapolitan Violets* that we have seen; and from Chiswick Mr. Barron sent up an exceptionally fine group of flowering and fine-foliaged plants, including some beautifully flowered clumps of *Helleborus niger*, *Primulas*, *Cyclamens*, *Abutilons*, *Begonias*, *Zonal Pelargoniums*, *Heaths* and *Mignonette*, a perfect blaze of bloom.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. The largest and most interesting contribution to this meeting consisted of a collection of 100 varieties of Apples, staged by Mr. Louis Killick, of Mount Pleasant, Langley, near Maidstone, and which the committee recommended to the Council for the award of a Silver-gilt Flora Medal. Most noticeable amongst them for size and fine quality were examples of *Tower of Glamis*, *Stone's Apple*, *Lord Derby*, *Warner's King*, *Mère de Ménage*, *Hollandbury*, *Bedfordshire Foundling*, *New Hawthornden*, *Winter Nonsuch*, and *King of the Pippins*. Most other popular sorts were represented, but as a rule only of average merit. Mr. W. Allan, gr. to Lord Suffield, Gunton, showed a couple of bunches of the *Chatsworth Seedling Grape*, a black oval-fruited variety, which met with no favour at the hands of the committee. Small bunches of *Gros Colmar* and *Alicante Grapes* came from Mr. Sage, Ashridge, and *Lady Downe's* and *Alnwick Seedling* came from Mr. Woodbridge, Syon. Mr. Miles showed a handsome brace of *Lord Carington Pine-apple*, and from Messrs. Veitch & Sons came ripe fruits of *Diospyros Kaki*, received from the South of France. Mr. Philip Crowley, of Waddon House, Croydon, sent a couple of immense Citrons; from Messrs. Cutbush & Son, Highgate came examples of their *Giant Brussels Sprouts*, a strain improved by careful selection during the last thirty years; and Mr. Hinds, gr. to Lord Wimborne, again sent a fine dish of *Trophy Tomato*.

Messrs. James Carter & Co.'s half dozen prizes for a collection of vegetables tempted some ten competitors to enter the lists, and the result was a remarkably good display for the season. The 1st prize was taken by Mr. Miles, gr. to Lord Carington, Wycombe Abbey, who staged fine samples of *Schoolmaster* and *Magnum Bonum Potatoes*, *Carentan Leeks*, especially good; *Autumn Giant Cauliflowers*, very small for the sort, but a nice table size; *Carter's Perfection Beet*, *Maltese Parsnips*, singularly fine examples; *Naseby*

Mammoth Onions, of great size; *Stamfordian Tomatoes*, *Perfection Brussels Sprouts*, *Long Red Surrey Carrots*, *Leicester Red Celery*, a rather weak dish; and *Carter's Jersey Lily Turnips*. The other prize-winners, in the order named, were Mr. Phillips, gr., The Deodars, Meopham; Mr. Iggulden, gr., Orsett Hall, Romford; Mr. Austen, gr., Ashton Court, Bristol; Mr. Roberts, gr., Gunnersbury; and Mr. S. Haines, gr., Coleshill, Highworth. Messrs. Carter & Co. also themselves exhibited a large collection of *Potatoes* and *Onions*.

Edinburgh Botanical: Dec. 9.—The Society met in 5, St. Andrew Square, Mr. William Gorrie, President, in the chair. The following office-bearers for 1880-81 were unanimously elected:—

President: Professor I. Bayley Balfour, Sc.D., M.B., C.M. Vice-Presidents: Thomas Alexander Goldie Balfour, M.D., F.R.S.E., F.R.C.P.E.; Alexander Buchan, A.M., F.R.S.E.; Hugh Cleghorn, M.D., F.R.S.E.; William Gorrie, of Rait Lodge, F.R. Cal. Hort. Soc. Councillors: C. H. Millar, of Blair Castle, F.R.S.E.; Sir Wyville Thomson, LL.D., F.R.S.E.; Isaac Anderson-Henry, F.L.S., F.R.S.E.; Sir Robert Christison, Bart., M.D., D.C.L.; Professor Thomas R. Fraser, M.D., F.R.S.E.; Professor Douglas MacLagan, M.D., F.R.S.E.; John Sadler, F.R.P.S., F.R. Cal. Hort. Soc.; Robert Gray, F.R.S.E.; William Craig, M.D., C.M., F.R.C.S.E., F.R.S.E.; Malcolm Dunn, Pres. Scot. Hort. Assoc., F.R. Cal. Hort. Soc. Honorary Secretary: Professor Balfour, M.D., F.R.S.S. L. & E. Honorary Curator: the Professor of Botany. Foreign Secretary: Professor Dickson, M.D., F.R.S.E. Treasurer: Patrick Neill Fraser, F.R. Cal. Hort. Soc. Assistant-Secretary: Andrew Taylor, F.C.S.

The following communications were read:—

I. Obituary notices of members who have died during last season. By Mr. Andrew Taylor, Assistant-Secretary.

II. Botanical Correspondence. Communicated by Mr. John Sadler.

Dr. Traill wrote from North Ronaldshay, Orkney, on November 12, that a good many young plants of *Phoridium tenax* grown from seeds that had ripened there last autumn, were now growing healthily in his garden as were also four plants of *Myrsine Urviliei*, two of which had been in the open all last winter; plants of *Leptospermum scoparium*, "Manuku," had also stood out quite safely during the last two or three winters. Since Dr. Traill introduced, about half-a-dozen years since, five or six kinds of shrubby *Veronicas*, their flowers are fertilised, probably through insect agency, and self-sown plants yearly spring up many of which are evidently hybrids, so curiously varied in foliage and flowers as to render the naming of the original stock difficult. A cross between *V. decussata* and *V. buxifolia* is so exactly like a florists' variety of *V. Devoniana* that only a practised eye could distinguish them.

E. G. Loder, Esq., Floore, Weedon, Northamptonshire, writes, on November 12, desiring that *Yucca Treculiana* be tried in the open, in perfectly drained rock-work. Messrs. Veitch had a splendid plant in their rockwork for years, until spoiled when flowering in 1878. Plants of *Yucca angustifolia* were sent, grown in one of his open borders, from seeds collected by Mr. Loder, in Colorado; they had stood the brunt of two severe winters unharmed without protection. *Yucca angustifolia* var. *mitis*, and some other varieties from further south in New Mexico, are more tender. "Yucca baccata I found in the south of Colorado, near Trinidad, on the borders of New Mexico. *Echinocereus Fendleri* has magnificent purple flowers. I sent a plant, in flower, to Kew last spring, and Sir Joseph Hooker was much pleased with it, and had it figured in the *Botanical Magazine*. *Echinocereus phoeniceus* and *E. gonacanthus* have scarlet flowers. All the plants I have seen in Europe named *E. phoeniceus* have been I believe *E. gonacanthus*. *Mammillaria vivipara* has pretty rose-coloured flowers. *Echinocereus Simpsoni* is the earliest to bloom in spring; the flower-buds come up from the centre of the plant (being a true *Echinocereus*), but as the plant grows the flowers get pushed down, as it were; and towards the end of summer (looking at the position of the dried-up flowers) one would think that the plant had flowered at the side like a *Mammillaria*. It is a very interesting plant; it reaches 13,000 feet in Colorado; my plants came from 20,000 feet." Mr. Loder sent Cacti from a cold frame in his garden where they had been during the last two severe winters; they all flowered splendidly both in the spring of 1879 and 1880. A plant or two of each species out in the open air, at the foot of a wall, where some overhanging Ivy wards off the snow and much of the rain, withstood the cold of last winter, when the thermometer indicated 32° of frost. Beside them, *Agave virginica* also withstood the cold and flowered this summer in the open air. *Puya coarctata* and *Dasyliroia Bigelovii* also do well in this Northamptonshire garden as well as *Agave utahensis*; but *A. Deserti* and *A. Shawii* succumbed. A few Cacti planted in the vertical face of a haw-haw wall facing S.W., and not protected from rain, though the drainage is perfect, withstood the severity of last winter. More are now planted, as well as *Agaves* and *Mesembryanthemums*. A very pretty plant, *Gillia aggregata*, from the Rocky Mountains, flowered with Mr. Loder this year, but did not ripen seed. He had seen only small plants of this in Colorado, 2 feet high, with a small spike of flowers, but his garden specimen was 3 feet high, branching like a large individual of *Lythrum Salicaria*, with hundreds of flowers. The colour is fine, but the scent of the flower is not agreeable.

W. F. Gumbleton, Esq., Belgrave, Queenstown, Co.

Cork, writes, at date Nov. 21, 1880:—"In reply to your enquiry about hardiness of *Clethra arborea*, I write a line to let you know that on the island of Valentia, off the coast of Kerry, this beautiful shrub is perfectly hardy, a fine specimen of it some 20 feet in height having been, next to his monster *Fuchsia Riccartoni*, 165 feet in circumference, the great pride and delight of my much esteemed old friend, the late Knight of Kerry. Even the severe and prolonged winter of 1878-79 left it quite unimpaired. It has been planted out, I believe, somewhat over twenty years in the middle of a small wood and close to the sea, and blooms profusely all over the tree every summer, usually also producing seeds. *Leptospermum bullatum* also lives out there, flowering abundantly and ripening seeds also. I believe we have had, for us, very severe frost for the last few nights—Wednesday night, 11°; Thursday night, 9°; and Friday night, 12°, if not 13°; and I am happy to say my three new shrubs—*Bigelovia arborescens*, *Carpenteria californica*, and *Fallugia paradoxa*—seem quite unimpaired thereby, though quite unprotected in any way. The first-named I hardly expected would prove hardy."

III. Report on Temperatures and on the Progress of Open-air Vegetation at the Royal Botanic Garden from August to November. By Mr. John Sadler, Curator.

During the month of August it was stated that the lowest temperatures were, on the 2d, 45°; 3d, 47°; 7th, 45°; 21st, 43°; and 22d, 47°. The highest day temperatures in the shade were, on the 8th, 74°; 10th, 73°; 11th, 88°; 13th, 76°. The weather during the month was remarkably dry, calm, and bright, and well illustrated Professor Smyth's "wave of solar heat." Fifty-four species and varieties of plants came into flower on the rock garden, making a total of 755 for the season.

Amongst the flowers in bloom on the wall garden were *Montbretia Pottii*, *Calceolaria chelidonefolia*, *Yucca filamentosa*, *Colchicum striatum*, *Convolvulus Scammonia*, *Cyananthus lobatus*, &c.

The lowest temperatures during September were, on the 8th, 40°; 9th, 39°; 12th, 42°; 18th, 38°; and 19th, 36°. The highest day temperatures in the shade were, on the 1st, 72°; 2d, 72°; 3d, 75°; 28th, 70°; and 30th, 70°. During the first week of the month the fine weather of August was continued, but during the second week there were heavy showers and easterly winds till the 25th, when the weather again became bright. Twenty-six species and varieties came into flower on the rock garden. These included *Lobelia lutea*, *Lilium longiflorum*, *L. auratum*, *Colchicum maximum*, *Gaultheria carnea*, &c. The favourable nature of the weather for the past two months has so matured the wood of trees and shrubs that there is a promise of a great display of flower next season. The *Rhododendrons*, for instance, have set their flower-buds in a way that we have not seen for the past three years. The first frost experienced from May 1, last was on the morning of October 4, when the thermometer stood at 30°, or 2° of frost. During the month the thermometer was at or below the freezing point on eleven occasions; in 1879 nine times. The lowest temperatures were, on the 13th, 27°, or 5° of frost; 19th, 26°; 20th, 22°; 22d, 22°; and 28th, 26°. There were registered collectively for the month 48° of frost, as compared with 36° in 1879. The highest day temperatures in the shade were on the 1st, 54°; 3d, 52°; 7th, 58°; 14th, 53°; and 17th, 54°. The Botanic Gardens escaped without injury during the severe gales in October, and only one species came into flower during the month in the rock garden, viz., *Merendera Bulbocodium*; this making in all from January 1, 782 species and varieties.

In November the thermometer was at or below freezing point sixteen times. The lowest readings were, on the 2d, 17°; 3d, 23°; 4th, 26°; 15th, 22°; 16th, 25°; 18th, 22°; 20th, 17°; and 21st, 9°, or 23° of frost; 22d, 17°, or 15° of frost; and 23d, 17°. There were registered collectively for the month 136° of frost; in 1879, 93°. Notwithstanding the severity of the weather, little or no injury was done to vegetation in the garden. During the storm several refugees came to the garden—namely, two water hens, a brace of pheasants (cock and hen), and a beautiful specimen of "reynard the fox." It was almost needless to add that the latter devoured the water hens.

Till about the middle of the month there were a few plants in flower on the rock garden, including *Lipospermum prostratum*, *Veronica rupestris* and *V. spicata*, *Arabis decurrens*, *Helleborus niger*, &c. The record of time of flowering is given for several of these in the spring report; thus, *Crocus medius* there dates as flowering on January 1, but this year it did so on November 5; *Arabis decurrens* flowered last year on March 1—this season in October; *Primula cashmiriana* last year on March 4, but this year on November 8; *Helleborus alba* came into flower on February 5, 1880, but this season on November 2; while *Helleborus niger grandiflorus*, which usually opens its flowers about the end of November or beginning of December, has this season flowered throughout the autumn. Since the month of December began the thermometer had only been twice at or below the freezing point—namely, on the 3d, 30°; and on the 7th, 31°. The comparatively mild weather is causing the early spring flowering bulbs to push forward rapidly, so that at present the growing points of many of them are already above the surface of the ground.

A special feature in the pinetum as well as in the rock garden at present and during November, is the deep russet-brown tint of the foliage of the Chinese *Arbutus* (*Thuja elegantissima*). Mr. Sadler exhibited nineteen species and varieties of plants in flower, which he had picked on that day, including *Helleborus niger*, *H. niger grandiflorus*, *Veronica rupestris*, *Ozothamnus* (*Diplopappus* *chrysophylla*), *Arabis decurrens*, *Crocus pulchellus* or *medius*, *Lipospermum prostratum*, *Sedum ibericum*, *Menziesia cœrulea*, *Calluna vulgaris* var., *Erica carnea alba*. Among the weeds in flower were *Lamium pur-*

pureum, Senecio vulgaris, Leontodon Taraxacum, Stellaria media, Capsella Bursa-pastoris, and Poa annua.

Mr. Alexander Buchan gave instances from the readings of the various stations of the Scottish Meteorological Society to show that last October had been the coldest month of that name for 170 years past. He attributed the extraordinary plant appearance just alluded to by Mr. Sadler to the present spring-like weather following after what was really a short winter, which had again been preceded by one of the mildest autumns on record.

Mr. Johnstone, of Inverlith Nursery, called attention to a snowstorm at Caterham in Surrey on October 21, which had done immense damage to Oaks and other trees.

IV. Miscellaneous Communications:—

Mr. John Campbell, Ledaig, near Oban, sent flowers in bloom from his garden.

Mr. Johnstone had lately seen, near Trynabruch, Kyles of Bute, a Eucalyptus about 60 feet high, planted fourteen years ago, virtually in the open.

Mr. Methven exhibited from his hothouses what Professor Trail, of Aberdeen, who was present, pronounced Momordica Charantia, he having seen it growing as a hedge creeper round the villages in Brazil.

Mr. N. Fraser presented to the University herbarium two fine specimens of *Dicksonia*, nov. sp., from Aneitum, New Hebrides.

National Rose Society: Report for 1881.—The committee of the National Rose Society desire to congratulate their members upon another successful year. Although last season again proved in many respects an unfavourable one they have nevertheless the pleasure of reporting that the influence of the Society still continues to increase, that its exhibitions have been well supported, and that its financial position has considerably improved, while its prospects for the ensuing season are at the present time most encouraging. The committee would suggest that, amongst other permanent work for the coming year might be the adoption of an idea first proposed by the late Wilson Saunders, F.R.S., viz., the compilation, by the Society, of a complete catalogue of Roses, containing a careful description of each variety, its raiser's name, and date of introduction. This catalogue to be afterwards printed and issued by the Society at a nominal cost; also the expediency of a lecture on Rose culture being delivered next year by a member of the Society on the occasion of the holding of one of its provincial exhibitions.

Financial Statement.—It will be remembered that the Society, after defraying all outstanding accounts, entered upon the year 1880 with a balance of £56 19s. 1d. At the commencement of the present year, notwithstanding that the amount paid in prizes greatly exceeded that awarded in the previous season, there still remains in the treasurer's hands a clear balance of £104 3s. 7d. The present favourable condition of the Society's finances may to some extent be attributed to the increased number of subscriptions received. It should, however, be stated that it is also due, in a great measure, to the many handsome cups and pieces of plate presented last year as special prizes, and the committee desire to take this opportunity of thanking those friends who so generously came forward and assisted the Society by these gifts, the competitions for which contributed so much towards increasing the interest of their last Metropolitan exhibition.

Affiliated Societies.—The Rose Societies of Farnham, Horsham and Writtle have, during the past year, become affiliated. In response to the kindly feeling exhibited by the proprietors of the *Journal des Roses*, and M. B. Lenaerts, the President of the Rose Club at Antwerp, in offering medals for competition at the Society's Southern Show, the committee presented the Rose Societies of Brie Comte Robert and Antwerp respectively with two of their own medals.

Arrangements for 1881.—At a meeting held in April last, the committee deputed one of your hon. secretaries to visit several provincial towns where a wish had been expressed that the Society should hold its second exhibition this year, viz., Cheltenham, Liverpool, Bath, and Sheffield. In the case of each of the towns last named, an earnest desire was expressed by the authorities that the exhibition should be there held, and after much deliberation the committee decided in favour of Sheffield, owing in part to its priority of application, leaving Bath for the year 1882. Three exhibitions will be held this year—the metropolitan show at the Crystal Palace early in July, the usual provincial exhibition in the Botanic Gardens at Sheffield, and an additional or autumn show in the gardens of the Botanical and Horticultural Society at Manchester in September. In respect to the metropolitan exhibition, the committee regret to state that they have been obliged to relinquish the privilege granted to members last year of a private view, in consequence of the dissatisfaction created amongst the Crystal Palace season ticket holders, but hope by a different disposition of the staging to obviate this difficulty. Should, however, any difficulty in inspecting the blooms be experienced by members visiting the show at its opening, this will probably render necessary some entirely different arrangement for the future.

Scottish Horticultural Association: Dec. 7.

—The ordinary monthly meeting of this Association was held in 5, St. Andrew Square, Edinburgh. There was a large attendance of members. The President, Mr. M. Dunn, Dalkeith Park Gardens, in the chair.

Mr. W. Ivson Macadam, F.I.C., F.C.S., &c., lecturer on Chemistry, Edinburgh, read a paper "On the Chemistry of Horticulture." He said that in his last paper he had considered the market gardening crops, and on this occasion he would refer to a few of the varieties

of plants met with in greenhouses. He first spoke of the chemical composition of the plants, and under this head gave figures, showing the proportions of water and dry matter contained in *Pelargoniums*, *Fuchsias*, *Primulas*, *Heliotrope*, *Begonia*, *Cyclamen*, *Lobelia*, and *Dracena*. He further divided the dry residue into organic vegetable matter and saline matter, showing a wide range from *Lobelia*, with 8.51 per cent. of salts and 47.94 per cent. of organic matter; to *Begonia*, containing saline matter 0.61 per cent. and organic matter 3.41 per cent. Mr. Macadam also considered the differences existing between the various species of the same plant, and gave the results of his analyses on this point.

The lecturer then went minutely into the chemical composition of the ash of the various plants experimented upon, giving the amount of each ingredient present. Soils were next dealt with, and the results of the analyses showed that all the materials necessary for the life of the plant were present, although in some cases in small quantities. Analyses of the manures commonly employed by horticulturists were given, and the price was shown to be in all cases very much above the real value of the ingredients present. Mr. Macadam, at the close of his paper, expressed the opinion that very many of the diseases so fatal to plants were due either to starvation of the plant or improper feeding of it, and said that he had no doubt that in a short time the knowledge of the science of horticulture would be increased to such an extent that these diseases would be nearly, if not entirely exterminated.

Mr. John Shearer, Craigroyston, brought under the notice of the meeting a large plant of *Epiphyllum truncatum*, or leaf-flowering Cactus. It was a large fine plant, and covered with flower; it was not, he thought, so extensively cultivated as its merits deserved. This was owing, in his opinion, to it having been introduced so long ago as the year 1830, and its popularity having given way to that of a great many inferior plants.

Mr. A. M. Millan, gr. to J. Macbraire, Esq., of Broadmeadows, forwarded a fine collection of cut flowers for exhibition; it contained twenty-four kinds of *Pelargonium* trusses, some of the large sorts measuring 18 inches in circumference, and with pips over 2 inches in diameter; a collection of thirty varieties of *Chrysanthemum* blooms, some of the sorts measuring 14 inches in circumference; among the varieties sent were—*Madame Marthe*, *James Salter*, *George Glenny*, *Madame Godefron*, *Prince of Wales*, *Julie Lagravère*, *Stafford Carey*, *Elaine*, *Golden Queen of England*, *Nil Desperandum*, *Mrs. Dixon*, and *Garibaldi*. There were also shown by the same exhibitor *Bouvardia* flowers, *Carnation* blooms, and *Regal Pelargonium* flowers. Mr. George McClure, Trinity Grove Gardens, exhibited a collection of *Chrysanthemum* flowers in fine condition. Messrs Thos. Methven & Sons exhibited *Chrysanthemum* *Rosinante*, showing a sport of yellow flowers on the same plant; they also exhibited a plant of *Momordica Balsamina* in fruit: it was an annual, native of India, and not being generally known attracted considerable attention.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, DEC. 15, 1880.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 48 years.	Highest.	Lowest.	Range.	Mean for Day.	Dew Point.	Degree of Humidity. Sat. = 100.		
Dec. 9	30.22	+0.44	51.7	43.9	7.8	47.8	+6.6	85	NNE: NNW	0.00
10	30.12	+0.34	55.8	41.6	14.2	49.3	+8.3	78	N.W.	0.03
11	30.05	+0.26	45.0	35.1	9.9	40.2	-0.6	86	WSW	0.00
12	29.97	+0.17	48.0	42.5	5.5	45.4	+4.7	75	S.W.: WNW	0.00
13	29.79	-0.01	51.9	41.1	10.8	48.0	+7.4	78	WSW	0.00
14	29.79	-0.01	41.8	37.0	6.8	40.8	+0.1	77	N.W.	0.15
15	29.10	-0.41	51.3	32.5	18.8	44.9	+4.2	97	WSW: S.W.	0.38
Mean	29.91	+0.11	49.7	39.1	10.6	45.2	+4.4	84	variable	sum 0.53

Dec. 9.—A fine day, but cloudy. Mild. Cloudless at night.

10.—A fine day, very cloudy at times. Mild. Cloudless at night.

11.—A fine bright day. Cloudy at times. Colder.

12.—A very fine bright day. Mild. Sky generally clear.

13.—A dull, cloudy day. Mild. Strong wind. Clear at intervals in evening.

14.—Overcast, dull, cold day. Occasional rain. Miserable.

15.—A dull, wet day. Overcast. Mild. Strong wind.

The minimum temperature, 32° 5, occurred at about 1 A.M., and the temperature rose rapidly afterwards.

LONDON: Barometer.—During the week ending Saturday, December 11, in the vicinity of London,

the readings of the barometer at the level of the sea increased from 30.52 inches at the beginning of the week to 30.53 inches by the morning of the 5th, decreased to 30.48 inches by noon on the 6th, increased to 30.65 inches by the evening of the 7th, decreased to 30.27 inches by the afternoon of the 10th, increased to 30.35 inches by the evening of the same day, and decreased to 30.13 inches by the end of the week. The mean reading for the week at sea level was 30.45 inches, being 0.10 inch above that of the preceding week, and 0.49 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 55° on the 10th, to 45° on the 11th; the mean value for the week was 51°. The lowest temperatures of the air observed by night varied from 35° on the 11th, to 44° on the 6th; the mean value for the week was 42°. The mean daily range of temperature in the week was 9°, the greatest range in the day being 14° on the 10th, and the least 6°, on the 8th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—5th, 47°.4, +5°.7; 6th, 49°, +7°.4; 7th, 48°.2, +6°.7; 8th, 47°.5, +6°.1; 9th, 47°.8, +6°.6; 10th, 49°.3, +8°.3; 11th, 40°.2, -0°.6. The mean temperature of the air for the week was 47°.1, being 5°.7 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 74° on the 7th, 69° on the 10th, and 63½° on the 11th; on the 6th, 8th, and 9th the readings did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30½° on the 11th, 35° on the 5th, and 37° on the 10th; the mean of the seven lowest readings was 38½°.

Wind.—The direction of the wind was W.S.W., and its strength strong.

The weather during the week was fine, mild, and dry, though generally dull, and the sky cloudy.

Rain.—No rain fell.

ENGLAND: Temperature.—During the week ending Saturday, December 11 the highest temperatures of the air observed by day were above 56° at both Birmingham and Sheffield, and below 54° at both Bristol and Wolverhampton; the mean value from all stations was 54½°. The lowest temperatures of the air observed by night were below 37° at Blackheath (London), Leicester, Cambridge, Wolverhampton and Nottingham, and above 42° at Plymouth, Liverpool, Leeds and Sunderland; the mean from all places was 38½°. The extreme range of temperature in the week was more than 20° at Blackheath, Cambridge and Wolverhampton; and less than 12° at Liverpool, Leeds and Sunderland; the mean range of temperature from all stations was 16½°.

The mean of the seven high day temperatures was above 53° at Truro, Plymouth, Birmingham, and Leeds, and below 51° at Brighton, Bristol, Norwich, and Hull; the general mean from all places was 51½°. The mean of the seven low night temperatures was below 42° at Wolverhampton, Nottingham, and Hull, and above 46° at Truro, Plymouth, and Liverpool; the general mean from all stations was 44°. The mean daily range of temperature in the week was more than 16° at Wolverhampton and Nottingham, but less than 6° at Bristol and Liverpool; the mean daily range from all places was 7½°.

The mean temperature of the air for the week from all stations was 47½°, being 16½° higher than the value for the corresponding week in 1879. The mean temperature was above 49° at Truro, Plymouth, Liverpool, and Leeds, and below 46½° at Brighton, Wolverhampton, and Hull.

Rain.—Very little rain fell during the week, the largest falls being 0.27 inch at Leeds, 0.25 inch at Nottingham, and 0.22 inch at Leicester; and the smallest falls 0.02 inch at Cambridge, and 0.04 inch at Liverpool. At Plymouth, Brighton, Bristol, Norwich, and Blackheath (London) no rain fell; the average fall over the country was 0.10 inch.

The weather during the week was fine, dry, and very mild, and the sky partially cloudy.

SCOTLAND: Temperature.—During the week ending Saturday, December 11, the highest temperatures of the air observed by day varied from 57° at Glasgow to 53° at Paisley; the general mean from all places was 55°. The lowest temperatures of the air observed by night varied from 32° at Perth to 40½° at Greenock; the mean value from all places was 35½°. The mean range of temperature in the week was 19½°.

The mean temperature of the air for the week from all stations was 47½°, being 14½° higher than the value for the corresponding week in 1879. The highest was 49° at Glasgow and Leith, and the lowest was 45½° at Perth.

Rain.—The heaviest falls of rain were at Greenock, 1.28 inch, and at Glasgow, 0.77 inch; and the least falls were at Perth, 0.02 inch, and Dundee, 0.05 inch; the average fall over the country was 0.34 inch.

DUBLIN.—The highest temperature of the air was 54°, the lowest 40°, the extreme range 14°, the mean 48°, and the fall of rain 0.08 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

ZINC LABELS.—Can you kindly tell me the reason of zinc labels becoming covered with a white deposit immediately on being placed out in the borders, while others which have been out for four or five years still remain perfectly clear and legible? C. E. V.

Information is requested concerning Mr. Kyle, who was honourably known some years since in connection with the application of sulphur to Vines suffering from mildew. At Leyton, where he is known to have resided, information has been sought without avail.

Answers to Correspondents.

ACACIA PUBESCENS. H. C. The fine Acacia you send is *A. pubescens*, a grand conservatory species. The falling of the flowers is no doubt attributable to the plant being dry at the root; the ball needs a thorough soaking.

FICUS ELASTICA, &c.: W. J. B. Palms can only be propagated by seeds. The Ficus is propagated by cuttings in a strong moist heat. The cutting consists of a piece of the stem with one eye and a leaf.

FUEL: Subscriber. Use three parts culm coal, one part chalk or limestone, the latter to be broken into 2 inch cubes, to be laid on the top of the culm. The fuel should be renewed every twelve hours only; the fire to be left undisturbed at other times, and a moderate draft only allowed. The chalk or limestone should be stored in a dry place before use. By this means a regular and moderate heat may be secured, and a saving of one-third effected. T. Challis.

HIBISCUS: J. H. The variations are very pretty and singular. It is, of course, possible, but we do not think it probable, that there has been any cross between *H. rosa-sinensis* and *H. cannabinus*. You do not give any history of your plants.

HYACINTHS: J. F. Your soil appears to be too close and sour and wanting in coarse grit; this holds the water, and is probably the cause of rotting. Any gritty matter would improve it—even burnt clay or ballast, or pounded bricks sifted, if you have nothing better. But we should recommend a different and more open mixture altogether.

IXORAS: Clara. The dropping of the leaves is probably occasioned by the plants being kept too dry or too cold.

LÆLIA ANCEPS: W. G. M. Your treatment appears to be about the right thing. Do not, however, err on the side of excess either as regards coolness or dryness.

NAMES OF FRUITS: J. Kay. Pear: Beurre d'Arenberg.—E. H. 1, Hollandbury; 2, Stirling Castle, probably; 3, Blenheim Orange.—W. A., Ford Manor, 1, Cox's Orange Pippin; 2, not known; 3, Hollandbury.

NAMES OF PLANTS: H. J. C. 7, *Pteris longifolia*; 8, *Cyrtomium Fortunei*; 9, *Blechnum polyopodioides*; 10, *Woodwardia radicans*; 11, *Blechnum*, imperfect; 12, *Pteris serrulata*.—G. McM. We do not undertake to name florists' flowers.—Young Gardener. You must send better specimens, and number them. We cannot afford to waste time over scraps of leaves only.—T. W. S. 1, *Ceanothus azureus*; 2, *Calycanthus fragrans*.—H. Smith, Dorking. A very common Lichen, *Physcia parietina*.—H. Ward. Geranium molle, a common weed. We are not aware of its being injurious to cattle.—T. B. *Origanum Sijpeleum*.—T. Spencer. *Epidendrum fragrans*.—W. J. Roberts. 1, *Lantana*, garden variety; 2, *Scolopendrium vulgare ramosum*, a poor form; 3, *Lotus Jacobaeus*.—G. M. It is impossible to name plants from such specimens—leaves only. The hard cut-leaved plant is *Lomatia silaifolia*.—J. H. K. *Gasteria verrucosa*.—W. H. 1, *Calanthe vestita*; 2, *Saxifraga sarmentosa*; 3, *Jasminum grandiflorum*; 4, *Nephradium molle*; 5, *Davallia Mooreana*; 6, *Pteris serrulata*.—J. C. Branley. *Begonia Craigiana*.—P. H. G. a, no specimen received: the drawing appears to represent *Bulbophyllum Carey-anum*; b, specimen insufficient.—Parker. *Ilex opaca*.

PEAR TREES, CANKER IN: R. W. Malone. The canker appears to us to be the result of poverty in the soil, which, you say, is very light and shallow. The best thing you can do is to give the border a good dressing of marl or clay. Soot or lime would of themselves do little good without something more substantial at the roots.

PICEA: W. E. D. We cannot give you a definite answer from the specimens sent. It has the appearance of amabilis, but the structure of the leaf is different, and the leaves on the upper surface of the branches are not parallel to the branch. We may have more to say about it another time.

SITUATION IN FRANCE: Un Garçon. The *Revue Horticole*, published fortnightly at 26, Rue Jacob, Paris.

STRAWBERRY GRAPE: F. Morgan. It is an American variety, so named on account of the resemblance of its flavour to that of the Strawberry.

VINES: Young. They are best planted out just after they are started into growth, before the young roots get entangled; but if planted with care they will succeed well enough either way. A good deal depends upon the border being of the right stuff, and in the right state.

VINES: J. E. T. Graft the Alicante and Muscats, as you propose; and you cannot do better than follow the instructions on grafting given by Thomson.

* * Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED.—Richard Dean (Ranelagh Road, Ealing), Catalogue of Hardy Florists' Flowers, Herbaceous and other Plants.—Chr. Lorenz (Erfurt), Catalogue of Flower and Vegetable Seeds.—John Dykes (Kilmarnock, N.B.), Price Current for Forest and Ornamental Trees and Shrubs.—Sutton & Sons (Reading), Amateurs' Guide in Horticulture for 1881.

COMMUNICATIONS RECEIVED.—Duarte d'Oliveira.—C. B. Turin.—Sander & Co.—F. W. M.—W. Howard (with thanks).—G. B.—E. B.—E. A.—Messrs. Veitch.—J. Cameron, Bangalore.—P. B.—Rev. Canon Burbridge.—C. N.—J. P.—C. N. Racotta, Bucharest.—G. Engelmann, St. Louis.—R. C.—Sir C. S.—R. J. M.—Price's Patent Candle Company.—J. van Voltem (your request shall be complied with). Fruit of *Carica endimacensis* received with thanks.—Gautier.—I. R. 1.—R. D.—J. R.—J. B.—M. M.—G. S.—H. E.—H. B. S.—T. S. J.—C. D.—D. T. F.—W. G. P.—A. B.—M. D.—T. C.—F. E.—J. R.—A. H.—W. P.—F. S.—F. L.—G. O.—W. & J. B.—G. G.—A. S., Bristol.—A. B.—C. Osman (many thanks).—A. Northernner.—N. J. D.—J. F.—R. H. D.—J. D. H.

Markets.

COVENT GARDEN, December 16.

Our market is generally depressed except for good samples of late Grapes, quotations for which are well maintained. Large arrivals of Canadian and American Apples to hand this week, reaching us in bad condition; sound stuff making better prices. James Webber, Wholesale Apple Market.

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	.. 2 0 5 0	Lemons, per 100	.. 4 0 6 0
Cobs, per lb.	.. 2 0 2 6	Pears, per dozen	.. 1 6 5 0
Grapes, per lb.	.. 3 0 5 0	Pine-apples, per lb.	.. 1 0 2 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe, per doz.	.. 3 0 6 0	Horse Radish, p. bun.	4 0 ..
Asparagus, 7, bndl. 25	0 ..	Lettuces, Cabbage, per doz.	.. 0 6 1 6
Beans, French, p. lb.	0 9 ..	Mint, green, bunch..	0 4 ..
Beet, per doz.	.. 1 6 2 6	Mushrooms, p. basket	1 6 2 0
Cabbages, per doz.	.. 1 0 2 0	Onions, per bushel..	5 0 ..
Carrots, per bunch	0 4 0 6	— Spring, per bun.	0 6 ..
Cauliflowers, English, each	.. 0 3 0 6	Parsley, per bunch..	0 4 ..
Celery, per bundle	.. 1 6 2 0	Radishes, per bun.	0 2 ..
Chilis, per 100	.. 3 0 ..	Rhubarb, per bun.	1 0 ..
Cucumbers, per doz.	0 6 0 0	Seakale, per basket	2 6 ..
Endive, per doz.	.. 1 0 1 6	Small salad, pun.	0 4 ..
Garlic, per lb.	.. 1 0 ..	Spinach, per bushel	4 0 ..
Herbs, per bunch	.. 0 2 0 4	Tomatoes, per lb.	.. 0 9 1 0
		Turnips, new, bunch	0 4 ..

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 20s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag. Trade very bad, and prices 10s. to 20s. per ton lower all round.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	.. 6 0 12 0	Ferns, in variety, doz.	4 0 18 0
Bouvardias, per doz.	12 0 24 0	Ficus elasticus, each	1 6 7 6
Chrysanth., p. dozen	0 18 0	Foliage Plants, various, each	.. 2 0 10 6
Cyclamen, per doz.	12 0 18 0	Hyacinths, per doz.	10 0 12 0
Cyperus, per dozen	0 6 12 0	— Roman, doz.	15 0 18 0
Dracena terminalis	30 0 60 0	Lily of the Valley, per pot	.. 4 0 6 0
— viridis, per doz.	12 0 24 0	Myrtles, per doz.	6 0 12 0
Epiphyllum, per dozen	.. 18 0 30 0	Palms in var., each	2 6 21 0
Erica gracilis, dozen	0 18 0	Poinsettia, per doz.	9 0 18 0
— caifra, per doz.	8 0 12 0	Primula, single, per dozen	.. 5 0 6 0
— hymalis..	12 0 36 0	Solanums, per dozen	0 18 0
Eunonymus, various, per dozen	.. 6 0 18 0	Tulips, 12 pots	.. 8 0 12 0
Evergreens, in var., per dozen	.. 4 0 18 0		

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Mignonette, 12 bun.	4 0 9 0
Arum Lilies, 12 blms.	6 0 9 0	Narcissus, Paper-White, 12 sprays..	3 0 4 0
Bouvardias, per bun.	1 0 3 0	Pelargoniums, 12 sprays	0 9 1 6
Camellias, per dozen	3 0 6 0	— zonal, 12 sprays	6 0 0 0
Carnations, 12 blms.	1 0 2 0	Polinsetia, 12 blooms	3 0 6 0
Chrysanth., 12 bun.	6 0 12 0	Primula, double, per bunch	.. 1 0 1 6
— 12 blooms	1 0 3 0	— single, 12 sprs.	0 9 1 6
Cyclamen, 12 blms.	0 3 0 6	Roses (indoor), doz.	2 0 6 0
Epiphyllum, 12 blms.	0 1 6 0	— yellow Fr., doz.	1 0 2 0
Eucharis, per doz.	4 0 9 0	— red French, doz.	1 6 2 6
Euphorbia, 12 sprays	3 0 5 0	— Christmas, 12 bl.	1 0 2 6
Gardenias, 12 blms.	12 0 18 0	Stephanotis, 12 spr.	10 0 18 0
Heliotropes, 12 sp.	0 6 1 0	Tropaeolum, 12 bun.	1 0 3 0
Hyacinth, Roman, 12 sprays	.. 2 0 3 6	Tuberose, per dozen	2 0 4 0
Lagerflora, white, 12 blooms	4 0 6 0	Violets, 12 bunches.	1 6 2 6
— red, 12 blooms	1 0 3 0	— Neapolitan, Fr., per bunch	.. 3 6 5 0
Lilac, Fr., per bunch	8 0 10 0	— Czar, Fr., bunch	2 0 3 0
Lily of the Valley, 12 sprays	.. 2 0 5 0		
Marguerites, 12 blms.	0 4 0 9		

SEEDS.

LONDON: Dec. 15.—The seed market to-day was thinly attended, and no new feature of interest presented itself. As Christmas draws near business in farm seeds is always restricted to very narrow limits. Red Clover, Trefoil, and, in fact, all varieties, continue exceedingly firm. The small lots of new English red which have been offering exhibit a wide range of quality. Königsberg spring Tares have advanced 1s. per quarter. The supply on the spot is very meagre. Bird seeds are just now quite neglected. Linseed is dull. John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.

CORN.

At Mark Lane on Monday a reduction of about 1s. per quarter was quoted in home-grown Wheat compared with Monday's night. Foreign Wheat was in fair supply, but here also prices were about 1s. lower. Indian corn sold slowly on rather easier terms. Good stout Barley realised former prices, but inferior sorts were dull at barely late rates. The Malt trade was without much change in figures. For Oats prices ruled occasionally in favour of buyers. Beans and Peas had a downward tendency, and flour was without material change.—On Wednesday Wheat was quoted as nominally the same as on Monday, but the market was decidedly less strong. Barley was cheaper to sell, as also were Oats, Maize, and other descriptions of produce. Average prices of corn for the week ending December 11:—Wheat, 45s. 1d.; Barley, 32s. 8d.; Oats, 20s. 9d. For the corresponding period last year:—Wheat, 46s. 2d.; Barley, 38s. 5d.; Oats, 21s. 4d.

CATTLE.

At Copenhagen Fields on Monday the "Christmas Cattle Market" proved a worthy successor to those of previous years, both in numbers and quality. The leading feature as regards beasts was the show of Scots, 2700 in number—2000 of which were brought to London from the far North in twelve special trains. The supply from the Western Counties exceeded that of former years, the Midland Counties and Norfolk contributed fairly—so did Suffolk and Essex; Ireland sent 800, and there were some beautiful Devons on offer. The total number of animals put up was 7660, against 5620 last year. Of sheep there were 12,540, against 10,290 in 1879; the average quality was much better than expected, and only a small proportion remained unsold. For "beef" salesmen showed no disposition to give way in price, and eventually choice qualities found purchasers at very fair rates. Good calves were in demand at full prices. Quotations:—Beasts: Best Scots and Herefords, 5s. 10d. to 6s. 4d.; best Shorthorns, 5s. 8d. to 6s. 2d.; second quality beasts, 4s. 6d. to 5s. 4d.; calves, 5s. 6d. to 6s. 8d. Sheep: Best downs and half-breeds, 6s. 10d. to 7s. 2d.; best long wools, 6s. 4d. to 6s. 8d.; ewes and second quality, 5s. 8d. to 6s.—Thursday's market was well supplied with stock, including a fair proportion for Christmas consumption. Owing to the unseasonable weather heaviness prevailed throughout. Prime beasts fell 2d., and inferior 4d. to 6d. per 8 lb., whilst sheep about realised late rates, and calves were dearer.

HAY.

Tuesday's Whitechapel report states that with a large supply trade was dull, at the following quotations:—Prime Clover, 100s. to 117s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 98s.; inferior, 30s. to 70s.; and straw, 30s. to 39s. per load.—On Thursday the moderate supply of fodder on sale met with a very dull trade, but there was no reduction in prices.—Cumberland Market quotations:—Superior meadow hay, 90s. to 100s.; inferior, 40s. to 76s.; superior Clover, 105s. to 120s.; inferior, 70s. to 92s.; and straw, 36s. to 40s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that moderate supplies were on offer. The trade was quiet, as follows:—Scotch Regents, 95s. to 110s. per ton; ditto Victorias, 110s.; ditto Champions, 90s.; Essex Regents, 80s. to 90s.; ditto Champions, 80s. to 90s.; German Reds, 4s. 6d. to 5s. 6d. per bag; Belgian kidneys, 3s. 9d.—The imports last week consisted of 62,212 bags from Hamburg, 18 Rotterdam, 61 Guernsey, 2798 Bremen, 4904 Bordeaux, 551 Boulogne, 5 Amsterdam, 501 St. Nazaire, 3326 Ghent, 9071 Stettin, 3194 Brussels, 100 Rouen, 750 Dantzic, 50 Ostend, 812 Antwerp, 60 Gravelines, 90 tons from Brest, 53 Harfleur, 40 Dunkirk, 80 St. Malo, and 76 Roscoff.

COALS.

The following are the quotations current at market during the week:—East Wylam, 16s. 6d.; Bebside West Hartley, 14s. 9d.; Walls End—Hawthorns, 16s. 6d.; Lambton, 17s.; Original Hartlepool, 18s.; Wear, 16s.; South Hartlepool, 16s. 6d.; Salvin's Huston, 16s. 9d.; Tees, 17s. 3d.; Hetton, 17s. 6d.; Radford Navigation, 16s.; Westminster-Brymbo and Wrexham Navigation, 15s. 6d.

Government Stock.—On Monday the closing prices of Consols were, for delivery, 98½ to 98½ ex div., and 98½ to 98½ ex div. for the account. Tuesday's closing figures were, for delivery, 98½ to 98½, and 98½ to 98½ for the account, both ex div. Wednesday's transactions for delivery closed at 98½ to 98½ ex div., and at 98½ to 98½, ex div., for the account. On Thursday the closing record was 98½ to 98½ for delivery, and 98½ to 98½ for the account, both ex div.

Chrysanthemums.

OUR FIVE HUNDRED VARIETIES OF CHRYSANTHEMUMS have been all proved, cut down, and stood in order as per Catalogue, consequently we are now able to execute Orders to any extent. Stock plants, selected, 6s. per dozen; Cuttings, 2s. per dozen, post-free. Our selection plants, 5s. per dozen; Cuttings, 1s. 6d. per dozen. One Cutting each of 100 distinct, all good decorative kinds, post-free for 10s.

H. CANNELL AND SONS, The Home for Flowers, Swanley, Kent.

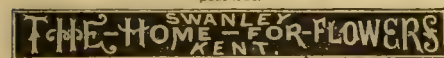
Scientifically Hybridised, and the CHOICEST BEGONIA SEED ever offered.

The *Gardeners' Magazine* says Messrs. Cannell & Sons' magnificent Begonias, comprising about 500 plants, grandly flowered, finest in cultivation, deservedly awarded the GOLD MEDAL.

H. C. & Sons' New Illustrated, and the most Complete, Correct, and Descriptive LIST of 200 varieties. All the new kinds are collected from all sources, and the very best only fertilised by most skilled hands; it is, therefore, quite certain that no better can possibly be offered. 2s. 6d. per packet. Sown now plants will flower all next summer.

From C. Brown, *Field House, Louth, Lincolnshire*. "The plants from the Begonia seed you sent me afford me the greatest satisfaction. The flowers are the grandest I ever saw, much better than my named collection; flowers 4 inches over."

CATALOGUE of FLOWER SEEDS, choicest of the choice, post-free.



NEW ENGLISH ROSE, H.P. MRS. JOWITT (Cranston's).

First-class Certificate awarded by the Royal Horticultural Society, South Kensington, July 27, 1880.

First-class Certificate awarded at Wirral Rose Show, July 24, 1880.

First-class Certificate awarded at Shrewsbury, July 28, 1880.

First-class Certificate awarded at Liverpool Rose Show, July 31 and August 2, 1880.

We are now booking orders for this superb New Rose, to be sent out this Autumn. For description see our new ROSE CATALOGUE, now published.

Extra strong ground plants, 7s. 6d. each.

Usual Discount to the Trade.

CRANSTON'S NURSERY & SEED CO. (LIMITED), KING'S ACRE, HEREFORD.

LILY OF THE VALLEY.

Imported Clumps, very fine, 12s. per dozen.

Single Crowns, of true BERLIN large-flowered variety, 7s. per 100.

OSBORN & SONS, The FULHAM NURSERIES, LONDON, S.W.

TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

Trade terms on application.

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New Large-flowered Chrysanthemum, "ANGELINE."

A fine, incurved Exhibition Flower, a sport from Lady Slade. Colour, golden-amber, shaded cinnamon-brown, very distinct.

Awarded First-class Certificate at the Westminster Aquarium and Stoke Newington Exhibitions (see *Gardeners' Chronicle*, November 20, p. 667).

Plants now ready, price upon application.

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100 Acres to Select from.

FOREST TREES

OF ALL SIZES, CONSISTING OF

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" SPRUCE,

" SCOTCH.

ASH, SPANISH CHESTNUT, QUICKS, &c.

Samples and prices forwarded. Also Descriptive Priced CATALOGUES of Ornamental Trees, Roses, &c.

HOLLAMBY'S NURSERIES, GROOMBRIDGE, TUNBRIDGE WELLS.

JOHN GRIGOR AND CO., The Nurseries, Forres, N.B., beg to intimate to Planters generally, that their Stock of SEEDLING and TRANSPLANTED FOREST TREES—including the True Native Highland Scotch Pine, for which they have been so long and so well known—is this season particularly fine. All in splendid condition for safe removal. Price LISTS and Samples on application.

New Seedling Potatoes.

GORDON'S ROYAL KIDNEY REGENT and **GORDON'S VICTORIA REGENT** were raised from seed three years ago, and have hitherto resisted disease. The former is a second early, and this year yielded over 10 tons per imperial acre. The latter is not unlike Paterson's Victoria, but is rougher skinned. It boils equally well, and is a much heavier cropper, having yielded 10 tons per acre.

Further particulars with price, may be had on application to Mr. JOHN GORDON, Balmuchy, Fearn, Ross-shire, N.B., the raiser of the Potatoes, who holds the entire stock.

WM. DRUMMOND AND SONS, Stirling, have authority to take orders.

To the Trade.

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MESSRS. JOHN STANDISH AND CO. have from 15,000 to 20,000 EXCEPTIONALLY fine grown MUSSEL STOCKS to offer. They are straight, clean grown, and beautifully rooted. Price 40s. per 1000.

Royal Nurseries, Ascot, Berks.

RHODODENDRONS, Sweet-Scented, and AZALEAS—AZALEA MOELLIS, and other choice early-blooming Plants, well set with flower-buds. The above Rhododendrons, &c., have received First-class Certificates of Merit, and have been approved of by many hundreds of purchasers, many of whom have bought a second and third time.

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HAVE STILL A FEW HUNDRED

Half-Standard Marechal Niel, Gloire de Dijon, and other TEA ROSES to offer.

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Conifers and Hardy Climbers.

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A SPECIALITY.



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SPECIAL CHEAP OFFER TO THE TRADE.

100,000 FIR, Scotch, 1½ to 2, 2 to 2½, and 2½ to 3 feet.

25,000 BIRCH, 2 to 3 and 3 to 4 feet.

50,000 ALDER, 2½ to 3, 3 to 4, and 4 to 5 feet.

100,000 ASH, Mountain, 4 to 5, 5 to 6, and 6 to 8 feet.

50,000 WILLOWS, Osier, 3 to 4 and 4 to 6 feet.

300 ASH, Common, 12 to 14 feet.

50,000 PINE, Corsican, 1½ to 2 feet.

25,000 PRIVET, Evergreen, 2 to 3 and 3 to 4 feet.

20,000 IVY, ovalifolia, 1½ to 2 to 3 feet.

5,000 IRISH, very strong, 2 to 3 feet.

25,000 YEW, English, 1½ to 2 and 2 to 2½ feet.

3,000 RHODODENDRON, caucasicum pictum, 1½ to 2 feet.

5,000 " Cunningham's White, 1½ to 2 feet.

10,000 " choice named varieties, 1½ to 2 feet.

50,000 Seedling Hybrids and Poncinum, 1½ to 2 feet.

50,000 CURRANTS, Black, 6s. per 100.

1,000 Red, 6s. per 100.

2,000 POPLARS, Black Italian, 10 to 12 and 12 to 14 feet.

1,000 SYCAMORES, 10 to 12 and 12 to 14 feet.

2,000 CHESTNUT, Horse, 9 to 10 and 10 to 12 feet.

2,000 LINES, Handworth Red-twisted, 9 to 10 feet.

BERBERIS AQUIFOLIA, 12 to 15 and 15 to 24 inches.

CUPRESSUS LAWSONIANA, 6 to 9 feet.

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STYRAX GRANDIFOLIUM, a rare shrub, 2s. 6d. each,

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HESPERALOE YUCCAFOLIA, red Yucca from Texas,

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ALDER, 1-yr., fine, 3s.; 2-yr., fine, 4s. per 1000

ASH, 1-yr., fine, 2s.; 2-yr., fine, 4s. per 1000

BEECH, 1-yr., very fine, 3s. per 1000

BIRCH, 1-yr., 3s.; 2-yr., 5s. per 1000

BRIER, Sweet, 1-yr., 4s. per 1000

BROOM, 1-yr., strong, 2s. 6d. per 1000

CHESTNUT, Horse, 2-yr., 10s. per 1000

Spanish, 1-yr., 4s. 6d.; 2-yr., 7s. 6d. per 1000

ELM, Scotch, 1-yr., fine, 3s. 6d.; 2-yr., fine, 6s. per 1000

HAZEL, 2-yr., drilled, 9 to 14 inches, 10s. per 1000

HOLLY, 1-yr., good, 3s. 6d.; 2-yr., good, 6s. per 1000

LABURNUM, 1-yr., extra strong, 3s. per 1000

OAK, 2-yr., fine, drilled, 7s. 6d. per 1000

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THORN, or QUICK, 1-yr., 3s.; 2-yr., fine, 5s. per 1000

PINE, Austrian, 1-yr., 2s.; 2-yr., 5s. per 1000

Corsican, 1-yr., 2s. 6d.; 2-yr., 5s. per 1000

LARCH, 2-yr., with leaders, 6s. per 1000, or £25 per 100,000

PINE, Pinaster, 1-yr., 2s. 6d. per 1000

FIR, Scots, true Native, 2-yr., scarce, 6s.; 2-yr., 9 to 15 inches, 17s. 6d. per 1000

SPRUCE, Norway, 2-yr., 1s. 6d.; 3-yr., 2s. 6d. per 1000

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Samples of any of the above per post free.

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Fir and Spruce, 9 to 15 inches; Austrian Pine, Pinaster Pine,

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Black Hamburgh. Black Alicante.

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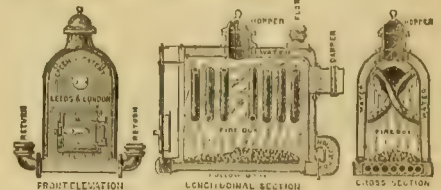
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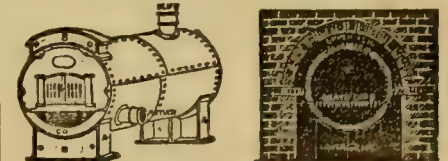
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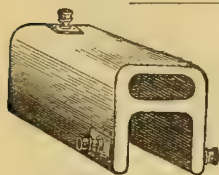
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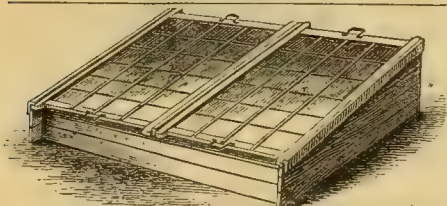
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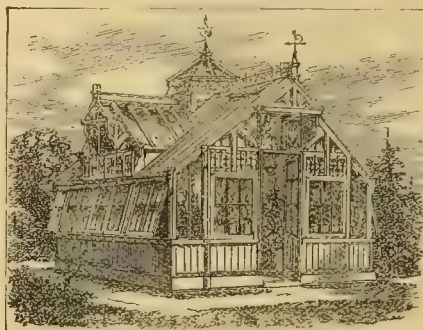
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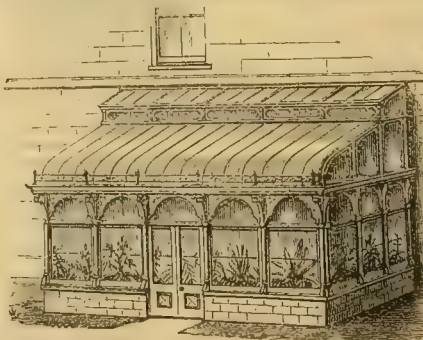
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TO GARDENERS.—A young Man (age 18) desires a situation. Willing to Help in the Houses, and to make himself useful. Five years' character.—W. P., Necton Hall, Swaffham, Norfolk.

SHOPMAN, or MANAGER.—ADVERTISER will be open for engagement next month. Has a thorough knowledge of Retail Trade and Book-keeping.—GARDENER, 6, Waterloo Terrace, Upper Street, London, N.

SHOPMAN, or Otherwise.—Age 32; seven years' good experience of all branches of the Trade, London and provincial. Four years' reference from last employers.—HORTUS, 5, Byfield Road, Isleworth, W.

Seed Trade.

SHOPMAN, or ASSISTANT.—Eight years' experience in all its branches. Highest references.—T. M. PARK, Orchard Street, Blandford, Dorset.

TRAVELLER.—Messrs. EWING & Co., of Eaton, Norwich, have great pleasure in recommending Mr. John Don to any Nurseryman requiring the services of an energetic, persevering, and pushing man, as above.

BOOK-KEEPER, or INVOICE CLERK.—Four years with present employer, and good references. Country not objected to.—Mr. C. BEALE, Pine-apple Nursery, Maida Vale, N.W.

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Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

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Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

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The Medical Profession for over Forty years have approved of this pure solution as the Best Remedy for

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and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.

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DR. LOCOCK'S PULMONIC WAFERS

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CHARLES SHARPE & Co.,

SEED GROWERS AND SEED MERCHANTS, SLEAFORD.

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See *Gardeners' Chronicle*, September 7, 1878.
See *Gardeners' Chronicle*, August 7, 1880.
See *Gardeners' Chronicle*, November 20, 1880.
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NEW LONG-PODDED BLUE MARROW PEA.

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SPECIAL NOTICE.

THE

GARDENERS' CHRONICLE

For SATURDAY, JANUARY 1, 1881, will contain a

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(18 inches by 13 inches), from an Original Design.

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or with Almanac mounted on Oak Rollers, ready to be hung up, and enclosed in Case,

SEVENPENCE; POST-FREE, EIGHTPENCE-HALFPENNY.

Purchasers are specially recommended to order the Almanac in a Case, to prevent injury from folding. The Publisher cannot be responsible for injury to the Almanac unless it is so protected.

NOTICE TO ADVERTISERS.—As a LARGE EXTRA SALE of this Number is guaranteed, it will be a very valuable medium for Advertisements. Applications for space should be sent in as early as possible.

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PARHAM'S PATENT SYSTEM OF GLAZING WITHOUT PUTTY,



With Wrought-iron Channelled Rafters, Continuous Lapped Glass, and Rainproof Ventilators under Glass Super Roof.



Parham's Patent Registered Plant Preservers,

With "Truss" Hinge, and no Principals. The Ridge always fits close, the interior is free from all obstruction and the corners are secured in iron angles: patent glazed, without putty, with 21-oz. glass.

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Any other sizes at proportionate price.

Both systems avoid the heavy expense of re-puttying and breakage of glass, and effect a great saving in cost of re-painting and repairs, combined with absolute freedom from drip.

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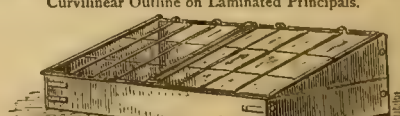
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Parham's Extra Strong Garden Frames,

With 2-inch sashes and 1 1/4-inch red deal framing, secured at each corner with two wrought-iron strap bolts: patent glazed, without putty, with 21-oz. glass.

Two wrought-iron strap bolts : patent glazed, without putty, with 21-oz. glass.					
Long.	Wide.	Price.	Long.	Wide.	Price.
4 feet by 6 feet, 1 light ..	£2 2 0		16 feet by 6 feet, 4 lights ..	£7 5 0	
8 feet by 6 feet, 2 lights ..	3 12 0		20 feet by 6 feet, 5 lights ..	8 15 0	
12 feet by 6 feet, 3 lights ..	5 7 6		24 feet by 6 feet, 6 lights ..	10 10 0	
Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork, at proportionate prices.					

Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork, at proportionate prices.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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Agent for Manchester—JOHN HEYWOOD.
Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 365.—VOL. XIV. { NEW SERIES. } SATURDAY, DECEMBER 25, 1880.

{ Registered at the General } Price 5d.
{ Post-office as a Newspaper. } POST FREE, 5d.

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 The GARDENERS' CHRONICLE for Saturday next, Jan. 1, 1881, will contain a COLOURED ALMANAC.

For full particulars see page 810.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

NOTICE IS HEREBY GIVEN, that the ANNUAL GENERAL MEETING of MEMBERS of this Institution will be held at the Bedford Hotel, Covent Garden, W.C., on THURSDAY, January 13 next, for the purpose of receiving the report of the Committee, for the ELECTION of OFFICERS, and the ELECTION of ELEVEN PENSIONERS on the Fund.

The Chair to be taken at 6 o'Clock precisely. By Order, EDWARD R. CUTLER, Sec.
14, Tavistock Row, W.C., December 14.
P.S. The Voting Papers have all been delivered. Any Subscriber not having received one, is requested to notify the same to the Secretary.

WEBBS' STANDARD NOVELTIES in VEGETABLE SEEDS for 1881.

The best of the season.

WEBBS' NEW EARLY PEA, Kinver Gem. 5s. per pint. Stock limited.

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FOR FULL PARTICULARS of the above and other CHOICE NOVELTIES in VEGETABLES and FLOWERS, see

WEBBS' SPRING CATALOGUE for 1881. Now ready, price 1s., which will be allowed off subsequent orders. Gratis to customers. WEBBS, The Queen's Seedsmen, Wordsley, Stourbridge.

HURST AND SON'S CATALOGUES of Garden and Flower Seeds have this week been posted to all their Customers; should any not have received Copies they can be had on application. 152, Houndsditch, London, E.C.

QUICKS, extra fine and strong, 2 to 3 feet, 17s. per 1000. PEAR STOCKS, fine, 30s. per 1000. LAURELS, 1½ to 2 feet, bushy, 8s. per 100. W. JACKSON, Blakedown, near Kidderminster.

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SUTTON'S AMATEUR'S GUIDE contains the best Novelties of the Season. 1s. 3d., post-free. Gratis to Customers.

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SUTTON'S AMATEUR'S GUIDE is now being posted to all Messrs. Sutton's Customers. If not received Messrs. Sutton should be written to. Non-customers may obtain it post-free for 15 stamps, or for 1s. at all the Bookstalls.

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Hardy Rhododendrons and Azaleas.

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LARGE CONSIGNERS of CUT FLOWERS, CHOICE FRUITS, &c., are requested to communicate with WISE AND RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

Gardenias.

WARREN AND CRAIK will return the highest Price for GARDENIAS, TUBEROSES, and MARECHAL NIEL ROSES. Not for commission. 43, Jermyn Street, St. James's, London, W.

Floral Commission Agency.

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WANTED, a few Hundreds of good strong Standard ROSES. State price and quantity to R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, a well-feathered plant of PINUS MACROCARPA with leader. State height and price to the GARDENER, Wygfair, St. Asaph.

WANTED, Large or Small Plants of LILAC (common or Persian), well set with bloom. JAMES HOADE, Addlestone, Surrey.

WANTED, Twenty-five PLANE TREES, from 12 to 15 or 18 feet, delivered at the Thorpe Station, Norwich. Price to be sent to Mr. W. WALTER LAKE, City Surveyor, Norwich.

WANTED, 1-yr. Seedling QUICKS. Please send sample (by post prepaid) and price per 100,000, to W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

WANTED, MANETTI STOCKS. State quantity and price to R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, Maiden PEACHES and NECTARINES, PLUM and CHERRY STOCKS, seedling BRIERS. State price. HEATH AND SON, Cheltenham.

WANTED, strong CRAB STOCKS.—H. WHEELER AND SON, Kingsholm Nurseries, Gloucester.

WANTED, SHALLOTS.—Sample, price, and quantity, to G. AND W. YATES, Seed Merchants, Manchester.

To the Trade.

JAMES CARTER AND CO.'S General TRADE CATALOGUE of Seeds has been posted to their Customers—should it miscarry, another copy will be sent on application. It includes all sterling Vegetable and Floral Novelties of the year.

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Notice to the Trade.

NUTTING AND SONS have now posted their ANNUAL TRADE CATALOGUE of Garden Flower and Agricultural Seeds to all their friends. If not duly received, they will be obliged by an early intimation, when another copy will be posted. NUTTING AND SONS, Seed Merchants, 60, Barbican, E.C.

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White Thorn.

B. BARKWAY, East Dereham Nursery, Norfolk, has a quantity of the above to offer. Size and price on application.

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H. LANE AND SON, Nurseries, Berkhamstead, Herts, can supply fine plants of leading varieties, 2 to 6 feet high, with from 10 to 150 bloom-buds on a plant. Also a large quantity of unnamed Seedlings and Fonticums, very cheap.

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APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each. RICHARD SMITH AND CO., Nurserymen, Worcester.

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To the Trade.

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CABBAGE PLANTS, very fine autumn sown.—Early Enfield, Battersea, York, Rainham, East Ham, Sugarloaf, Wheeler's Imperial, Robinson's Champion Drumhead, Thousand-Head, Nonpareil, and Red Pickling, in any quantity, at 3s. per 1000. Low price quoted for large quantities. EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

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H. AND F. SHARPE are prepared to make special offers of all the leading varieties of Seed Potatoes, grown from the finest selected stock and free from disease. Seed Growing Establishment, Wisbech.

RHUBARB FOR SALE.—Extra strong Roots, for Forcing and Planting. Price, per dozen, 100, or 1000, of S. BIDE, Alma Nursery, Farnham, Surrey.

RHUBARB, Victoria and Albert, 16s. per 100. Cask and packing included. T. EVES, Gravesend Nurseries.—Established 1810.

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TO BE SOLD BY AUCTION, at Aylesbury, DECEMBER 29, a fine unique COLLECTION of PLANTS, consisting of 700 CACTI of different sorts of Hybrids, fine bushy plants, 18 inches high to 1 foot; 120 fine NIGHT FLOWERING CERESUS in pots, seventeen larger in boxes, and two larger in tubs; and other valuable Plants. May be seen on application to Mr. J. H. CEELY, Church Street, Aylesbury, Bucks.

The Extensive and Valuable Collection of rare Stove and GREENHOUSE PLANTS and ORCHIDS formed by the late JAMES JOHNSTONE, Esq.

MESSRS. WEATHERALL and GREEN will SELL by AUCTION, upon the Premises, Hooley House, Carlsdon, Surrey, about 3 miles from Caterham Junction Station, on the main Brighton Road, by order of the Chancery Division of the High Court of Justice, on TUESDAY, January 11, 1881, and following days, at 11 for 12 o'clock each day precisely, the widely-known and very fine COLLECTION of SPECIMEN STOVE and GREENHOUSE PLANTS, consisting of Azaleas and Camellias, well-grown Crotons, Palms, Bananas, and Tree and other Ferns; a superb collection of Orchids of the rarest kinds, Fruiting and Succession Fines, Vines, Greenhouse Plants, Heaths, Orange, Citron, and other Fruit Trees, Garden Implements, and miscellaneous effects.

May be viewed and Catalogues obtained of J. ANDERSON ROSE, Esq., Solicitor, 11, Salisbury Street, Strand, W.C.; of HENRY PALMER, Esq., Solicitor, 32, Essex Street, Strand, W.C.; or of the Auctioneers, 22, Chancery Lane, W.C., or will be forwarded on application.

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To Nurserymen and Others.

TENDERS are invited for Two GREENHOUSES, and about Twenty AUCUBAS, 150 yards of BOX, and several other SHRUBS. Situate at Ilford, Essex. For full particulars apply to Messrs. CRONK, Land Agents, 23, Cockspur Street, Charing Cross, S.W.

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THE STRATFORD-UPON-AVON CORPORATION are prepared to RECEIVE TENDERS for the LAYING-OUT of GROUNDS, FORMATION of WALKS, PLANTING SHRUBS, &c., on the Site of New Cemetery, Evesham Road. Plans may be seen, and Specification and Quantities obtained, upon application to me at my Office on and after Saturday next, the 18th instant. Tenders to be sent in to me not later than January 1, 1881.

THOS. HUNT, Town Clerk.

PROTHEROE and MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

FOR ABSOLUTE SALE, having to give up the land, strong transplanted Deciduous TREES, up to 10 and 12 feet, 4s. to 6s. per dozen; Standard APPLES, from 6 to 8 feet, 6s. to 9s. per dozen, or from 45s. per 100; other Nursery Stock correspondingly cheap. For LIST apply to T. L. MAYOS, Nurseryman, Hereford.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.

Descriptive LIST on application.

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FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale. THOMAS RIVERS and SON, Sawbridgeworth, Herts.

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Seeds of Superior Quality. Carriage Free.

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SMITH'S CURLEY-LEAF DWARF-TOP, a scarce variety, Tubs seldom exceed 10 inches; Tubers, uniform, round, or pebble-shaped; eyes, small, and very shallow; splendid for Forcing or Early Market. 4s. per stone, 15s. per bushel. Other varieties quoted on application.

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Millions of the finest Seedlings in the kingdom. 1-yr. and 2-yr. QUICK, fine; 1-yr. and 2-yr. BIRCH, very fine; 1-yr. and 2-yr. ALDER, fine; 1-yr. BEECH, stout; 1-yr. SWEET BRIER, 1-yr. SYCAMORE, 1-yr. ACACIA, good; 1-yr. LABURNUM, fine; 1-yr. BROOM, 1-yr. APPLES, very fine; 1-yr. PEARS, very fine; and 2-yr. LARCH, with good leaders. Special prices to large buyers. Samples and prices on application.

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GORDON'S ROYAL KIDNEY REGENT and **GORDON'S VICTORIA REGENT** were raised from seed three years ago, and have hitherto resisted disease. The former is a second early, and this year yielded over 10 tons per imperial acre. The latter is not unlike Paterson's Victoria, but is rougher skinned. It boils equally well, and is a much heavier cropper, having yielded 13 tons per acre.

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To the Trade.

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MESSRS. JOHN STANDISH and CO. have from 15,000 to 20,000 EXCEPTIONALLY fine grown MUSSEL STOCKS to offer. They are straight, clean grown, and beautifully rooted. Price 40s. per 1000. Royal Nurseries, Ascot, Berks.

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Grampian, select Victoria, Paterson's Regents, Walker's Dalnahoy Glenbervie Fortyfold Champion Ashleaf Kidney, of sorts MARIGOLDS, French, superbly striped; TROPÆOLUM, canariense; do Lobbianum, mixed; STOCK, Brompton, double scarlet.

W. SMITH and SON, Exchange Seed Warehouses, Aberdeen.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.

JAMES BIRD, Nurseries, Downham.

FINE ALDER, LARCH, ASH, from 1 to 6 feet. For prices apply to GEORGE BUNYARD and CO., Maidstone.

SPRING, 1881.



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LABURNUM, Purple	THORN, Scarlet
MAPLE, Norway	" Paul's
OAK, Scarlet	ELM, Common
LIMES	" English
ASH	" American
CHESTNUT, Horse	" Variegated
" Scarlet	SERVICE TREE

Standard APPLES and PEARS
COB NUTS, Webb's, 3 to 5 feet
RHODODENDRONS, various, 2 to 6 feet
Standard RHODODENDRONS.

It is believed no Establishment in Europe can show such a Stock of the above as CHARLES NOBLE'S Nursery, Bagshot, Surrey.

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BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.

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PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.

SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.

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HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

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THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application. Lion Walk, Colchester.

JOHN GRIGOR and CO., The Nurseries, Forres, N.B., beg to intimate to Planters generally, that their Stock of SEEDLING and TRANSPLANTED FOREST TREES—including the True Native Highland Scotch Pine, for which they have been so long and so well known—is this season particularly fine. All in splendid condition for safe removal. Price LISTS and Samples free on application.

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GRAMPIAN
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And several other favourite kinds. Prices on application.

R. AND A. MORRISON offer the following Transplanted and other Trees:—

ALDER, incana, transplanted, 18 to 30 inches, fine.

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ASH, 1-yr. seedling, strong.

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ELM, Scotch, 1 and 2-yr. seedlings, strong.

LABURNUM, Scotch, 1 and 2-yr. seedlings, strong.

LARCH, true native, 1-yr., strong; 2-yr. seedlings.

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PINUS AUSTRIACA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., strong and fine.

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SYLVESTRIS (see Scotch Fir).

POPLARS, sorts, transplanted, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.

FIR, Scotch, true native, 1-yr. 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., 4 to 6, 6 to 9, 9 to 12 inches, transplanted, very fine.

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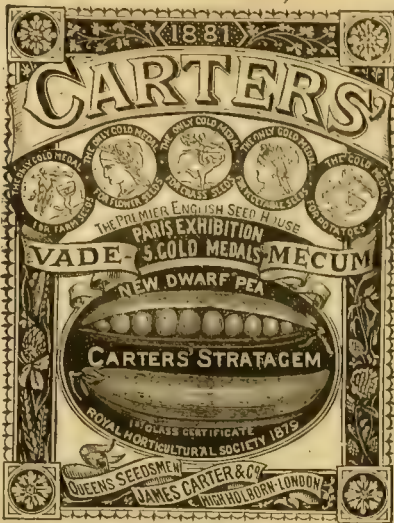
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A double crimson-maroon variety of this beautiful everlasting.

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A splendid strain of this lovely flower.

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The Bride.—Producing snow-white flowers in immense trusses, sea-green foliage.

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A beautiful form of this pretty flower.

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Produces combs of colossal proportions.

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Crop at once.

Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.

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They abound in Seedling and Transplanted CONIFERS, Seedling and Transplanted FOREST TREES, specially fine lot of 2-yr. Transplanted SCOTCH FIR and LARCH, Dwarf ROSES, budded low on Manetti, and TEA ROSES from the open field worked low on the Seedling Brier. Priced LISTS on application.

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Special offer on application.

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100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30s. per 1000; samples of 100 for 4s., free in London, no change of rail. Also 200,000 FASTOLFE, price 15s. per 1000; samples of 200 for 4s., free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to

A. AND E. BATH, Colgate Farm, Sevenoaks, Kent.

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EWING AND CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and FILBERT BUSHES; ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees; MYROBELLA (PRUNUS MYROBALANA), for fencing, &c.

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CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.

Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

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CHRYSANTHEMUMS.—Strong stock plants to furnish cuttings, our selection from 300 of the best varieties grown, 4s. per dozen, 25s. per 100.

Strong cuttings of the best large-flowered ANEMONE or POMPON CHRYSANTHEMUMS, 12 varieties, our selection, 1s. 6d.; 50 varieties, 5s. 6d.; 100 varieties, 10s., post-free.

Cuttings of JAPANESE varieties, 2s. 6d. per dozen.

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To the Trade.

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IVY, Irish, transplanted.

" in pots.

" dentata, in pots.

" ovata, in pots.

" sagittifolia, in pots.

" maculata major, in pots.

VIRGINIA CREEPER, strong, transplanted.

BRAMBLE, Parsley-leaved, in pots.

ROSES, Climbing, Victor Verdier, in pots.

" Madame Levet, in pots.

Price on application.

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SEEDSMEN and BULB MERCHANTS.

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JOHN BULL.—The finest main-crop, 3 feet, blue wrinkled Pea, and the best of all T. Laxton's introductions. Sealed half-pint packets, 5s.

MINIMUM.—The dwarfest Pea. A very early and most prolific white wrinkled variety, and the best of all for Forcing.

Sealed half-pint packets, 3s. 6d. One packet of each variety, 7s. 6d.

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Three weeks earlier than the old Maple. 10s. per quart.

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SPRUCE FIRS for Christmas Trees, well

formed, 3 to 4 feet, 30s. per 100; 4 to 5 feet, 40s. per 100.

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RETAIL OFFERS.—Strong Evergreen

PRIVET, 3 to 4 feet, 30s. per 1000; extra strong

HAZEL, 3 to 4 feet, 35s. per 1000; Black Italian POPLARS, 7 to 10 feet, 7s. per 100.

W. AND J. BROWN, Nurserymen, Stamford.

DOUBLE WHITE PRIMULAS,

just coming into flower, 12s. and 15s. per dozen.

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SPECIAL CHEAP OFFER TO THE TRADE.

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 25,000 BIRCH, 2 to 3 and 3 to 4 feet.
 5,000 ALDER, 2½ to 3, 3 to 4, and 4 to 5 feet.
 10,000 ASH, Mountain, 4 to 5, 5 to 6, and 6 to 8 feet.
 50,000 WILLOW S, Osier, 3 to 4 and 4 to 6 feet.
 3,000 ASH, Common, 12 to 14 feet.
 5,000 PINE, Corsican, 1½ to 2 feet.
 25,000 PRIVET, Evergreen, 2 to 3 and 3 to 4 feet.
 25,000 " ovalifolia, 1½ to 2 feet.
 5,000 IVY, Irish, very strong, 2 to 3 feet.
 25,000 YEW, English, 1½ to 2 and 2 to 2½ feet.
 3,000 RHODODENDRON, caucasicum pictum, 1½ to 2 feet.
 5,000 " Cunningham's White, 1½ to 2 feet. [2 feet.
 10,000 " choice named varieties, 1½ to 2 feet.
 50,000 " Seedling Hybrids and Ponticum, 1½ to 2 feet.
 5,000 CURRANTS, Black, 6s. per 100.
 1,000 Red, 6s. per 100.
 2,000 POPLARS, Black Italian, 10 to 12 and 12 to 14 feet.
 1,000 SYCAMORES, 10 to 12 and 12 to 14 feet.
 2,000 CHESTNUT, Horse, 9 to 10 and 10 to 14 feet.
 2,000 LIMES, Handsworth Red-twigged, 9 to 10 feet.
 2,000 BERBERIS AQUIFOLIA, 12 to 15 and 15 to 24 inches.
 CUPRESSUS LAWSONIANA, 6 to 9 feet.

For Price and particulars apply to

MESSRS. ISAAC MATTHEWS & SON,
 The Nurseries,
 MILTON, STOKE-ON-TRENT.

GEO. JACKMAN & SON,
 (ESTABLISHED 1810.)



Cultivators of
 FRUIT and FOREST TREES,
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 A SPECIALTY.

Descriptive Priced Catalogues free.

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TEA ROSES, £3 PER 100.

Extra strong, on own roots, in 4½-in. pots.

GLOIRE DE DIJON, ISABELLA SPRUNT, &c.

Trade terms on application.

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The Finest in Cultivation.

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CRYSTAL PALACE.—"You possess an excellent strain of
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ROYAL HORTICULTURAL SOCIETY, CHISWICK.—
 "The Petunias grown from your seed were very fine
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 Curator."

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PLANT FRUIT TREES EVERYWHERE.

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OF ALL SIZES, CONSISTING OF

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 The Nurseries, Knutsford, are now offering their
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First-class Certificate awarded by the Royal Horticultural
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NEW WHITE PRIMULA FOR 1881.



(Electro of above, 5s.)



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ALBA MAGNIFICA.

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The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure $2\frac{1}{2}$ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage.

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For Opinions of the Press and Testimonials see

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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6d. per truck. **BLACK FIBROUS PEAT**, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton. Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each. Fresh SPHAGNUM, 10s. 6d. per bag.
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PEAT, for Rhododendrons, &c., of excellent quality, on rail, Ringwood Station, Hants, in trucks of 4 tons, 4s.; do., coarse and fine SAND, 25s. per truck; selected Peat and compost for choice plants. Fresh gathered SPHAGNUM, &c. Chief Office and Depot, Ringwood Station, Hants. F. G. GATERELL, Manager.



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SPECIAL NOTICE.

THE
GARDENERS' CHRONICLE

For SATURDAY NEXT, JANUARY 1, 1881, will contain a

BEAUTIFULLY COLOURED ALMANAC

(18 inches by 13 inches), from an Original Design.

PRICE, FIVEPENCE; POST-FREE, FIVEPENCE-HALFPENNY;

or with Almanac mounted on Oak Rollers, ready to be hung up, and enclosed in Case,

SEVENPENCE; POST-FREE, EIGHTPENCE-HALFPENNY.

Purchasers are specially recommended to order the Almanac in a Case, to prevent injury from folding. The Publisher cannot be responsible for injury to the Almanac unless it is so protected.

NOTICE TO ADVERTISERS.—As a LARGE EXTRA SALE of this Number is guaranteed, it will be a very valuable medium for Advertisements. Applications for space should be sent in as early as possible.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

NEW PINE-APPLE — "LORD CARRINGTON."

MESSRS. JAMES VEITCH & SONS

Beg to announce that they are now sending out this splendid new Pine-apple, which has been under cultivation by Mr. Miles, of Wycombe Abbey, during the past seven years. It is an exceedingly handsome, highly flavoured fruit, and a most excellent variety for autumn and winter use.

It received the award of a *First-class Certificate* from the Fruit Committee of the Royal Horticultural Society in January, 1877, and a *Silver Medal* of the Society in October, 1878, when five fruits, weighing 28 lb., were exhibited.

The following extracts will serve to point out to Cultivators the merits of this fine novelty:—

"Mr. Miles, of Wycombe Abbey Gardens, sent (Royal Horticultural Society's Meeting, October 16) five fine specimens of Lord Carrington Pine-apple, to which a First-class Certificate was awarded last year, and now a Silver Medal for the present exhibition. It is a distinct and handsome Pine, valuable for its good keeping properties." *Journal of Horticulture*, October 17, 1878."From Mr. Miles came five exceedingly fine fruits of Pine-apple Lord Carrington. The fruit is very handsome in appearance, is of excellent flavour, and has, besides, the merit of being the best keeping variety in cultivation, and which, on that account, is well deserving the attention of growers in the Azores." *Gardeners' Chronicle*, October 19, 1878.

A limited number of vigorous plants, 42s. each; smaller ditto, 21s. each.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.



OSBORN & SONS

ARE PLEASED TO ANNOUNCE THAT THEIR

GENERAL SEED CATALOGUE FOR 1881

Is now Published, and will be forwarded Post-free on application.

It contains a Descriptive List of all the most useful varieties of Kitchen Garden and Flower Seeds, Culinary Roots, Gladioli, Lilliums, Horticultural Sundries, &c.

THE FOLLOWING NEW AND IMPROVED VARIETIES CAN BE ESPECIALLY RECOMMENDED:—

OSBORN'S FORCING FRENCH BEAN.—One of the best and earliest in cultivation. Per Quart, 2s.**OSBORN'S SELECT DARK RED BEET.**—Equally valuable for the Kitchen or the Flower Garden. Per Ounce, 1s. 6d.**OSBORN'S WINTER WHITE BROCCOLI.**—One of the best mid-winter varieties in cultivation. Per Packet, 1s.**GILBERT'S BURGHLEY CHAMPION BROCCOLI.**—A most useful late variety, coming into use in May and June. Per Packet, 1s. 6d.**OSBORN'S SELECT RED CELERY.**—An excellent variety of compact growth, very solid and crisp. Per Packet, 1s.**TELEGRAPH CUCUMBER.**—We possess a true stock of this most useful variety. Per Packet, 1s. 6d.**SCOTT'S SUPERB WHITE COS LETTUCE.**—One of the finest in cultivation, attaining an immense size. Per Packet, 1s.**GLAMORGAN TOMATO.**—A new and very prolific large-fruited variety, of excellent constitution. Per Packet, 1s. 6d.**ABUTILON, Choice Hybrids.**—Saved from a collection of white, primrose, orange, and crimson flowers of various shades. Per Packet, 1s.**CASTILLEJA INDIVISA.**—An interesting Half-hardy Annual, with showy crimson-scarlet bracts. Per Packet, 1s.**CYCLAMEN PERSICUM, Wiggin's Superb Strain.**—Comprising the finest varieties in cultivation in shape and colour. Per Packet, 2s. 6d.**ERYSIMUM PULCHELLUM.**—A charming Dwarf yellow Perennial, useful for rockwork. Per Packet, 1s.**GNAPHALIUM LEONTOPODIUM.**—This interesting plant is the "Edelweiss" so much sought after by Alpine tourists. Per Packet, 1s.**PRIMULA DENTICULATA.**—A beautiful spring-flowering Hardy Perennial, producing heads of bloom of a pretty bluish-lilac colour. Per Packet, 1s.**SENECIO SPECIOSUS.**—A Half-hardy Perennial, with pretty magenta flowers, which are produced in great profusion from spring until autumn. Per Packet, 2s. 6d.

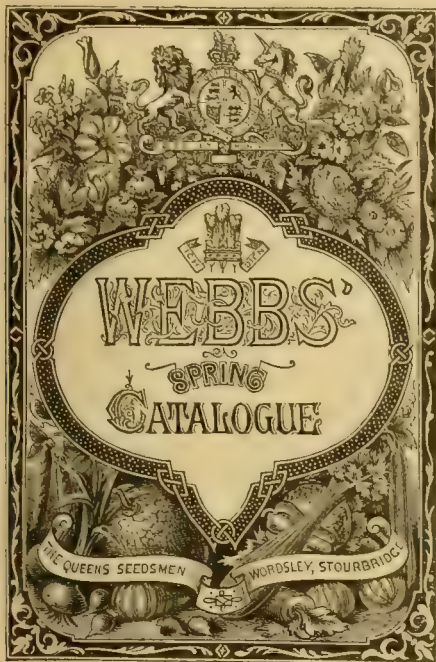
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Carriage Paid to any Railway Station in England and Wales on all Orders for Seeds (with the exception of Potatoes) amounting to 20s. and upwards; and to any Railway Station in Scotland or Seaport in Ireland if amounting to 40s. and upwards.

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Contains complete Cultural Instructions for successful cultivation.

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VALUABLE NOVELTIES

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per Cent. Discount for Cash. Orders of 20s. value Carriage Free.

ALL FLOWER SEEDS FREE BY POST.

Edw. Webb & Sons

THE QUEEN'S SEEDSMEN,
WORDSLEY, STOURBRIDGE.

SUTTON'S NOVELTIES.

THE BEST OF THE SEASON.

NOTICE.—Messrs. Sutton's Novelties are subjected to careful test trials, and all those offered this season are of sterling merit and perfectly distinct.



We have the pleasure of introducing to the English public this New and perfectly distinct Wrinkled Pea, feeling convinced, after a most careful trial, that it will prove to be not only the earliest Dwarf Wrinkled Pea, but that for quickness of growth, productiveness, and flavour it is unequalled by any other early variety. It is the result of a cross between those two popular varieties, Little Gem and Champion of England, and is superior in flavour to the Champion of England, and in productiveness to Little Gem. It grows from 8 to 10 inches in height, comes ready for table in five weeks from the date of planting, and is invaluable for forcing under glass or for early sowings in the garden. The great want hitherto has been a Wrinkled Pea which will occupy but little space, and come in as quickly as the first early round white varieties. This Pea remedies that want, and it has only to be tried to ensure general cultivation. It was introduced in America two years ago by Messrs. B. K. Bliss & Son, the eminent seedsmen of New York, from whom we have purchased the entire stock, which will be sent by them to England this season.

Per $\frac{1}{4}$ pint, 1s. 6d.; per $\frac{1}{2}$ pint, 2s. 6d.; per quart, 8s. 6d.

CAUTION.

SUTTON & SONS are the only English House to whom a consignment of the above New Pea has been sent for Sale by the Raisers, Messrs. B. K. Bliss & Son, of New York. Every package will bear Messrs. Sutton's Registered Trade Mark.

The Finest New Melon of the Season.



SUTTON'S HERO OF LOCKINGE.
Price 2s. 6d. per packet, post-free.

SUTTON'S AMATEURS' GUIDE
Is now ready, post-free for 15 stamps. *Gratis to Customers.*

Sutton & Sons

The Queen's Seedsmen and the Seedsmen by special warrant to H.R.H. the Prince of Wales.
READING. LONDON and PARIS.



THE Gardeners' Chronicle.

SATURDAY, DECEMBER 25, 1880.

PRICES OF SEEDS.

NOW that the wholesale lists are finding their way into the hands of seedsmen, the fact is placed beyond all doubt that some seeds will rule high in price during the spring; a few—Onions, for instance—will be higher than for many years past. The cause is not far to seek. The seed-grower, like the farmer, has had to face three or four disastrous seasons, and these following in succession have made it impossible for the wholesale dealers to hold over large stocks; the consequence is, there is an absolute scarcity of some important articles. When there is a good harvest, and seeds are abundant and of good quality, the wholesale dealers can, as they should, hold over to the following year a good portion of their requirements for the following season, except in the cases of certain subjects that will not keep, and when this is the case the growth of seeds is satisfactory and prices are low.

When the reverse holds good, as it has unfortunately done for a few years past, the results cannot be so satisfactory. Peas generally are high in price; the selected stocks of early round varieties and the main-crop wrinkled Peas especially so. Wrinkled Peas, because of their superior quality, have come to be largely grown in gardens, but they will form an expensive item in seed bills during 1881. Hopes were held out some time since that Australia would send to the mother country large supplies of some leading wrinkled Peas harvested in good condition in February last, but it would appear the anticipations were unfounded. Beans are much about the same in price as last year, and as it is indispensable to depend on the previous summer's growth for the spring supply, owing to the difficulty of keeping the samples in good condition for a year, a deficient harvest causes these also to rule in price above the average. French Beans are a little below last year's prices; Runner Beans, and especially the well-known Scarlet Runner, much lower.

Mustard, which has been dear for two or three years past, is a little cheaper this year; but the prices of Onions will make many a small country seedsmen very despondent. Unhappily for him, he wants but a few pounds, and he does not get the tempting offers in autumn that come to the larger houses, and he is undersold in the race for custom. It must be years since white Spanish Onions reached such a figure, and the improved types of it are correspondingly high. In the great Bedfordshire district, where the white Spanish Onion is so much grown for seed, the harvest of 1880 was the worst known for years; and seedsmen depend on this country for their stocks. It is not much better on the Continent, except in the case of the Tripoli Onions, which are quoted at last year's prices. Danver's Yellow, Strasburg, Blood-red, Trebons, and the silver-skinned types, are all much dearer than last year; and even the Lisbon has advanced in value.

Carrots are dearer than in 1880, and it will be as necessary this as it was last year for seedsmen to request their customers to sow

both Carrots and Onions thick. There is therefore much reason for seedsmen and farmers alike to desire that the year 1881 may mark a decided advance in the character and quality of the harvest. If only Nature will be pitiful in the coming year, grower, seller, and consumer will have much reason to rejoice.

New Garden Plants.

BIFRENARIA HADWENII (Lindl.) var. *PARDALINA*, nov. var.

A new and very beautiful variety, having sepals and petals with brown circles or polygonal figures on a light yellow ground. The lip is light ochre-coloured at its basilar part, white in front, with radiating mauve-purple streaks. Column white in front, with purple broken lines. I have obtained this rarity only once in my life (in September last) from Dr. Wallace, New Bulb Company, Colchester, and together with the typical form and the fine var. *bella*, so that there is at that place a quite unique assemblage of varieties of this plant. *H. G. Rehb. f.*

CALANTHE SYLVATICA, Lindl.

This very curious *Calanthe* has only flowered once in Europe, so far as I know, viz., in M. Pescatore's garden of La Celle, near St. Cloud, under the excellent management of M. Lüdemann. The unusual merit of the plant is to change gradually the fine white colour of the flowers into bright yellow without fading. A large group, consisting of a totally white *Calanthe* in the way of *veratrifolia*, of a mauve-purple one, as in *Masuca*, and of this, might prove to be very attractive, very suitable, too, to captivate the jurors at any exhibition. The plant was recently introduced by Mr. Humblot. *H. G. Rehb. f.*

PHAJUS HUMBLOTTII, n. sp.*

A most remarkable and unexpected novelty. It is a beautiful *Phajus* with a spurless lip, having a saddle-like callus on its disk running out in a small keel. The large flowers are rosy with white and red blotches, according to the statement of its lucky discoverer, M. Humblot, who has just succeeded in bringing it over in good health from Madagascar. *H. G. Rehb. f.*

PACKING FLOWERS.

THE art of doing this successfully is one that requires to be mastered by many who are called upon to forward both flowers and plants by rail. On two or three occasions recently we have seen *Camellia* blooms that had been sent to London from the country. The stems had been fastened with great care, and not without much danger to the flowers, to the bottom and sides of the box and the inside of the lid. When the flowers reached their destination scarcely one was entire; the majority had lost their petals—the concussion caused by the journey proved too much for the blossoms. This is but one of several methods illustrative of "How not to do it." On the other hand, *Camellias* and choice flowers of a fragile character have come long distances as fresh as when first gathered, by wrapping a little of the softest tissue-paper about them and packing them in shallow boxes in cotton-wool. The boxes used for the transmission of flowers should be shallow and strong, the sides should be protected by cotton-wool, and the flowers placed in one, and certainly not more than two layers. Flowers with thin, fragile, and soft petals and segments, such as *Dipladenias*, *Allamandas*, &c., should be packed in single layers only and with the greatest care. *Camellias*, *Gardenias*, *Stephanotis*, *Eucharis*, *Roses*, and flowers of stouter build, together with many *Orchids*, may, if carefully packed, be laid close together, provided they are laid loose enough not to chafe against each other from jolting and other causes. *Lilies* of the Valley, *Roses*, *Violets*, and other choice flowers are at this season of the year sent to London from the South of France, and, because carefully and properly packed, reach the metropolis in excellent condition. In the case of plants, few gardeners understand how to pack them so that they can be sent a long distance without injury. Gardeners who are employed in a nursery while in want of a situation frequently enjoy the advantage of being in the packing-shed, and here

they acquire knowledge that is very often of great value to them in after-life. It is not every gardener who understands the art of packing a plant properly, by placing against it a stake of proper height, which should always be 2 or 3 inches above the topmost part of the branches when secured in an erect position. The shoots need to be handled with care, and tied so that they do not snap; the soil in the pot should be covered with soft moss, tied down carefully and secured to the pot by means of ties. If a plant out of a stove temperature or warm greenhouse, it should be carefully wrapped in cotton-wool and then papered. Prepared in this way it can be laid down in a hamper with soft moss, or stood upright in a matted basket, and sent in safety, unless the weather be too severe. Some time since it fell to the lot of a gardener to send to London a valuable lot of large sized plants of *Lady's Slipper*; but so indifferently were they packed in wooden cases, that much damage was done, the pots were broken, and the flowers torn from the plants. Whether placed in wooden cases, or in matted baskets, the plants must be made secure if they are to travel in safety. Most gardeners and others who grow plants receive a good lesson in packing when a package comes in from a nurseryman; so that the methods adopted by these expert packers should be imitated by them. *X.*

THE VINE LOUSE AND ITS CURE.

SEVERAL years ago a prize of 300,000 francs was instituted to encourage investigations as to the best remedy against the *Phylloxera*. Much ingenuity was wasted, many absurd remedies proposed, and it is curious to note the substances which were lauded by the inventors. They were for the most part the same, mixed in different proportions—tars, sulphur, lime, soot, urine, phenic acid, and salts of copper or iron. Patient research and scientific study have alone produced certain results; these results, however, were not accepted and acknowledged without difficulty. Objections were accumulated, and many instances of partial failure were brought together, ill-will and inertia playing an important part in the business. Local influences, political opinions, and other extraordinary considerations, one after another, opposed or favoured the results which were gained. At present the question has once for all entered upon a better path, the charlatans and pretended Vine doctors having entirely lost their credit. We are in possession of four modes of treatment which are really efficacious, though they vary in their effects in different cases.

The various conditions of application, and the entirely different principles which the application follows, explain the divergence of opinions and methods. The scientific remedy is given. Practice will decide which of the four methods is at the same time most efficacious and most economical. This happy result must mainly be attributed to the Commission of the Academy of Sciences, which was presided over by M. Dumas, who was the very soul of it. This Commission sent "delegates," who severally studied special clearly defined questions, like officers sent by a General to make a reconnaissance in a country. . . . We must also notice particularly the viticultural station at Cognac, which was established by private subscription, after the English manner—a thing of rare occurrence in France.

It was there that the general experiments as to "insecticides" were made, in accordance with the simple method proposed by M. Cornu, director of the viticultural station, in order to determine definitively what substances are powerless. . . . Towards the end of the first year they began to distinguish clearly the small group of substances which alone should be utilised. Amongst them was carbon disulphide (CS_2), which had been indicated by Baron Thenard, abandoned, and then eagerly resumed by the enthusiastic M. Monestier, and at last rejected in a general manner in the end of 1873 and during 1874.

The carbon disulphide by itself appearing too dangerous to human life, M. Dumas happily started the idea of using it in combination with sulphide of potassium, forming the sulpho-carbonate of potassium ($KSCS_2$), which is both a powerful insecticide and an energetic manure. . . . Under the happy influence of the Minister of Agriculture, the Vine-growers were grouped into "vigilance committees" for watching, and "syndicates" for treating the Vines. Thus the in-

difference of some and the unreasonable excitement of others were followed by energetic preparation for the struggle. At the end of 1878 there were sixty committees, instituted in fifty-six departments, and now there are 221, embracing sixty-one departments. Some of them have obtained decidedly successful results, and thus furnished a powerful incentive for the others to persevere. The expense of the applications is still considerable, but in any case the most valuable Vines are now out of danger. The more common Vines will at first cost a good deal, but we are confident that scientific skill will supply sulphide of carbon either free or in combination at a cheaper rate, and that practical experience will render its application more easy and less expensive. France will thus continue to produce her wines, and have the pleasure of offering them to her friends and neighbours. This, though apparently a mere wish, is an actual statement of fact. Extracted from an article in "Nature," by M. Max Cornu.

FLOWERS AT CHRISTMAS.

I SUBJOIN a list of plants in flower at Ham Green, near Bristol, on the Christmas Day of 1806, which I have just discovered among some old papers. Ham Green, which was a beautiful residence on the banks of the Avon, was then the property of the Brights of Bristol, who were always devoted to their garden, and in that warm sheltered spot everything grew luxuriously. This list of Christmas flowers is certainly very wonderful. *H. A. B.*

Flowers in Bloom in Garden at Ham Green, Christmas Day, 1806.

Arbutus	Pheasant's Eye
Mediterranean Heath	Olive-leaved Alaternus
Rose, Indian	Larkspur
ever-flowering	Laurustinus
Narcissus	Dwarf Toad-flax
White Hellebore	Ceromilla
Windflower	Wallflower
Burrage	Tree Primrose
Sweet William	Sweet Allrope
Sweet Sultan	Yellow Lupine
Nasturtium	Sweet Scabious
Brompton Stock, double	Mignonette
Honeysuckle	Fox-tail Grass
American Mallow	Rosemary
Chrysanthemum, various	Tobacco
Crocus	Everlasting
Wood Laurel	Heart's-Ease
Edging Stock	Devil in the Bush
Hollyhock	Fennel
Cornflower	Larger Quake Grass
Fuchsia	Rue
Daphne (collina)	Gentian, dwarf
Lungwort	Violet, white
Prince's Feather	Tansy
Ten-Week Stock	Savoy Anthericum
Polianthus	Mezerion, white
Primrose	Chelone, red
Double Purple	Three-leaved Toad-flax
Strawberry	Hairy Rudbeckia
Double Daisies	Smaller Honeywort
Hepatica	Lavatera
Golden Manear	Hawkweed, pink-coloured
Virgin's Bower, evergreen	Proud-leaved Germander
African Marigold	White Vervain
"Velvet Robin	Peach-leaved Bell-flower
Guelder Rose	Purple and red-topped Clary
White Periwinkle	Lobel's Catchfly
Blue large Periwinkle	Athaea-leaved Herminia
St. John's Wort	Scorzonera
Tree Candytuft	Yellow Hawkweed
Groundsel	Crimped-leaved Crane's Bill
Double Marigold	Archangel

TITHES.

THE *Mark Lane Express* has lately published the prize essay on this subject by Mr. Albert Bath, of Colgate's Farm, Sevenoaks, Kent. The matter is of great importance, not only to farmers, but to fruit growers and market gardeners, on which account we may usefully call attention to some of Mr. Bath's conclusions. As to the ordinary tithes Mr. Bath states they are about 7s. per acre, and as a proof that the Tithe Commutation Act has completely failed in giving a correct return of the corn averages, he says that since the passing of that Act up to the present time it has averaged £103 2s. 14d. upon the £100 worth of tithe; and last year—one of the most disastrous to agriculturists on record—it stood at £111 15s. 14d., which was 11½ above par. If taken correctly it would have been under £90. He shows, therefore, that tithes are a heavy burden upon the producer of food, and that if something is not done soon by Parliament they will be the means of throwing out of cultivation many acres of land, which would not only be a loss to the landowner, but an injury to the labourer; and consequently the tradesman and the country at large would suffer. As the Tithe Commutation Act of 1836 is so disfigured by inequalities and pregnant with injustice to the payer of tithes, Mr. Bath proposes that this and all recent Acts of Parliament relating to

* *Phajus Humblottii*, n. sp. — Racemo parvifloro, floribus cernuis; sepalis oblongis acutis tepalibus duplo latioribus, labello magno trilobis lobis lateralibus rotundatis evectis, lacina mediana transversa emarginata callo carnosio sessilefere bilamellato in disco, antice in carinulam excurrente, calcaris nullo. Madagascar. Humblot. *H. G. Rehb. f.*

tithes be repealed in the next Session, and "a short Act passed leaving the commutation of tithes as agreed upon in 1836 to be the same; also the proportion and prices of the averages the same, viz.:—One third in Wheat, £33 6s. 8d., at 7s. 0½d. per imperial bushel; one third in barley, £33 6s. 8d., at 3s. 11½d. per imperial bushel; one third in Oats, £33 6s. 8d., at 2s. 9d. per imperial bushel. All corn to be sold by the imperial bushel only. Returns to be made by the sellers only; penalty for not making a true return, £20. A tithe commissioner to be appointed to supply every occupier of land with forms to fill in with the price per imperial bushel, stating buyer's name and address. When filled in the forms to be sent free by post to a department that shall be named, the takings of the averages to be triennial, 10 per cent. to be allowed off in con-

upon Hops, fruit, and market gardens, he says this is a direct tax upon labour and capital, and a discouragement to the growth of the produce thus over-charged. He points out the inequalities of this tithe, and shows upon Hop plantations that it varies from 4s. to 30s. per acre, and this in addition to the ordinary tithe, while on this extra tithe the excessive corn averages are charged. On fruit grounds this ranges from 4s. to 18s. per acre, and in some parishes it is not charged; thus, in Shoreham in Kent it is not, but in the adjoining parish of Eynsford 7s. per acre is imposed, fruit being grown to a considerable extent in both parishes. Of extra charges on market gardens he mentions, amongst others, Isleworth, in Middlesex, where it is 7s. per acre; Plumstead, in Kent, 6s. per acre—some parishes lower, some higher. He suggests that a short Act of Parliament,

own taxes, and not endeavour to throw his burdens upon the tenant, who is breaking down every day under a load, which is too heavy for him to bear. Again, I am only asking for what is done by every landowner in Scotland, in some of the northern and midland counties, and by a landlord in one parish where I farm, also by others in parts of Kent well known to me. Then, as to the alteration of taking the corn averages which I propose—it is merely to endeavour to get a correct return. In Scotland they already manage this far more satisfactorily than we do, the farmers meeting an officer and others appointed for the purpose every spring, and giving the results of their sales of corn. I am well aware that an alteration is needed in the price of Wheat, and that the quantity should be lessened in Wheat for the averages; but my object is to first give this a fair trial for at least three years, and then, if necessary, further legislation can be effected to improve upon it. Why I

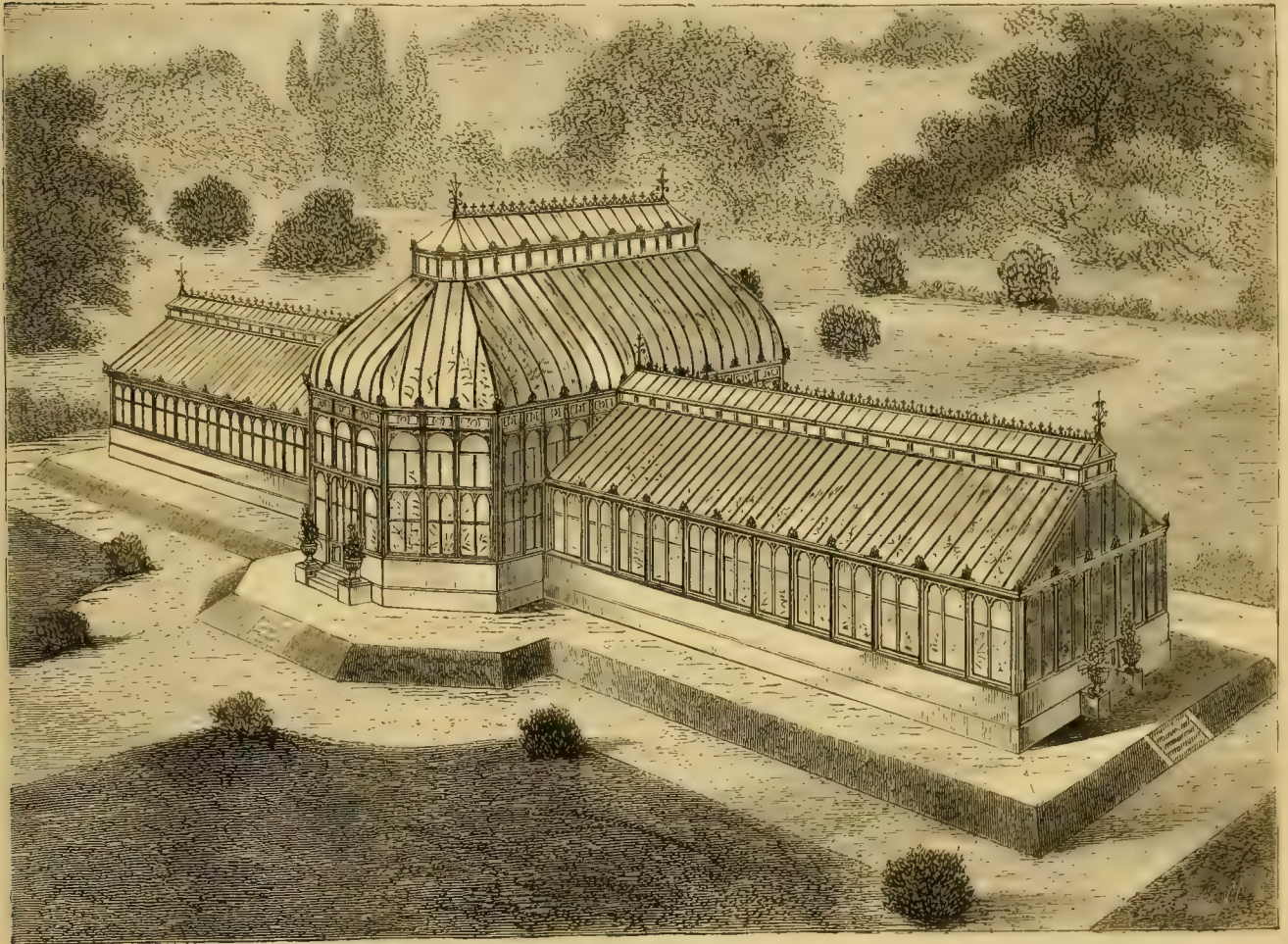


FIG. 157.—CONSERVATORY FOR PORT ELIZABETH.

sideration of inferior corn, which, being unfit for market, is consumed at home. This tithe to be paid by the landowner, and it should be made compulsory upon him to pay it. In cases where he has tenants under leases, the tenant to pay the landowner an equivalent sum in lieu of tithes until the expiration of his or her lease. Also, that it be unlawful for the receiver of tithes to apply to any occupier for any sum for tithes after this Act comes into force. In cases of non-payment of tithes by landowners, the tithe owners can have recourse to the law of distress (so long as the law remains on the statute books), and distrain upon the land, and sell so much of the land as may be required to recover the amount in arrear for tithes; and in the case of a tenant occupying such lands as shall be sold, sufficient can be sold to compensate the tenant for his lease, if any, also crops, cultivations, all his unexhausted improvements: the amount to be paid to him within two weeks after the sale."

With reference to the extraordinary tithes imposed

to be called the "Extraordinary Tithes Compulsory Redemption Act," should be passed, declaring that at a certain period all extraordinary tithes shall be redeemed, landowners in a reasonable time to pay the receivers of these tithes (who are with few exceptions clergymen of the Church of England), life and vested interest. It should be made compulsory upon receivers of tithes to sell; Government to grant loans to the landowners, where required, upon easy terms, for the purpose of redeeming the said tithes. After the passing of this Act any agreement or lease binding the tenant to pay the landowner an extra sum per year in "consideration" of being relieved of these tithes will be useless, and of no effect in courts of justice.

He concludes by saying:—"I hope no one will consider me unfair in urging that the ordinary tithes shall henceforth be paid by the landowner, for I consider he is the only person who should pay this impost. It has been argued over and over again that it is a landowners' question, a tax upon his land. Granted! Then I say by all means let him pay his

suggest that the Act should be compulsory in making the landowner pay the ordinary tithes is, that I am certain that any other legislation would be useless. I do this with all due respect to landowners and with a considerable amount of reluctance. Take, for instance, the Agricultural Holdings Act, with its permissive clause; why, it is a dead letter—it is worthless!"

PORT ELIZABETH.

THE accompanying illustration (fig. 157) shows a conservatory which Messrs. James Boyd & Sons are constructing at Paisley for the municipality of Port Elizabeth, Algoa Bay, South Africa, to be erected in the Botanic Gardens there. The construction is composite, wood and iron, the timber used being Teak-wood, to stand the climate. In our number for April 6, 1878, p. 437, will be found an illustration of the growth of Cacti and succulent Euphorbias in this garden. The conservatory in the Botanic Gardens at Cape Town was also built by Messrs. Boyd, and is of similar construction.

POYLE PARK.

POYLE PARK, the residence of Dr. Alfred Meadows (see figs. 158, 159), is some 2 miles from the Wraybury station on the South-Western Railway, and about 4 miles from Slough on the Great Western Railway. It is approached by the main road from London to Bath. The mansion is most pleasantly situated in the midst of the spacious park and meadow lands of some 100 acres in extent, through which the river Colne passes. It is a well-proportioned, handsome building (see fig. 159), of the time of Queen Anne or of the early Georges, and has been added to and improved by its present owner, and is entirely decorated and furnished in the Queen Anne style. Near the lodge gates on the Bath road is a miniature reproduction of the Elizabethan garden at Hatfield, planted on all sides with standard and dwarf Lime trees, intended to form an archway around it. At the time of my visit the summer bedding was nearly past its best, but ample traces still remained to show that there had been no lack of pains. Leaving this we came next to a rockery, which is in course of construction; and further on is a sunk Rose garden, circular in form, where the greater portion of the best sorts are to be found.

Turning again we find ourselves face to face with a huge Cedar of Lebanon, symmetrical in form, the interior braced up with iron rods and bolts, which are necessary on account of the great weight of its branches, to prevent breaking down the branches of the tree and injury to those in the vicinity. This tree girths at 4 feet from the ground 18 feet 6 inches, it is upwards of 80 feet in height, and about 120 feet in diameter. The house on the south side is thickly covered with Ivy, Virginia creeper, Ampelopsis hederacea and *A. tricuspidata* (Veitchii), which latter is growing vigorously. This is a charming plant for covering walls and blank spaces, its neat attractive habit making it a universal favourite. Here upon the lawn are a variety of flower-beds with a large bed in the centre filled with small Tulip trees, *Liriodendron tulipiferum*, and the golden Catalpa. This latter is a charming deciduous shrub, and one that cannot be too largely used for decorative purposes, its large handsome foliage making it quite an acquisition. On the south side of the house, and stretching over the Colne, is a bridge which is, as regards design, a *fac-simile* of the one originally thrown over the Cam by Sir Isaac Newton (see fig. 158). This bridge was among the many improvements effected by Dr. Meadows when he took possession of Poyle Park some few years ago. The bridge above-mentioned was built and fitted together beneath the Cedar of Lebanon previously alluded to, whose huge and wide-spreading branches formed the workshop for it. From the front of the mansion an extensive view of the gardens and pleasure-grounds at the western side, through part of which a branch of the Colne has been made to flow, is obtained.

The glasshouses consist of vineries, stoves, Peach-house, and general plant-houses; in the former Grapes of the various kinds had been good, others still hanging had large highly-finished berries, and, considering the short length of time since the erection of these houses (two years), the crop was exceedingly good. Prominent among the varieties were Alnwick Seedling, which as a black Grape is not easily surpassed; Black Alicante, Foster's Seedling, and Lady Downe's. Another house is used for planting out Vines that have been grown in pots, which are largely cultivated and form the earliest crop. For this purpose a clean, short-jointed batch of canes with plump eyes are ready for next season's crop. The stove contains a general collection of plants making clean and vigorous growth. In this house a plant of *Eucharis amazonica*, which had ceased flowering at the time of my visit, had produced a double flower, which will indeed be an acquisition if it can be perpetuated. An attempt had been made to do so by carefully impregnating the flower with its own pollen: a nice batch of seed has ripened, the result of which will be looked forward to with some interest. The wall of the stove is covered with *Bougainvillea glabra*, *Stephanotis floribunda*, and *Allamanda Hendersoni*. There is also a small collection of Orchids, and looking well among these are *Cattleya Mendelli* and *C. Lodigesi*, also a good form of *C. Mossiae*. *Cypripedium niveum* is grown in pans, healthy and strong; *C. Harrisoni* and *C. venustum* are also represented in

well grown specimens; *C. insigne* is exceptionally fine, some large specimens averaged from twenty to twenty-four spikes. On a shelf near the glass a batch of *Calanthes* was just showing bloom: the remaining occupants of the stove consisted of *Dieffenbachias*, *Crotons*, which are represented in the majority of the newer kinds by clean healthy plants, and *Gardenias* well set with buds. The next is a greenhouse, the stages of which are filled with *Cinerarias* and *Scarlet Pelargoniums* for winter flowering. The roof is covered with *Cobaea scandens* fol. var., *Lapageria rosea*, and *Tacsonia Van Volxemi*, with *Mandevilla suaveolens* and *Hoya carnea* flowering freely on the back wall. *Heliotrope* is grown largely in pots for winter use. Another house is used for the forcing of bulbs, such as *Hyacinths*, *Tulips*, and *Narcissi*, together with *Spiraeas* and *Lilies of the Valley*. Pot Roses are grown extensively and successfully, the buds being always in great request; the house in which these are now grown was, when first erected, filled with *Vicomtesse Héribart de Thury Strawberry*, of which some 2000 were forced in the season. At the time of my first visit, early in October, I tasted some of its delicious fruits, which, considering the heavy rains of the previous day, were of really good flavour. Some of the largest of these fruits averaged 1½ inch across; these were from plants forced early and planted out in May, since which time they have borne an average summer crop of half a pound to the plant. In another house the remarkable growth of *Maréchal Niel Rose* made this season bore sufficient testimony to the suitability of the soil. These plants, of which there are four in number, were purchased in October last and planted in their present situation. Up till nearly the middle of June of the present year they appeared on the decrease rather than otherwise. They at length started into growth, with a degree of vigour natural to many plants after a long-continued rest, and since that time one of these has made seven strong shoots, averaging 16 feet in length, the longest exceeding 22 feet. Another cool house is occupied with *Chrysanthemums*. These are in specimen form for the most part, and are looking well. Among them are *Fair Maid of Guernsey* and *Elaine*, two of the best whites among Japanese varieties, and *James Salter*, also a good variety. Among large-flowered kinds are *bronze* and *yellow Jardin des Plantes*, *golden Dr. Brock*, *Duchess of Teck*, and *white and golden Beverley*, together with a host of others equally good; and planted against the wall of this house are *Orange trees* in variety, making good progress.

The kitchen garden of this establishment is of considerable size, being walled-in on three sides, and open to the river on the south. It is well stocked with *Plums*, *Peaches*, *Nectarines*, *Apricots*, and *Pears*; the remaining portion of fruit trees, of which there is a large collection, are mostly young, healthy trees: the other crops for indoor consumption are looking well. In the centre of the garden an herbaceous and mixed border during the summer has been most attractive, among the principal of its occupants were *Lobelia Queen Victoria*, gay with bright scarlet spikes of bloom; *Phloxes* of the *decussata* and late-flowering section; the large-flowered *Impatiens*—*M. pardinus*, *Marigolds*, *Phlox Drummondii*, and a host of other annuals, which all tended to maintain a gay appearance. A border of this kind is invaluable in any private establishment for decorative purposes. Outside this garden is the frame ground, with *Cucumber* and *Melon* pits, and here the *Strawberries* for forcing are grown during the summer. There are also various pits and frames for general purposes. The beds in the pleasure grounds and flower garden which are set aside for spring bedding were at the time of my visit being prepared to receive their occupants.

By many illustrations here one is reminded of the severity of last winter's frost, which played sad havoc and opened many a breach in the shrubberies; even common and *Portugal Laurels*, together with a valuable collection of *Coniferae*, *Hollies*, &c., have in more or less degree succumbed to its severity, and have been removed by cartloads.

In connection with Poyle Park, Colnbrook, and the surrounding districts a horticultural society is in course of formation, with Dr. Meadows as its president. It is to be hoped that his exertions will be rewarded with the success they deserve.

Since the preceding notes were written a second visit has been paid to Poyle Park. The extensive range of plant-houses and conservatories is now presenting an exceedingly gay appearance, and which will continue long in perfection, owing to the extensive collection of plants grown. *Chrysanthemums*, as before stated, are made a leading feature, numbers of fine, healthy, robust specimens being a mass of large full blossoms. The numerous specimens, even without the bloom, have a most striking appearance, many of them measuring 2 feet 6 inches in diameter, and not presenting that over-trained and formal appearance which so often tends to disfigure instead of to improve the appearance of the specimens. These, it would appear, are late in coming into flower,

as they were on December 13 just in their prime, and with a promise of a more brilliant display for some time to come.

Among the leading Japanese forms *Elaine* still holds good its position as a white, while *Gloire de Toulouse*, a claret-coloured variety, is very striking; these two, associated with *Soleil Levant*, a clear canary-yellow, with quilled petals and fringed, have a very pleasing effect. Of the large-flowered kinds, *Empress of India*, *Alfred Salter*, *Mrs. G. Rundle* and *Julie Lagravère*, are among the best. *Princess Teck*, a fine white and beautifully incurved variety, promises to make a fine show after other kinds are past, and will, in consequence, be valuable as a late variety; thus it is that we find the earliest and latest flowering plants of any one genus the most valuable, especially in the case of autumn and winter-flowering subjects. *Primula sinensis* is grown here in profusion; many of the flowers measure 2 inches and upwards in diameter: these are especially striking. *Poinsettias*, too, are very fine, and have large terminal heads of bracts some 15 inches across. *Calanthes* are among the most useful of winter-flowering cool Orchids, and are found to be of much value. The general condition of the garden and of its contents reflects great credit on Mr. Masson, the gardener, who evidently carries out the wishes of his employer with zeal and judgment.

Lastly we may mention another feature of the place which may interest some of our readers—a herd of very fine Jersey cattle, numbering between twenty and thirty head, which adds greatly to the picturesque appearance of the landscape, as they have been selected by the owner with great care from some of the best blood in England. Altogether there is a homely charm about Poyle Park which is very attractive. J.

Garden Operations.

FLOWER GARDEN.

The last Calendar of the year naturally suggests a retrospective glance as regards flower and ornamental gardening generally, and the first thought is that the year now closing will in all respects bear favourable comparison with its predecessor, and in no respect more so than in the—to gardeners—all-important and ever uppermost topic, namely, the weather; still, this has again been sufficiently fickle to teach us that, as regards flower gardening, we shall do well to devote more attention to the searching out and culture of a greater number of hardy plants that can be turned to account as "bedders." With plants of this nature we can never hope to equal, much less excel, the *Pelargoniums*, *Petunias*, *Calceolarias*, and *Lobelias*, as regards gaiety, but the question arises, Is this desirable? to which question I venture to give a negative answer, for there can be no doubt that we have studied and obtained this gaiety at the expense of a corresponding decrease of real beauty and long-lasting conditions. If the recent cold and wet summers have done us no other good, they certainly have made us so discontented with the more transitory varieties of bedding plants, as must lead to the use of, if less gay, at least more hardy kinds of plants for bedding purposes. As regards the system itself, though frequently told that it is on the decline, I can discern no diminution of interest in it; what other branch of gardening has—to the largest number—afforded so much pleasure, or has given a greater impetus to horticulture generally? I answer, none. Such being the case, and the abuse of the system being admitted, our aim should be 'reformatory rather than destructive of it. Other bright retrospects of the year are, that the reaction in favour of herbaceous and hardy perennial plants has been continued, whilst the finer kinds of Japanese shrubs and trees, such as the *Retinosporas* and *Maples*, are now being planted in numbers proportionate to their value—which is of the first-class—as ornamental subjects for restricted landscape or lawn decoration. All the varieties of *Retinosporas*, by reason of their compact growth, are very suitable for formal or geometrical parterres, and equally so for dotting about on the turf between irregularly formed beds, or as foreground plants to shrubberies. The *Maples*—particularly the finest cut-leaved kinds—may be made to do duty as "subtropicals," and for which purpose they are no mean substitutes. All new or extra work should now be got out of hand as soon as possible, so as not to interfere with routine duties in the busy spring-time. Lists of plants and roots required for the various arrangements next season should now be made out, after which the stock plants should be examined, and any that are likely to run short may be forthwith started into growth for the production of cuttings. *Marvel of Peru*, *Cannas*, herbaceous *Lobelias*, *Verbena venosa*, and *Fuchsias*—all these should be occasionally seen to, that on the one hand they do not shrivel, from being too dry, or rot, from being too wet. To have good plants of the following ready for bedding purposes next May, the seeds should now be sown in a brisk heat:—*Acacia*

lophantha, Phormium tenax, Arundo conspicua, Cannas, Echeveria metallica, and the Australian Gums. Any old plants of Australian Dracenas that have outgrown their position should be cut up, root and stem into eyes; these, inserted in pans in a strong bottom-heat, will quickly root and make nice plants by bedding-out time. This plant is of such a graceful habit, being unequalled as a dot plant for formal designs, that for this purpose it should take precedence of all others of similar habit: to add to its other good qualities, it is comparatively hardy. *W. Wildsmith, Heckfield.*

PLANT HOUSES.

CONSERVATORIES.—The present is about the dulllest and worst period of the whole year in which to keep these structures gay and interesting, but by a judicious use of the many variegated and fine-foliaged plants

play and last in full beauty till March at the least. A temperature ranging anywhere between 50° and 55° suits them well, and is just the thing for Bouvardias, Callas, Primulas, and suchlike, but if there are many Camellias a lower degree of heat must be kept, or the blooms will be small and of short duration. At the stage at which these latter now are, liquid-manure will be found of great benefit, and nothing by way of stimulant answers better than soot-water, which has the double merit of being very agreeable to the plants without giving off an offensive odour or being dangerous to the roots, like some of the artificial compounds, unless used with great care. Soot-water, however, like all other liquids applied to the same purpose, should always be given perfectly clear, and the easiest way to have it in this state ready to hand when wanted is to sink a bag containing a certain quantity in a tub of water, which can then be drawn from and

so many varieties, it is a good plan where only a limited quantity can be accommodated to select a certain number of the best and most distinct, and make a list of them and the number intended to be grown, which saves confusion, and often loss of sorts, and the disappointment resulting therefrom. The same remarks apply to Fuchsias, Pelargoniums of both sections, and other things besides, a list of which should always be at hand to refer to when wanted. *J. Sheppard.*

FRUIT HOUSES.

CUCUMBERS.—Take every opportunity to encourage growth in the plants by shutting up the house early on bright days (which of late have been few and far between), and damping at the same time with tepid water the pathways and plants, using a fine spray for



FIG. 158.—POYLE PARK. (SEE PP. 814 817.)

much may be done to make up for the paucity of flowers. The best and most valuable of these for such purposes are *Coprosma Baueriana*, the foliage of which is rich in the extreme, as besides the diversity of colour it always has an exceedingly bright and polished look, and the same may be said of *Eurya latifolia variegata*, which is so useful that it ought to be in every garden. Then again there is the *Aralia Sieboldii variegata*, a truly noble plant, the normal type of which is also worth growing; the *Aspidistras*, too, are so hardy and enduring that they will stand draughts, gas, and the impure atmosphere it causes better than anything else. These, with a few Palms, will do good service till some of the forced things come in to take the place of *Chrysanthemums* now fast on the wane. As regards flowering plants the best for the present season are the *Sericographis Ghiesbreghtiana*, *Linum trigynum*, and *Libonia floribunda* and *penrhosiensis*, which in warm conservatories will make a grand dis-

replenished at pleasure. Roof climbers will now be at rest, or should be brought to that condition by keeping the borders dry, as growth made at this time of year is a sore tax on the plants.

GREENHOUSES.—The ever welcome perpetual Carnations ought to be at their best now, but to get them to expand their blossoms freely they must have a light airy situation, and a temperature by day not lower than 50°, which will not only be suitable to them but also to *Cyclamens*, *Primulas*, *Salvia splendens*, and most other soft-wooded plants now in flower. As it is very important to have strong early cuttings of *Chrysanthemums*, plants going out of bloom should be headed back and plunged in cold frames where they can have plenty of air and be kept secure from frost, when the shoots they make will be found of that sturdy character that there will be no difficulty in getting them to strike and to form the foundation of future specimens. Seeing there are now

the latter. Let tepid liquid-manure in a diluted state be given to plants which are making a free growth, but, on the other hand, should they show the least signs of a stagnant growth it will be advisable to withhold the manure-water until they have again shown unmistakable signs of free growth. A top-dressing, composed of one part of peat, two of loam, and one of horse-droppings, the same having been previously warmed to the same temperature as the soil in which the plants are growing, by placing it in the same house for twenty-four hours before being used, will have beneficial and invigorating influences upon the plants. Dung and leaves having been mixed and turned over a couple of times, as advised in last Calendar, will now be ready for making into a hotbed. This should be done in a southern aspect: all the better if in front of a wall or evergreen hedge, planted for the purpose of breaking the north wind and preventing it from cutting into the back of the frames when air is put on. *H. W. Ward.*



SATURDAY, DECEMBER 25, 1880.

THE severe cold weather which set in on November 20 continued until December 27—a period of thirty-eight days. The mean temperature of the air for these thirty-eight days was $31^{\circ} \cdot 1$, being $9^{\circ} \cdot 7$ below the average from sixty years' observations." That was the story Mr. GLAISHER had to tell in our columns this time last year. All through that dreadful year we had one continuous wail about the weather. The sun forsook us, we were alternately swamped with rain and floods—blown to atoms and congealed into ice. Summer was not. It was all winter. When 1880 at length came we rejoiced—things could not be worse—they might be better. And now we are at another of life's milestones, looking back upon another stage. Well! it has been better on the whole—the weather has been better, the crops have been better, the gardens have been better; fruit, it is true, was scanty, but Potatoes were both more abundant and in finer condition than could have been anticipated. The frost was on the whole not so injurious as we feared it might have been, trade has improved, and altogether, though it has been by no means an average year, yet by comparison it has been a marked improvement on its predecessor. Doubtless, if we knew all, we should say it was as good as we deserve, for, no doubt we have been, as usual, very slow to learn and profit by the lessons put before us—very disinclined to move out of the fixed rut, very timid in availing ourselves of those new resources and new methods which Mother Nature is always ready to place at our disposal if we will but utilise them. Still, we have done something. 1880 will remain in the calendar for years to come as the year when Strawberries were first forced under the electric light. It was a real gratification to find that what we had predicted for years on scientific grounds, and what we had more recently strongly urged on practical considerations when electric lighting began to show itself out of the laboratory of the experimenter and in the workshop and public street, was really fulfilled. The Royal Society was chosen as the place of exhibition of the first Strawberries ripened under the electric light on March 4, and Dr. SIEMENS' results were contributed to our pages on March 20. Shortly after further illustrations were shown, by Mr. BUCHANAN, before the Royal Horticultural Society. Distinctly, then, 1880 may stand out as the starting point of culture by means of the electric light; and we can have no doubt that in the future we may look for great practical results from what is now still only in the experimental stage.

The business of the year has been carried on as briskly as ever. Horticultural shows have been as numerous as before, but with too much sameness, and too little attention to their importance as educational agents. Horticulturists, especially those whose business lies with Vine growing colonies and with various countries of Europe, have been sadly hampered by restrictions, made with a view of preventing the spread of the Phylloxera, in most cases as stupid as they are futile. It is to be hoped that the teachings of entomologists will at length have some influence, so that while all rational precautions may be taken all mischievous prohibitions may be relaxed. The resolutions adopted at the Congress at Brussels,

and the steps taken by our own Government, have, we believe, not been altogether useless in this respect; but there is still much to be done. In ordinary affairs, even in political matters, we act, or are supposed to, upon the highest degree of probability known to us, and not upon some extremely remote possibility, such as the Phylloxera laws are based upon, with the result of inflicting widely-diffused injury on the many for the advantage of the few.

The year has been remarkable for the introduction to our gardens, or, at least, for information gained concerning plants from the little visited island of Socotra, whence Professor BAYLEY BALFOUR, in spite of Phylloxera laws, managed to import to this country some very remarkable plants. BURBIDGE has sent us many from Borneo, MARIÉS from Japan. AITCHISON has turned the scientific frontier to some use, by giving us a paper on the "Flora of the Kuram Valley," and there are other facts of the same nature to which we might refer did space allow. Of books we have had the valuable *Eucalyptographia* of Baron von MÜLLER, the *Phytographia* of DE CANDOLLE, the completion of ELWES' *Monograph of Lilies*, the history of the Cinchona enterprise by MARKHAM, and the remarkable work of DARWIN on the movements of plants. We mention these few as illustrations merely to show that progress has been made and is making; but while so many of our people are insufficiently and improperly fed, while thousands upon thousands know nothing of the charms, the refinement, the intellectual delight to be got from plants and their cultivation, there is ample room for more strenuous effort and better directed progress.

No year passes without leaving its mournful tale of useful lives cut short. We know it must be so, but we are not without hope. We know that the lives of those whom we have lost have not been misused. On the contrary, we cherish their memory with admiration and gratitude for the work they have done. ROBERT FORTUNE has gone to his grave during the year. It seemed almost as if had some presage of his coming end, for, but a few weeks before his death, he sent us lists of his introductions, and a general summary of his work, which will now be perused with additional interest. To no gardener since DOUGLAS has the world in general been under such obligations as FORTUNE. No portrait, no memorial yet exists of him; not from lack of duty on the part of the horticultural Press, who have urged the subject again and again; while some of our contemporaries probably can reciprocate our own feelings at the receipt of numerous letters from various parts of the world, seeming to prove that FORTUNE was more honoured abroad than at home. This should not be. The yellow Jasmine, which makes our walls aglow in this dull season, should shame us—even now, for it is not too late—into making some recognition of the services of this great collector. Among botanists the loss of General MUNRO is severely felt, for none knew grasses as he did, whether cultivated or wild. By the death of Miss HOPE we have lost an enthusiast, whose zeal was catching and whose energy was inspiring. In the death of EDWARD COOKE the world at large experienced a distinct loss—so earnest was he in what was good and true and beautiful, so loving to his fellows, so many-sided; a geologist, a landscape gardener, a botanist, a gardener, an artist. It is difficult to conceive such a combination of qualities again. The name of another of our old and valued contributors, the Rev. W. F. RADCLIFFE, cannot be mentioned without eliciting sympathy and regret, not only from those who knew him personally, but also from those who only knew him as an honest, trustworthy writer. His friend and ours, the Rev. T. C. BRÉHAUT, to whom Peach growers are under special obligations, has also been removed from our midst. Quite recently, too,

we have been shocked by the death of ARTHUR VEITCH, who in the few years which he was permitted to spend among us did much to prove himself to be the worthy bearer of such a name.

But while in a retrospect of this character a tribute of admiration and respect is due to those who have passed away, we must learn from their lives not to be discouraged, but to be ever following their example and doing our work as they did theirs—in all singleness of purpose and nobility of aim. 1880, as we have said, was an improvement on its predecessor; let us each, so far as in us lies, do our best to render 1881 a year of progress and improvement in our own special line of work. If we are tied and hampered by conditions in some ways, we have at least resources which are inexhaustible, and which only need the enterprise and skill of man to render them available for the common benefit of mankind and the praise of his Maker.

CHRISTMAS FEASTING.—Our contemporary the *Lancet* indulges in a counterblast against excessive indulgence in the pleasures of the table at Christmas-tide, and points out how the pill-mongers, and the horde of patentees who fatten upon the ignorance and indulgence of the masses, give at this festive season special prominence to their wares. How strange it is that in these assumed healing potions intelligent people, at least, do not perceive that they represent Death on the pale horse riding close at their heels—the inevitable Nemesis punishing them for their indulgence and folly! Christmas may be a festive time, but it need not be a time of gluttony, or for the imbibition of things that will half-poison if they do not kill. It may be a holiday time, but need it be a time of folly? To children specially is it cruel to give of foods, sweets, and drinks that shall, after a day or two of indulgence, make them miserable, sick, and perhaps quite ill. It is in all respects mistaken kindness; it is an outrage upon common sense. No safer food enjoyments exist, for old and young, than fruits, especially such as our own country provides. Apples, Pears, and Grapes are all wholesome and refreshing, but never enjoyable when the stomach is overcharged with rich diets and mawkish sweets. To suppose that this organ is capable of performing thrice its customary work, or of digesting substances that might well provoke dyspepsia in an elephant, is one of the standard notions of Christmas-tide. It is a notion that cannot be too soon exploded. If the family gathering will have some unusual feasting, at least let it be as harmless and uninjurious as possible. Beyond the fruits named, we can now get an abundance of imported Grapes cheap to every one. Oranges, if yet somewhat acid, are ever enjoyable and most harmless. Nuts are best if sparingly indulged in, and dried fruits partaken of moderately are seldom harmful.

CONTINENTAL NOVELTIES IN 1881.—It is a task to look through the French, German, and other seed lists, and note the novelties that they offer for the coming year. They are always numerous, but, with but few exceptions, generally disappointing to English cultivators. The most promising are *Eschscholtzia californica alba flore-pleno* (BENARY), produced from the double golden-yellow variety sent out by Messrs. CARTER & Co. two years ago; the double white form is said to come true from seed. A variety of *Helianthus annuus nanus*, "foliis variegatis," in which the foliage is said to be striped with yellow on a green ground, and to be as effective as in the case of the Japanese Maize; *Zinnia elegans*, dwarf double white (VILMORIN & Co.), announced as "a long-wished-for addition to the dwarf Zinnias," as it will be if the flowers are really white; and two or three varieties of dwarf *Phlox Drummondii*, a race of plants fast becoming favourites for their obvious good qualities. English cultivators are naturally a little shy of purchasing foreign novelties, but there is always a keen interest attaching to the raising and flowering of a select few that promise to be worthy the gardener's care.

STEMONACANTHUS MACROPHYLLUS.—An Acanthad from tropical America and some of the West Indian Islands, of which good examples are flowering in the Palm-house and elsewhere at Kew. It is a somewhat erect-growing plant, from 3 to 4 feet in height, and requires judicious stopping to ensure the development of lateral flowering shoots. The

glossy leaves are green, and the scarlet tubular corollas measure nearly 3 inches in length.

— THE PROLONGATION OF THE FLOWERING PERIOD OF HERBACEOUS PERENNIALS this season may be illustrated by the fact that Mr. WARE in his nurseries collected, on December 13, twenty-four species and varieties then in flower. The Scorpion Iris (*Iris scorpioides*) is flowering in one of the open beds at the nursery at Tottenham, where it has been producing its lovely lavender-coloured flowers for the past fortnight. This Iris seems to be variable as to its flowering period, and is more often seen in flower during the month of April, but its delicate flowers at this season of the year are as welcome as in the spring months—perhaps more

them, found the crop to fail, and attributing it to bad growing quality, claimed compensation. He failed, however, to satisfy the Court that such was the case, and the contention of the other side, that the failure arose from defective cultivation, was held to be a substantial plea. It is a well-established rule in the horticultural trade that, should any financial loss result from the defective quality of seeds, bulbs, or plants supplied, it is the duty of the vendor to give proper compensation. But the other day a case occurred respecting the supply of certain bulbs which did not turn out to be what they were invoiced as, and a financial loss to the grower resulted. It is due to the seed-house which supplied the bulbs to say that, as soon as they were satisfied the mistake had been made, liberal compensation was given. Another case

seeks to demonstrate that no such thing as a constant and definable Sargasso sea exists, and the presence and relative abundance of the weed depends upon the direction of storms and currents. He also finds that the number of species of *Sargassum* has been needlessly multiplied.

— AZALEA LINEARIFLORA.—About a dozen years ago this odd-looking but handsome Japanese shrub was introduced to this country by Messrs. STANDISH, and a figure prepared from a plant which flowered in their nursery was published in the *Botanical Magazine* for May, 1869. It is a dwarf bush with slender branches, clothed with rigid, spreading, red-brown hairs; the long linear-lanceolate leaves, with wavy ciliated margins, are about a quarter of an inch



FIG. 159.—POYLE PARK. (SEE P. 814.)

so, owing to the scarcity of hardy plants now in flower.

— TRADE OBLIGATIONS.—A rather curious case occurred recently in a southern county court involving the question of the quality of certain Potatoes. To decide the matter fully upon its merits, the judge ordered some of the Potatoes to be cooked and brought into court, when it was found that they were of excellent quality, and that the fault complained of arose solely from bad cooking. The verdict was of course for the tradesmen who supplied the tubers. Probably many similar complaints have no better foundation. But a case of more importance arose since that one was decided, and Potatoes were still the subject of dispute. In this case a person who had purchased of another a quantity of seed tubers and planted

is less satisfactory. A market grower of Strawberries ordered of a nurseryman 1000 plants of Sir J. Paxton, to grow on in pots to force last spring. The plants turned out to be a worthless kind, and the loss to the grower large. On the high-handed ground that the firm in question made no mistakes, application for compensation has been refused. Possibly a law court may have to decide the matter.

— THE GULF WEED AND THE SARGASSO SEA.—To the third part of ENGLER'S *Botanische Jahrbücher* Dr. OTTO KUNTZE contributes a revision of the genus *Sargassum*, together with an examination of the published data respecting the so-called Sargasso sea, illustrated by a map showing its position according to different travellers and navigators. The author, who has traversed the ocean himself,

in width, and have a tendency to crowd themselves together at the ends of the twigs. The flowers have five long narrow ribbon-shaped petals of a purplish-red colour. Plants now in flower may be seen at Kew.

— PROPAGATION OF *ARDISIA CRENULATA*.—It is scarcely necessary to descant on the merits of this useful berried plant for winter decoration, but it may be remarked that the plants are raised by seeds and cuttings. In the case of seeds they should be sown in pans as soon as ripe, using a soil made up of equal parts of loam, peat, and sand, and the pans should be placed in a warm position in a stove or propagating-house. Cuttings should be taken in January, for which purpose the tops of the old plants come in useful, or the tops of young seedlings, such as may not

be good enough to grow on. Good specimens can be obtained from seeds, but as a rule cuttings make the best plants, as they are better shaped and put forth a more bushy character, which is one of the peculiar charms of the *Ardisia*. It is, then, not to be wondered at that growers of this plant prefer cuttings, and as they root freely in a close case with a brisk bottom-heat when plunged in fibre their value is enhanced thereby. The cuttings require but little attention, and if potted with care when rooted and grown on with like attention soon make nice examples of a useful character.

— ORCHIDS IN FLOWER.—The following Orchids are in bloom at Messrs. JAMES VEITCH & SONS', Royal Exotic Nursery, King's Road, Chelsea:—

<i>Angræcum sesquipedale</i>	<i>Masdevallia gibberosa</i>
" <i>eburneum</i>	" <i>igneæ</i>
<i>Anæctochilus Dawsoni</i>	" <i>ochodes</i>
<i>Barkeria Lindleyana</i>	" <i>tovarensis</i>
<i>Calanthe Veitchii</i> ×, many plants	" <i>Veitchiana</i>
" <i>vestita</i> , many plants	<i>Mormodes Wendlandi</i>
" <i>nivalis</i>	<i>Odontoglossum Alexandræ</i>
<i>Cattleya bulbosa</i>	" <i>Andersonianum</i>
" <i>maxima</i>	" <i>blandum</i>
<i>Compærtia falcata</i>	" <i>cirosum</i>
<i>Cœlogyne cristata</i>	" <i>constrictum</i>
<i>Chysis Chelsoni</i> ×	" <i>crocoditerum</i>
<i>Cypripedium barbatum</i> biflorum	" <i>gloriosum</i>
" <i>concolor</i>	" <i>maculatum</i>
" <i>Crossianum</i> ×	" <i>Roezlii</i>
<i>Dayanum</i>	" <i>album</i>
<i>Dominii</i> ×	" <i>Rossii majus</i>
<i>Harrisianum</i> ×	" <i>pardinum</i>
<i>Haynaldianum</i>	" <i>Pescatorei</i>
<i>insigne</i>	" <i>prænitens</i>
" <i>Maulei</i>	" <i>pulchellum</i>
" <i>longifolium</i>	" <i>nebulosum</i>
" <i>marmoraphyllum</i> ×	" <i>tripudians</i>
" <i>Roezlii</i>	" <i>Uro-Skinneri</i>
" <i>Schlimii</i>	<i>Oncidium aurosum</i>
" <i>Sedeni</i> ×	" <i>bicallosum</i>
" <i>venustum</i>	" <i>cheiophorum</i>
" <i>vexillarium</i> ×	" <i>cucullatum</i>
" <i>porphyreum</i> ×	" <i>Forbesii</i>
<i>Dendrobium bigibbum</i>	" <i>tigrinum</i>
" <i>endocharis</i> ×	<i>Phalenopsis amabilis</i>
" <i>heterocarpum</i>	" <i>grandiflora</i>
" <i>japonicum</i>	<i>Lewii</i>
" <i>moniliforme</i>	" <i>leucorhoda</i>
<i>Epidendrum eburneum</i>	" <i>rosa</i>
<i>Goodyera Rolissoni</i>	<i>Pilumna fragrans</i>
<i>Lælia acuminata</i>	<i>Pleione Arthuriana</i>
" <i>anceps</i>	<i>Restrepia antennifera</i>
" <i>albida</i>	" <i>elegans</i>
" <i>bella</i>	<i>Saccolabium giganteum</i>
<i>Lycaste Skinneri</i>	" <i>violaceum</i>
" <i>alba</i>	<i>Sophranites grandiflora</i>
<i>Masdevallia bella</i>	" <i>violacea</i>
" <i>Chimæra</i>	<i>Stelis Brückmulleri</i>
	<i>Zygopetalum Mackayi</i>

— CLOMENOCOMA MONTANA.—This is an interesting as well as handsome winter-flowering Composite from Guatemala, where it was collected both by SKINNER and HARTWEG. In general aspect it bears a good deal of resemblance to some of the species of *Tagetes*, cultivated as summer-flowering and outdoor ornamental plants; the large showy flower-heads are of a rich deep orange-scarlet colour. Specimens of it are now blooming both in the T range and in the Palm-house at Kew.

— BLACK WALNUT WOOD.—In connection with the subject of the uses of Black Walnut wood (*Juglans nigra*), referred to in the *Gardeners' Chronicle* for August 28 last, p. 263, we have recently received information from an undoubted authority that American Black Walnut is of no use for gun-stocks, being too short in the grain, besides being gritty; and that the Americans even, who make some of their gun-stocks out of it, prefer to buy for best work English, Swiss, and Turkey wood.

— BRAZIL NUTS IN PODS.—These are now an object of considerable interest in some of the fruiterers' shops in London, to the great wonderment of the passers-by. It is not surprising they fail to recognise in them the seed-vessel as gathered from the trees abroad. The pods are represented by a thick, hard, woody fruit, reminding one of a ball used in our English game of bowls, but of a rather more conical shape. The covering is a quarter of an inch in thickness, and very hard; and when the top is sawn off it discloses to view a number of triangular nuts, laid together in a regular manner, and with the smallest waste of space. The pods vary in size—some are 5 inches or more in diameter, and 4 inches in height. The Sapucaia Nut is produced in much the same way, but is seldom imported in the pods to this country. In the case of this latter nut the capsule is furnished with a kind of lid which falls off when it is ripe, the seeds fall out, but the pod or capsule frequently hangs on for two years afterwards. It is a puzzling task to

empty a pod of Brazil Nuts, and then attempt to replace them with the same regularity. The attempt may give occupation to idle moments—it will impart an interesting lesson in regard to the adaptation of means to ends in Nature.

— MR. MECHI.—Mr. J. J. MECHI, the eminent agriculturist (formerly Alderman and Sheriff of London and Middlesex), is seriously affected in health by the financial troubles in which he has been involved, and which have culminated in his bankruptcy. It is highly desirable, says the *City Press*, that the friends who are contemplating a movement in his behalf should be up and doing, for at his great age he has neither time nor strength to bear the strain of delay in respect of the sympathy and aid he needs and deserves.

— THE USE OF WOAD IN HUNGARY.—Indigo prepared from the woad plant, *Isatis tinctoria*, which grows wild all over Hungary, is said to be used in very large quantities in the cotton-dyeing steam factories both in Buda-Pesth and Stuhlweissenburg. It is stated that but little doubt remains as to the success of the invention so far as the production of indigo is concerned, the main difficulty seems to lie in the profitable cultivation of the plant.

— TRADESMEN'S ANNUAL DINNERS.—The thirty-sixth annual Christmas dinner, given by Messrs. HURST & SON, of Houndsditch, to their *employés*, numbering about seventy, was celebrated on Saturday last, the 18th inst., at the Three Nuns Hotel, Aldgate. Mr. J. JOHNSON presided, and was supported by Mr. SHERWOOD, Mr. HUGH AITON, Mr. E. R. CUTLER, and others. Much sympathy and regret was expressed at the absence of Mr. HURST, through serious illness.—On Tuesday evening, at the Pier Hotel, Chelsea, Messrs. J. WEEKS & CO. dined with about seventy of their workmen, many of whom have been with them nearly twenty years, and some over twenty-five years.

— THE WEATHER.—General remarks on the weather during the week ending December 20, issued by the Meteorological Office, London:—The weather has been very dull and unsettled in all parts of the country. Great quantities of snow have fallen in Scotland, and exceedingly heavy rain in the south and south-west of England. The temperature was slightly above the mean in "England, S.," and "England, S.W.," but in all other districts the readings were much lower; in Scotland the deficit ranged from 6° to 8°. The thermometer was generally lowest on the 17th, when it fell to 15° at Glenalmond, 16° at Glasgow, 19° at Shrewsbury, 20° at Markree Castle and Durham, and to between 23° and 30° at all except our southern and south-western stations. The maxima were generally rather low, the highest reading registered being 55°, at Valentia. The rainfall was more than the mean in all districts except "England, N.E.," and "England, E.;" over the south and south-west of England the excess was very large. Bright sunshine shows an increase in duration, except over the central, southern, and eastern parts of England, where the number of hours recorded was very small indeed. The percentage of total possible duration varied from four in "England, S.," to thirty in "Scotland, E.," and thirty-five in "Ireland, N." The wind has varied greatly in direction. At the commencement of the period it was fresh from the north-west at most stations, but on the following day an easterly breeze appeared in the far north, while elsewhere a south-westerly breeze prevailed. The north-easterly current gradually gained ground, and by the evening of the 16th it had reached our most southern coasts, and freshened considerably there on the 17th, with much rain. During the 18th and 19th south-westerly to westerly gales prevailed in the north and west, and fresh breezes from the same quarter on our other coasts, but on the 20th the wind had moderated and veered to west or north-west at nearly all stations.

— GARDENING APPOINTMENTS.—Mr. E. DOLBY, for the last five years Foreman to Mr. RABONE, at Alton Towers, near Stoke-on-Trent, has been appointed to succeed Mr. POINTON as Gardener to ROBERT HEATH, Esq., of Biddulph Grange and Knipersley, Congleton, Cheshire.—Mr. J. ROBERT MACMILLAN, late Gardener to Mrs. BAGOT, Ashstead Park, Epsom, Surrey, has been appointed Gardener to HANS SLOANE STANLEY, Esq., Paultons Park, Romsey, Hants.

Home Correspondence.

New Plants in Wales.—Horticulture is looking up in the Principality, perhaps from the repeated visits of certain writers for the *Gardeners' Chronicle*. A number of rare plants were sold by auction at Aberch, Pwllheli, in Carnarvonshire, on Friday last. The sale consisted of "Plant-trees," but not exclusively, as in one part of the catalogue a "good Pony" comes in, and then a "store Fig," to say nothing of "2 Frames, Including Lots of flower pots." Amongst horticultural novelties are "Kelin plants," "Sweedds Bays plants," "Ashdialla plants," "Pericon and Pienice plants," "Perievits, Portincalls, Oralls, Rodendro, Rodo Dendro, Largis and Apple Stocks naple." Elsewhere in the list are enumerated "Holeys, Scotch Furs, Plum trees plants, Forted trees, Cupasis, Loral times Geriniaus, and other rarities. Lot thirty-six includes a "Loral Dinas," perhaps a misprint for a "local Dinas." Dinas, the old Celtic word for a fortified town, is now commonly applied to the ruinous prehistoric earthworks of Wales. A genuine local "Dinas" for sale by auction is therefore a novelty of the first class. It is to be hoped that Sir John Lubbock has been advised of this, as he is the only gentleman who now buys earthworks and stone circles. The last object mentioned in the catalogue is a truly curious one, viz., a "Garden Rowler"—these terrible animals (made of tin) are seldom seen out of Wales: I have before described them in the *Gardeners' Chronicle*. A large sheet of tin is cut into the shape of a formidable cat, rampant. This tin model is painted "tabby" on one side and "tortoise-shell" on the other, and it is suspended in the middle of a garden by a string hanging from a stick, like a large fish pendent from a fishing-rod. With the slightest agitation of the air the cat flies round with a grating sound, and is then terrible alike to the eyes and ears. First a "tabby" is seen, then a "tortoise-shell"—a wild and destructive pair. A well-made "Rowler" strikes terror into the heart of every Welsh bird from the biggest to the smallest, and that, too, over a considerable area. The "Rowler" was invented by Llewelyn ap Gruffudd. W. G. S.

Gooseberry Caterpillars.—A word in season. We have just finished pruning and dressing the Gooseberry and Currant bushes, and as we seem troubled with a plague of caterpillars in the summer, I intend when digging between the rows to have all the surface soil beneath the trees drawn into a deep trench. We use a hoe for that purpose; it destroys the grubs. I found this plan very useful about sixteen years ago, and we have not been troubled with the above pest until this year, when they would have eaten every leaf if they had not been hand picked. We fill up the space made by the removal of the soil with two or three spadefuls of decayed manure. W. F.

Duty.—I am glad to see your notice of Mr. Smiles' latest work—*Duty*. Having read the book I think it in many respects about the best of the many good books he has given us. In the chapter on "Conscience," and the one on "Men who Cannot be Bought," are presented such ideals of morality and true goodness, and in such homely yet forcible language, that one cannot read a sentence without being profited. Young gardeners who have this Christmas 6s. to spare for a book, not strictly on gardening, could not make a better investment than by purchasing it. The *Life of a Scotch Naturalist*, published in 1877, and *Robert Dick, Geologist and Botanist*, published in 1878, by the same author, should be in every gardener's library. W. H.

Staphylea colchica.—This invaluable shrub for early forcing is worthy of increased popularity with gardeners having a supply of flowers to keep up at this dull season of the year. I introduced some plants of it into heat with Lilac Charles X. and Deutzia gracilis, and for quickness of flowering I find it superior to either. The pure wax-like whiteness of the flowers, contrasted with the shining green leaves, together with the sweet odour emitted, will be sure to make *Staphylea colchica* a favourite with all lovers of flowers. C. J. Denning, The Gardens, Ballywalter Park, Co. Down.

Open-air Grapes.—As an open-air grower of forty years' experience I have read with interest the recent article on Grapes at Castle Coch, and wish to draw attention to the earliest sort known, and the only kind out of six which bore a crop this year against my house, which is on the northern slope of a steep hill; the aspect of the Grape wall is south-east. Your columns informed me, years ago, of the Early Malingre Grape, and I at once obtained it from Mr. Rivers. It is a welcome variety among our Grapes, as it is oval, amber-coloured, and pulpy rather than juicy; flavour very good; its only fault being that

it is too small, but by no means very small. It has handsome shoulders on the best bunches, thus differing from the general run of small Grapes, and, of course, is not a cluster Grape. I should much like to see it tried under glass and thinned. I have had White Muscadine ripe this year and Braddick's Sweet-water, but not a quarter of a crop; these are generally a success with me, and even in bad seasons some of them ripen. My plan is to cover the house wall up to the height of 18 feet—no matter in what direction—with long rods (6 feet in length), 28 inches apart: the main walls have three tiers 6 feet each vertically. Between every rod a new rod grows for the ensuing year's crop; when the rods have fruited they are cut away, together with every foot of superfluous old wood. This, you will see, is strictly Hoare's plan, but to follow him minutely one must have an accessible front border, which is not my case. I tie with bast to straight wooden horizontal strips, not too slight, plugged into the wall but not touching it, and 1 foot from strip to strip: nothing can be simpler, and I have thus converted what was a toil into a pleasure. *William Gee, Woodside, Freshford, Bath.*

Dunkeld and its History.—I am obliged to Mr. Makenzie (p. 761) for his courteous correction of my account of the history of Dunkeld. My sketch was derived chiefly from the article on "Dunkeld," in the *Statistical Account of Scotland*, written by its minister, the Rev. John Mackenzie, and, on referring to that interesting article, I cannot discover that I went wrong except in regard to the burial of St. Columba. The "relics" of the saint might mean his body, or something belonging to him worth preserving. I read the word in the former sense, remembering Milton's lines:—

"What needs my Shakspeare for his honoured bones?
The labour of an age in piled stones?
Or that his *reliques* should be hid
Under a star-pointing pyramid?"

The author of the article I have referred to derives the name of Dunkeld from "Dun-kaled-in," the stronghold of the rough and mountainous country; hence *Caledon*—*c* and *k* being interchangeable in the ancient British language—and hence, also, I believe, *Caledonia*. *H. E.*

Lapagerias.—A great deal has been said about the quantity of flowers produced on one raceme. In the gardens at Worktop Manor there is a lovely plant of *L. rosea* planted out in a north house and trained along the roof, which has produced at one time over ninety flowers as close as they could be, in pairs. There were, a few days ago, many very fine racemes still in perfection. *A. O.*

Cupressus Lawsoniana argentea variegata nova.—Mr. E. Holmes, of the Whitington Nurseries, Lichfield, has this beautiful variety in fine character: it was received from a Continental nursery. It is a variety of robust habit and the variegation is really white, not a yellowish white, and gives the plant a bright striking appearance. Can any of your readers throw any information on its origin? Of course it is a sport, but it is a very welcome acquisition. *III. IV.* [Why give it five names? *EDS.*]

A White Pompon Chrysanthemum.—Seeing your account of Mr. Cannell's white Chrysanthemum Snowdrop, I send by this post a few blooms of a variety I have grown for some years, and which is the prettiest and most useful white I have ever seen. I do not know its origin or name, and for want of a better we call it *Cooling's White*. It is very free, and may be had in bloom from November to February. The individual flowers last fresh longer than any kind I know. *E. Cooling, Derby.* [A pretty small-flowered Pompon, very like Snowdrop, if not the same thing. Mr. E. J. Lowe claims Snowdrop as one of his productions. *EDS.*]

Autumn-bearing Raspberries.—Referring to the note at p. 691—Mr. Hinds' recommendation of Belle de Fontenay, which, though by no means a new sort, I do not find named in any nurseryman's catalogue in my possession—I would ask Mr. Hinds whether this sort simply requires to have all the canes cut down close to the ground in February, or whether, like the "large-fruited Monthly," the canes must be taken up, transplanted, and cut down each winter? *Diss.*

The Sensitiveness of the Flowers of some Species of the Genus Stelis.—In the *Treasury of Botany*, under *Stelis*, it is remarked that "the flowers of some species are irritable, closing suddenly when moved or touched." The flowers of *S. ophioglossoides* and *S. micrantha*, both natives of the higher mountains of Jamaica, though not irritable, are sensitive in a somewhat passive degree, inasmuch as their opening and closing is entirely regulated by the density of the enveloping atmosphere. Under cultivation in the garden here at a few hundred feet above sea level during dry, sunny days, their flowers

are persistently closed; but should the sky become clouded with a tendency to rain they immediately relax, and should rain fall they are shortly in full blossom. It is quite different with them at night. The nights here are generally damp and dewy, and the flowers of our two Orchids open with the falling of the dew at dusk, and close again at sunrise or shortly after, when the dew is evaporated. I have shut up flowering plants of both species in a box during the day to ascertain what effect the darkness or absence of light might have on the movements of the flowers, but at the close of three hours the deltoid sepals were still closed. Thus, here they might be styled night-blooming, and they virtually are so; but they are far removed from home and the associated conditions of life to which they have so very long been educated. Naturally they affect the trees in dark, shady forests, at elevations of from 4000 to 7000 feet, where they are almost continually enveloped in fog or pelted with torrents of rain, and consequently at the proper season their flowers are almost constantly open by day as well as night. *George Syme, Jamaica.*

Poinsettia pulcherrima.—Some grand examples of these are just now in perfection at Moorfields, Manningham, near Leeds, in the houses of E. Priestman, Esq. Mr. Scott, the gardener, who has just taken charge of these gardens, measured in my presence several over 18 inches in diameter, well coloured, and beautifully done. *A. O.*

Rhyncocarpa glomerata.—This is a climbing Brazilian Cucurbit, with a tuberous perennial root and deeply cut palmate leaves, the segments linear lanceolate. The flowers are inconspicuous, the males in racemes, the females in dense clusters succeeded by



FIG. 160.—RHYNOCARPA GLOMERATA.

ovate pointed fruits about the size of a hazel nut. Messrs. Haage & Schmidt, to whom we are indebted for the illustration (fig. 160), speak of it as well adapted for covering arbors. It requires to be grown in a warm border as an annual, but under glass it may be grown as a perennial.

Rollisson's Unique Pelargonium.—This lovely Pelargonium is second to none for winter flowering. It also possesses the merit of being sweet-scented, which enhances its value at this season. As a flower for travelling it is superior to any of the single-flowering varieties of the Zonal section, in consequence of the compact habit of the truss, which is, as the name implies, unique in form as well as in appearance. The colour is also distinct from anything else that we possess in winter. Plants propagated in the autumn of 1879, and growing in 6-inch pots, are now producing flowers abundantly, and promise to continue flowering during the winter. *Cultivator.*

Orchids in Flower at Ferniehurst.—Amongst the many grand examples of cultivation in Mr. Salt's Orchid-houses, the following Orchids are in flower:—*Barkeria elegans* and *B. Skinneri*, seldom now seen, but fine when well done; *Cattleya maxima*, grand for this season of the year; *Calanthe Veitchii*, several good spikes; and *C. vestita* varieties; *Cypripedium Harrisianum*, one of Mr. Dominy's beautiful hybrids; *C. insignis* Maulei (grand), *C. parvum*, *C. venustum*, *C. javanicum*, *C. Boxallii*; *Dendrobium Hillii*, with nineteen spikes; *D. moniliforme*, *Epidendrum vitellinum majus*, *Lycaste Skinneri*, several good and distinct varieties; *Mesospinidium vulcanicum*, several spikes, very bright rose, beautiful at this dull season; *Masdevallia Veitchii*, good variety; *M. bella*, grand flowers; *M. tovarensis*, several with three transparent

pure white flowers upon a spike, very delicate and lovely; the scarce and beautiful *Oncidium Phalenopsis*, two plants with a fine spike each—the best variety it has been my pleasure to see for a very long time—quite charming; *Odontoglossum Rossii majus*, several well flowered good varieties; *O. Alexandre*, many varying from pure white to deep spotted; *O. Hallii*, grand varieties; *O. Pescatorei*, many very fine, particularly some of the branched-spiked varieties; *O. cordatum* Lindleyanum and *O. Reichenheimii*. These are just now very fine. There are numerous other varieties which will shortly produce a grand display. In addition to the Orchids one house is particularly beautiful with a fine collection of *Crotons*, *Dracenas*, *Palms*, *Aralias*, and other plants suitable for table decoration, the two former being splendidly coloured, it must be gratifying to Mr. Salt, who takes great interest in gardening, to find everything so well carried out by his gardener, Mr. Culley, who has had charge of this establishment for some years. *A. O.*

Sports in Chrysanthemums.—From time to time I have read accounts of sports in the Chrysanthemum, but I have never seen or read of one like a sport I have on a plant of the well-known Miss Mary Morgan, a fine incurved show variety. The sport is a complete tasselled Japanese variety, with pale pink or flesh-coloured florets, which are long, narrow, and very full, but not quite so large as Elaine. The colour and form are most pleasing. Several of the principal exhibitors in Edgbaston have seen it, and pronounce it quite an acquisition. I intend to name it Mrs. Marigold. *Richard Gallier, The Gardens, Park Road, Edgbaston.*

Potatos.—As the seed Potato season will soon be here, will any of your correspondents be so good as to say if Covent Garden Perfection is a generally reliable variety for growing somewhat extensively? I have tried it on a small scale on a rather heavy cold soil and am pleased with it, so much so that I thought of planting a good breadth of it, but should like to have an expression of opinion as to its fitness for a general middle-season crop. Beauty of Hebron did exceedingly well with me on a similar soil, but it appears to be very close to Early Rose in habit and appearance. Rector of Woodstock has done well with me. I also grow Webb's Improved Schoolmaster, and Schoolmaster from the original stock sent out by Mr. Turner, and I can see no difference. What has been the result with other growers? Again, is there any difference to be found amongst the Magnum Bonums? Has any one any right to call either kind "improved"? In the Wolverhampton, Walsall, and various other districts of the Midlands, Magnum Bonum has done well, and will be generally cultivated next year: Champion is not so great a favourite. *R. Rushall.*

Citrus japonica.—When visiting Thoresby the other day I was much struck with the beauty of *Citrus japonica*, or the Otaheite Orange. The plants were growing in 6-inch pots, and some of them had as many as sixteen beautifully coloured ripe fruit. These, as Mr. Henderson has found out, are invaluable for decorative purposes, and should be more extensively grown for that purpose. *A. O.*

Reports of Societies.

Meteorological: Dec. 18.—The usual monthly meeting of this Society was held at the Institution of Civil Engineers, Mr. G. J. Symons, F.R.S., President, in the chair. F. Coventry, J. W. Moore, M.D., W. T. Paulin, J. Porter, and Captain W. C. Smith, were balloted for and elected Fellows.

The following papers were read:—(1.) "Report on the Phenological Observations for the year 1880." By the Rev. T. A. Preston, M.A., F.M.S. Agriculturally speaking the year may be considered as disappointing. Till June the weather was such as has rarely been experienced for farm operations. The severe cold of the winter broke up and mellowed the soil, and the dry open weather enabled farmers to clean their land from the excessive growth of weeds caused by the damp of the year before. The dry May was not favourable for the hay, which suffered severely in some places, but still a crop with far more real nourishment in it than would be obtained from a rank growth would have been secured had it not been for the terrible floods of July, in the Midland Counties, which not only seriously injured the crop so that it was frequently not worth the trouble of removing from the land, but also carried it entirely away in low-lying districts. The corn, again, which was looking most promising till July, suffered much during that damp period, and had it not been for the subsequent fine weather would have been ruined. But the unfavourable season of 1879 produced very serious effects on vegetation, especially on trees and shrubs, and their produce. The young wood of the trees was not ripened, and as a natural consequence the severe winter killed an enormous quantity of some kinds, and greatly injured others. *Laurustinus* was generally killed to the ground, and in some districts the destruction of other shrubs was severely felt. The evergreens in many cases lost large quantities of their leaves; *Hollies*

especially are mentioned by several observers, and Privet hedges were sometimes quite leafless. With respect to fruit trees, Apples and Pears in some localities (but not all) were hardly able to put forth any bloom, and the crops were consequently extremely poor. Wall fruit was also a general failure, but this was partially owing to severe weather when the trees were in bloom, for in some instances the show of bloom was splendid. Gooseberries and Currants produced enormous crops, and Strawberries were very fine, but they lasted an unusually short time. Seeds generally ripened with difficulty; much of the corn could not be ground, and a great deal was mixed up with roughly ground Indian Corn, and flavoured to induce the cattle to eat it. The crop of ordinary garden seeds was also far below its usual quality, and some of the favourite garden flowers were consequently very poor.

Among the special features of the year may be mentioned the great quantity of certain insects—aphis was in astonishing numbers in the early part of the year. The Apple shoots, before the leaves expanded, were in almost every case covered with this green-fly, and among plants the mealy Guelder Rose was especially attacked by them. Wasps, again, have been in extraordinary numbers, and dreadful accounts of them have been sent to the various entomological periodicals: their numbers appear to have exceeded all previous experience. The larvæ of the Gooseberry moth and of the Gooseberry saw-fly have also been extremely destructive; and finally, as an undoubted result of the wet season of 1879, the larvæ of the crane-fly have been a perfect plague in some localities, and sheep ticks in others. The scarcity of small birds has been universally noticed: some, no doubt, perished from the cold, but vast numbers had migrated. The enormous numbers of larks which hastened to the Eastern Counties on the outbreak of cold weather was astonishing. (2.) "On the Variations of Relative Humidity and Thermometric Dryness of the Air, with Changes of Barometric Pressure at the Kew Observatory." By G. M. Whipple, B.Sc., F.R.A.S., F.M.S. (3.) "On the Relative Frequency of Given Heights of the Barometer Readings at the Kew Observatory during the Ten Years, 1870-79." By G. M. Whipple, B.Sc., F.R.A.S., F.M.S.

Variorum.

SIDEBOARD AND TABLE DECORATIONS FOR CHRISTMAS.—In the middle and at the ends of the sideboard are Poinsettias, with Solanums, full of ripe berries, and red and white Primulas to the right and left of the central plant. Van Thol Tulips may be employed in lieu of the red Primulas, if more convenient. In the decoration of rooms, dinner-tables, and vases with cut flowers during the Christmas festivities, a profusion of flowers is not really necessary, for, with a liberal use of Fern fronds, few flowers, and a moderate quantity of richly coloured leaves—such as those of the Dracænas and the Crotons—may be made to produce a most tasteful effect. Sprays of the pretty *Panicum variegatum* are also most useful for intermixing with flowers. In selecting flowers for arrangements to be seen under the influence of artificial light, reject as quite unsuitable those of the various shades of purple, blue and yellow. The selection of flowers suitable to the size of the epergne or vase in which they are to be placed is a point of considerable importance. For small vases there is perhaps nothing better in the way of greenery than the fronds of *Adiantum cuneatum*, sprays of the more robust *Selaginellas* and branchlets of the common Holly. The most useful flowers are the Van Thol Tulips, white Roman Hyacinths, *Euphorbia jacquiniiflora*, double white Primulas, red and white *Epacris*, and *Cyclamens* in variety. For large vases and epergnes, Poinsettias, Narcissi, red and white Camellias, and Japanese *Chrysanthemums* may be employed. With the flowers enumerated, berries of Holly or other berried shrubs may be arranged at this season of the year. The berries are most appropriate, and certainly not wanting in effectiveness. A very pretty table decoration may be made with a soup plate and a handful of flowers and Fern fronds. In fitting up a soup-plate fill with silver sand, and then pour sufficient water over it to make it thoroughly moist, for the stalks of the flowers are to be inserted in the sand, and the moisture is necessary to preserve their freshness for as long a time as possible. Over the sand place a thin layer of moss or Fern fronds, and proceed to arrange the flowers according to the materials at command. A fringe should be formed round the edge with elegant Fern fronds, and these should be inserted horizontally, so that they lie upon the cloth and quite hide the plate. Then, if available, fix in the centre three small heads of the Poinsettia, and round these arrange white or other suitable flowers, and with these intermix a few fronds of *Adiantum cuneatum*. Fern fronds of all kinds should be immersed in water for a few seconds previous to using, as they retain their freshness for a

much longer period than would otherwise be the case. *The Garden Oracle.*

THE PREPARATION OF OPIUM FOR SMOKING.—An interesting account of the mode of preparing opium for smoking, as carried on in Hong-Kong, has recently been communicated to the *Pharmaceutical Journal*. In the particular establishment described, which is a moderate-sized building at Shek-tong-tsin, in the west end of the city of Victoria, the boiling operations are carried on, over eighty Chinese coolies and a few Indian watchmen being employed, all of whom live on the premises. The majority sleep in a loft immediately above the boiling rooms, the others in a room on the ground-floor, which also does duty as a kitchen, mess-room, and general store, and is in open communication with the boiling rooms. The *employés* may, therefore, be said to live in an atmosphere saturated with the odour of opium, yet all seem in good health. On inquiry whether many of them were habitual opium-smokers, the information received was that only one head man smoked regularly, but that some of the others indulged occasionally, when any of their friends paid them a visit. The boiling is conducted in two rooms in open connection with each other, one being set apart for the first and the second for the final boiling. The first boiling-room has a row of furnaces along each side, with a few rows running transversely between them; the other has four rows extending along the whole length of the room. The furnaces are made of a kind of fire-clay, and are of two sizes, 24 inches and 18 inches in diameter respectively, and about 9 inches deep. They are built in with brick, and wood charcoal is used as fuel. The pans in which the opium is boiled are somewhat in the shape of a shallow evaporating dish; they are made of a kind of copper alloy, and are of two sizes, to fit the furnaces. The opium is sent daily from the hong, or shop, to the boiling-house, and that which has been boiled on the previous day is then returned to the hong. Patna opium is alone used, and the average boilings amount to six or eight chests per day. After removing the covering of leaves from the opium, it is moistened with water, and allowed to stand for about fourteen hours; 2½ balls of opium, and about 10 pints of water, are then put into each pan, and boiled from five to six hours, stirring occasionally, until the whole mass has become of a uniform thin paste-like consistence; it is then transferred to a larger pan, and cold water added to about 3 gallons, covered, and allowed to stand for fourteen or fifteen hours. A bunch of "tangsuin" (lamp-wick, and pith of some plant) is then inserted well into the mass, the pan slightly tilted, when a rich clear brown fluid is then drawn off and filtered through paper made from Bamboo. The residue is removed to a calico filter, and thoroughly washed with boiling water, the wash-water being reboiled and used time after time. The last washing is done with pure water; these washings are used in the next day's boilings. The residues on the calico filters are transferred to a large one of the same material, and well pressed. This, which is called opium dirt, is insoluble, and is the perquisite of the head boiling coolie. It is readily sold at Canton, where it is used for mixing with the moist inferior kinds of prepared opium. The filtrate, or opium solution, is concentrated by evaporation at the boiling point for from three to four hours, with occasional stirring, until the proper consistence is attained, when it is removed from the fire and stirred vigorously till cold, the cooling being accelerated by the use of large fans. When cold it is taken to the hong, where it is kept for some months before it is considered in good condition for smoking. As thus prepared the opium has the substance of a treacly extract, and is sent in large quantities from China to America, Australia, &c., carefully secured in small pots, each having the name of the maker upon it. The following grades, or qualities, of opium are recognised by the Chinese:—1, Raw opium as imported from India; 2, prepared opium, the outcome of the process just described; 3, opium dross, the scrapings from the opium pipe, which is reboiled and manufactured as a second-class prepared opium; and, 4, "Nai chin," or opium dirt, the insoluble residue described above. The dross (No. 3) is said to be more poisonous than the ordinary prepared opium. "What strikes one very forcibly on witnessing these operations is that the morphia value of the opium can have little to do with its smoking value; because, if so, the mode of manufacture must deteriorate it considerably, owing to the

long-continued moist heat it undergoes; however, there can be no doubt but the process described has, after long experience, been found to yield the drug in the most approved form for smoking. This opinion naturally raises the question, which of the definite principles of opium, or combinations thereof, has the power, when smoked—or, rather, burned in a pipe, the vapours being inhaled—of producing such peculiar effects? The elucidation of this point must be of great interest both to the chemist and physiologist."

HOW SUGAR IS ADULTERATED IN AMERICA.—From a recent report from the United States, it seems that the adulteration of food and drink has of late occupied much attention. The manufacture of false butter is a very important branch of trade, and the adulteration of sugar and refined syrups with glucose has reached such prominence as to force the large sugar refiners to issue a circular to their customers (the grocers and wholesale dealers in sugar) to secure suitable legislation to protect the public against this fraud. The manner in which this adulteration is effected is thus described. The adulterating article is manufactured in two forms—the one a liquor of heavy body and gelatinous consistency, and the other a white granular powder resembling gluten. The first is used for adulterating syrups, the last for converting brown sugars of low grade as adjudged into products of apparently high grade and correspondingly high price. As glucose is more expensive than the best grade of refined syrup, the first question is how the adulteration can be made profitable. Glucose liquor having a beautiful straw colour and a ropy consistency, the adulterator buys an inferior grade of common molasses for the basis of his products. This he mixes gallon for gallon, or in proportions to suit the grade of syrup required, with glucose liquor. The result is two gallons of an apparently high grade amber-coloured syrup, worth, judged by tint, six cents more than the finest grade of refined syrup offered in the market but costing 25 per cent. less, and possessing only 70 per cent. of the value of a pure syrup for sweetening purposes. The large refiners assert that nearly all the fancy syrups dispensed by grocers under various attractive names are merely inferior grades of molasses doctored in this manner. For producing the high and fancy grades of brown sugar the manipulator resorts to glucose in the solid form, buying for his basis a low grade of pure sugar; with this he mixes the white amorphous powder of adulteration to the extent of 15 to 20 per cent. by weight, producing a light, amber-tinted, and very handsome looking sugar, but of very inferior quality. Large quantities of this product are sold as "coffee brown sugar," and being of a beautiful colour find a ready market for table use. "As glucose possesses only two-fifths of the sweetening value of cane-sugar, the customer soon notices that it requires three teaspoonfuls of the adulterated article to sweeten a cup of coffee, whereas only two of the apparently inferior but really pure article were required for that purpose, and if he is an acute observer a thick pasty gelatinous sediment at the bottom of the cup attracts his attention. This is glucose, which, being less soluble than sugar, settles to the bottom. If this sediment be left for an hour or two to dry it assumes all the hardness and toughness of dried gelatine, and can only be removed by scraping with a sharp instrument. Under the lower powers of the microscope the adulteration shows white amorphous grains, scattered over the field, which transmit reflected light feebly. By the polariscope this lævo-glucose is distinguishable from the dextro-glucose, which is a natural constituent of cane-sugar, the latter rotating the ray to the right, the former strongly to the left. Again, the glucose of the cane-sugar is crystallisable, whilst its correlative, from corn, on evaporation of the water from the liquor, forms a white amorphous powder."

DESTRUCTION OF FORESTS IN NEW ZEALAND.—Our contemporary, *The Colonies and India*, in drawing attention to the destruction of forests in New Zealand points to the fact, as stated in the report of the Crown Lands Department for the past year, that the stock of some of the most valuable timber trees is being exhausted more quickly than it can be replaced by the natural growth of young trees, and in a wasteful manner, which is, in the future interest of the colony, much to be regretted. It is estimated, for instance, that although the noble and valuable Kauri forests cover an area of 230,000 acres, and

reckoning only two trees to the acre, and 5000 feet of timber to each tree, contain altogether about 2,300,000,000 feet of timber, the whole existing supply will be exhausted within twenty-one years at the present rate of destruction. These Kauri forests are very susceptible to fire, and when once started will burn with great fury. Besides this source of danger the young plants are liable to destruction by cattle, and their growth is thwarted in various other ways. The relative proportions of the various other timber trees in New Zealand are only imperfectly known, but recent examination has shown that, besides the Kauri, several of the more highly prized kinds are being rapidly exterminated. Such an event would be deplorable from many points of view, for not only would the resources of the colony be seriously crippled, but its climate must suffer from the denudation of its forest lands.

NAKED SEEDS OF THE AMARYLLIDACEÆ.—We are reminded of these curious seeds by an article in a recent number of the *Revue Horticole*, entitled "Des Soboles." Under this denomination the writer describes and figures the bulbils of *Fourcroya tuberosa* and the fleshy seeds of *Pancratium speciosum*, apparently considering them as essentially of the same nature. But from the researches of Robert Brown, Alexander Braun, and others, there is no doubt that the latter are developed from true ovules, whereas the former are adventitious buds. These are really naked seeds, though the ovules are generated in a closed ovary. It will be remembered that the Amaryllidaceæ have normally a three-celled inferior ovary, with two or more ovules in each cell. The Australian genus, *Calostemma*, is, however, exceptional, being in a very early stage only one-celled, and containing two or three ovules; but in *Crinum*, *Pancratium*, *Amaryllis*, &c., the original condition is normal. Soon one of the ovules takes the lead, and grows away from the others, obliterating them and the partitions of the ovary, and eventually the ovary itself, so that what appears to be a fruit is in reality a naked seed. Its true nature is evident, as it bears no traces at the top either of a style or of a perianth. A. Braun published a very good account (*Annales des Sciences Naturelles*, sér. 4, xiv., p. 1, t. 1) of the naked seeds of the Amaryllidaceæ. He distinguished two types of them, which he designated respectively bulbous and tuberous. The bulbous seeds develop from an anatropous ovule, having the normal two coats, the outer of which becomes fleshy, and is traversed by vascular bundles. They are green and smooth, and covered with a shining epidermis, which is sometimes furnished with stomates. The embryo is not formed before the seed separates from the plant. Subsequently one or more, often three, embryos are developed in one seed, and these embryos germinate in a manner characteristic of a large number of Monocotyledons, that is to say, the axis is carried out by the elongation of the base of the cotyledon. *Pancratium speciosum* is an example of this type. The tuberous seeds are produced by more or less campylotropous ovules, destitute of coats, but enveloped in fleshy albumen in which there are no vascular bundles, whilst the nucleus dries up into a brownish membrane. And the embryo is formed early before the seed separates from the plant. It is probable that the embryos of the bulbous type are adventitious, as Strasburger determines them to be in some of the cases of polyembryony and in some of the supposed cases of parthenogenesis.

SERBIAN VEGETABLE PRODUCTS.—The following primitive method of wine-making is described as being that in vogue in Servia. The vineyards produce excellent Grapes, but the wine is spoilt in making and keeping. Each peasant makes his own wine, and the process is very simple. The Grapes are brought home in waggon-loads. As each load arrives the Grapes are shovelled into a tub, where they are beaten with a club of rough wood till at least half are crushed, they are then poured into a large cask holding from 1000 to 3000 gallons. There they are left to ferment, and in the process of fermentation the unbroken Grapes burst and mix with the others. In about ten days' time the peasant begins to draw from the cask, and continues to do so till the wine is exhausted. At first the wine is sweet, but the last 25 or 30 per cent. of it is generally sour. In some few instances a wine-press is used, but owing to the cost of transport, wine-presses have not yet been introduced into the interior. The exportation

of dried Plums is described as a trade of growing importance. These Plums realise a good price, and it is said that many large buyers are anxious to export dried Plums from Servia to England, but that the English import duty of 7s. per cwt. discourages the trade. Regarding the forests of Servia, we are reminded that immense forests of Oak and other trees abound, but they are suffering from bad treatment. When a peasant requires wood for repairs, or for fuel, he fells twice as much timber as is required, and without any regard as to which trees should be felled and which remain. Under this treatment many forests have already disappeared, and if this system is continued the disappearance of other forests is only a question of time.



STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, DEC. 23, 1880.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLAISHER'S TABLES 6th Edition.		WIND.	RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Dew Point.		
Dec. 16	29.45	-.036	48.0	36.5	11.5	41.9	+1.2	38.3	S.W. 0.11	
17	29.54	-.029	39.5	13.5	6.0	37.2	-3.3	31.0	ESE 0.01	
18	29.37	-.046	44.2	33.0	11.2	38.5	-1.7	34.2	WNW 0.03	
19	29.38	-.045	42.6	36.0	6.0	39.8	-0.2	33.4	S.W. 0.00	
20	29.34	-.050	37.5	13.0	4.5	35.1	-4.6	33.2	N.E. 0.77	
21	29.84	-.001	49.3	30.0	9.3	35.0	-4.3	31.1	NNW 0.00	
22	29.55	-.029	52.8	29.0	23.8	42.6	+3.8	41.1	N.W. 0.43	
Mean	29.50	-.034	43.3	33.0	10.3	38.6	-1.3	34.6	sum 1.35	

- Dec. 16.—A dull, overcast day, frequent rain. Fine, but cold at night. Strong wind.
 17.—Dull, overcast day. Little snow at times. Windy, cold.
 18.—Overcast, dull till evening, then fine. Occasional thin rain till evening. Clear at night.
 19.—A cold, windy day, clear and sometimes bright. Dull after 6 P.M. Overcast at night.
 20.—A cold, wet, wintry day. Miserable. Rain fell till 4 P.M., snow in flakes fell in afternoon.
 21.—Dull till 11 A.M., fine afterwards. Cold, cloudy. Cold, frosty night.
 22.—Overcast, dull, wet, miserable day. Very cold and sharp frost in early morning. A nocturnal rising temperature throughout. Temperature at 9 A.M. was 40° F., at 3 P.M. was 51°. The maximum, 52° F., occurred at midnight. Strong wind.

LONDON: Barometer.—During the week ending Saturday, December 18, in the suburbs of London, the readings of the barometer at the level of the sea increased from 30.13 inches at the beginning of the week to 30.15 inches by the evening of the 12th, decreased to 29.95 inches by noon on the 14th, increased to 30.03 inches by the evening of the same day, decreased to 29.52 inches by the afternoon of the 15th, increased to 29.76 inches by the morning of the 17th, and decreased to 29.50 inches by the end of the week. The mean reading for the week at sea level was 29.80 inches, being 0.65 inch below that of the preceding week, and 0.20 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 52° on the 13th, to 39½° on the 17th; the mean value for the week was 46½°. The lowest temperatures of the air observed by night varied from 32½° on the 15th, to 42½° on the 12th; the mean for the week was 36½°. The mean daily range of temperature in the week was 10°, the greatest range in the day being 18½°, on the 15th, and the least 5½°, on the 12th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—12th, 45° F., +4° 7'; 13th, 48°, +7° 4'; 14th, 40° 8', +0° 1'; 15th, 44° 9', +4° 2'; 16th, 41° 9', +1° 2'; 17th, 37° 2', -3° 3'; 18th, 38° 5', -1° 7'. The mean temperature of the air for the week was 42° 4', being 1° 8' above the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 60½° on the 12th, 59½° on the 18th, and 58° on the 13th; on the 17th the readings did not rise above 46°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were below 32° on the 15th, 17th, and 18th; the mean of the seven lowest readings was 34°.

Wind.—The direction of the wind was W.S.W., and its strength moderately strong.

The weather during the week was dull and wet, and the sky generally overcast. A little snow fell on the 17th.

Rain.—Rain fell on five days, and the amount measured was 0.67 inch.

ENGLAND: Temperature.—During the week ending Saturday, December 18, the highest temperatures of the air observed by day were 53½° at both Truro and Plymouth, and below 49° at Liverpool, Hull, and Sunderland; the mean value from all places was 50½°. The lowest temperatures of the air observed by night were below 28° at Leicester, Cambridge, Wolverhampton, Nottingham, Sheffield, Liverpool, Hull, Bradford, Leeds and Sunderland, and above 32° at Brighton and Blackheath (London); the general mean from all stations was 28½°. The extreme range of temperature in the week was more than 24° at Cambridge and Wolverhampton, and less than 20° at Brighton, Blackheath, and Sunderland; the mean range from all stations was 21½°.

The mean of the seven high day temperatures was above 51° at Truro and Plymouth, and below 42° at Hull and Sunderland; the mean from all stations was 45½°. The mean of the seven low night temperatures was below 35° at Wolverhampton, Nottingham, Sheffield, Hull, and Sunderland, and above 44° at Truro and Plymouth; the mean from all stations was 37°. The mean daily range of temperature in the week was more than 10° at Brighton, Blackheath, Wolverhampton and Nottingham, and less than 7° at Sunderland; the mean daily range from all places was 8½°.

The mean temperature of the air for the week from all stations was 41½°, being 5° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 47° at Truro and Plymouth and below 38° at Hull and Sunderland.

Rain.—The falls of rain during the week were the heaviest at Brighton, 1.39 inch; Bristol, 1.32 inch; Liverpool, 1.29 inch; and Leicester, 1.03 inch; and the least at Sunderland, 0.50 inch; Cambridge, 0.58 inch; and Leeds, 0.59 inch; the average fall over the country was 0.85 inch.

The weather during the week was generally dull and wet, and the sky overcast.

Snow fell at some places.

SCOTLAND: Temperature.—During the week ending Saturday, December 18, the highest temperatures of the air observed by day varied from 59° at Paisley to 43½° at Aberdeen; the mean value for the week from all stations was 47½°. The lowest temperatures of the air observed by night varied from 7° at Perth, and 12° at Glasgow and Paisley, to 24° at Aberdeen and Greenock; the general mean from all places was 18°. The mean range of temperature in the week from all stations was 29½°.

The mean temperature of the air for the week from all stations was 33½°, being 6° lower than the value for the corresponding week in 1879, and 8° below that of England. The mean temperature was above 35½° at Greenock and Paisley, and below 30° at Perth.

Rain.—The amounts of rain and melted snow were the heaviest at Greenock, 2.40 inch, and Glasgow, 1.24 inch, and the least at Perth 0.10 inch, and Edinburgh, 0.45 inch; the average fall over the country was 0.90 inch.

DUBLIN.—The highest temperature of the air was 51°, the lowest 30°, the extreme range 21°, the mean 41½°, and the amount of rain 1.47 inch.

JAMES GLAISHER, F.R.S.

Obituary.

WE regret to announce the death, on the 12th inst., of Mr. WILLIAM PAUL, of the Crossflat Nursery, Paisley, aged fifty-five. The *Paisley and Renfrewshire Gazette* states that Mr. Paul was one of the oldest and most useful members of the local horticultural society; and so far back as 1848, while a gardener at Trees, Barrhead, he competed at the local flower shows. In the following year he was appointed Vice-President of the society, but his most intimate connection with it was while he filled the office of Secretary, between the years 1866 and 1873. During these years his great experience, practical knowledge, and high character, caused his advice to be greatly valued by the other directors of the society. In one particular branch of horticulture—florists' flowers—Mr. Paul was a special-

ist; and his fame in this respect caused him to be sought as a judge at floral competitions, not in Scotland only, but in Ireland and England also. He competed, too, in the great shows all over the country, and frequently carried off numerous prizes—particularly for Pansies—wherever specimens of his cultivation were exhibited.

Enquiries.

He that questioneth much shall learn much.—BACON.

ARUNDINARIA FALCATA.—Can any correspondent kindly oblige me with any information relating to this hardy Bamboo? 1. Is it synonymous with *Bambusa gracilis*? [The proper name is *Thamnochlamys Falcata*; see *Gardeners' Chronicle*, December 16, 1876, where you will find General Munro's account of the synonymy. Eds.] 2. Is it Himalayan? [yes] and, if so, at what altitude does it flourish? 3. Does it grow and fruit either at Simla, Nanital, or at Dhurmlala? 4. Has it borne fertile seeds in the open air in Britain?—have seeds so grown germinated? and, if so, where? [We think not.] 5. Any information as to the mean or extremes of temperature to which it is naturally subjected on the Himalayas, or a list of the plants which naturally grow in its company, would be of much value. B. [See the correspondence in *Nature* between a Dublin and a London Professor as to this plant. Eds.]

Answers to Correspondents.

ASPIDIUM CORIACEUM. *A. Mesham.* This Fern is also called *Polystichum coriaceum*. It is from New Zealand, and is often confounded with a Cape plant distinguished as *Polystichum capense*.

BOOKS. *W. Reid, Botany for Beginners* (Bradbury, Agnew & Co.).—*W. D. Kemp's How to Lay out a Garden* (Bradbury, Agnew & Co.) would suit you.

ERRATUM.—At p. 797, col. b, for 1830 read 1818.

INSECTS. *H. B. S.* The beetle which injures your *Cyclamens* is the common weevil (*Otiorynchus sulcatus*). Hunt for it after dark, having first spread a white sheet beneath your pots. *I. O. W.—G. U. H.* The little grubs which burrow down the stems of your Carnation shoots are the larvæ of a small two-winged Musca (smaller than the house-fly). Pinch the shoots which appear drooping between your thumb and finger sharply, so as to kill the insect. *I. O. W.*

MAGNOLIAS. *J. H. S.* With proper care you may transplant your Magnolias during open weather any time between now and April, but in any case settle in the soil by a good watering, and mulch the surface with short littery dung or old tan, the mulching being applied before frosty weather sets in, and being sufficient in quantity to keep out the frost.

NAMES OF FRUITS. *F. Smith.* Your Pear is *Beurré Diel*.—*G. Ormiston.* Pear: *Beurré d'Arenberg*. Apple: King of the Pippins.—*W. and J. B. Apple.* Not known.—*F. L. Apple.* Grenadier.—*G. G. Your* Pear is properly named *Joséphine de Malines*. It ripens much earlier than it is generally stated.—*W. P.* The largest Pear is *Beurré Diel*; the other Knight's Monarch.

NAMES OF PLANTS. *S. T.* *Pinus Pinaster*, with cones. The other probably *P. Sabiniana*.—*P. J.* 1, *Hedera Helix conglomerata*; 2, *H. H. donerleiense*; 3, *Centropogon Lucyanus*.—*G. H. W.* *Lastrea invisa*.—*J. Sutton.* 1, *Salaginella hæmatodes*; 2, *Nephrodium molle corymbiferum*; 3, *Pteris serrulata cristata*; 4, *Asplenium Veitchianum*; 5, *Pteris longifolia*; 6, *Gymnogramma chrysophylla*; 7, *Adiantum formosum*.—*Subscriber.* 1, *Lycium barbarum*; 2, *Aster argophyllus*; 3, *Griselinia littoralis*; 4, *Berberis japonica*; 5, *Photinia serrulata*; 6, *Pittosporum tenuifolium*.—*S. B.* 1, *Asplenium brasiliense*; 2, a *Maranta*, which we do not recognise; 3, *Catasetum tridentatum*.

ORANGE. *R. Maries.* A very curious circumstance, but not a very uncommon one.

PARASITE ON PELARGONIUM. *J. Lindsay.* The parasite is no doubt some species of *Orobanchæ*. It will probably not affect many of the plants, and if so, the best thing you can do to get rid of it is to burn them. The roots or seeds are probably in the soil used, and find a congenial nidus on the Pelargonium sorts. If you wish to preserve the particular plants attacked, shake them out, clear the roots of the *Orobanchæ*, and report in fresh soil.

REMOVING TREES. *Gardener.* When trees are planted in a garden they become part and parcel of the freehold, and you must not remove them without permission from the landlord. If he chooses to sell the property of course the trees go with it. You had better take the advice of a solicitor on the subject of your last question.

PRIZE ESSAYS. *G. Holmes, Jun.* We do not know of any prizes such as you refer to being offered. The Scottish Arboricultural Society offers various prizes for Forestry subjects, but that does not come within your enquiry. Individuals have occasionally offered such prizes through local societies with which they are connected.

STOVE FOR FRUIT ROOM. *J. N.* Charcoal is dangerous unless you ventilate, and that would be injurious. You had better get a small paraffin stove, which, used with care, would quite answer your purpose.

pose. Even with this some slight ventilation would be necessary.

THE LATE INTERNATIONAL POTATO SHOW.—We have received two communications from Mr. Kerr relating to this matter, in neither of which does he offer any explanation of the alleged charge of misrepresentation brought against him by "One Who Knows," but requesting to know the name of that writer. This we are not at liberty to give him, and if we were it would not in any way affect the question at issue. Mr. Kerr also writes with reference to the protest at the late Birmingham show, and sends us a schedule, from which we learn that the competition in classes 17, 18, and 19 was limited to "farmers, farm stewards, amateurs, and their gardeners." The schedule also says "that the roots must in all cases be grown by the exhibitors in 1880;" but it is not quite clear to us whether Potatoes were intended to be included under roots. Questions of this kind should be settled on the spot by the umpire or by the committee, and principles only dealt with in the public Press. The mass of readers are not interested in the grievances of particular individuals, though they may be concerned with the principles involved.

VINES. *Rev.* We have not been able to find any *Phylloxera* on the roots, which are in a bad condition, but from what cause you give us no means of judging.

Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. Letters relating to ADVERTISEMENTS, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—Martin Grashoff (Quedlinburg), Extract of Wholesale Trade Catalogue of Seeds.—B. S. Williams (Victoria and Paradise Nursery, Holloway), Catalogue of Flower, Vegetable, and Agricultural Seeds.—Harrison & Sons (Leicester), Wholesale Catalogue of Seeds.—William Etherington (Manor House, Swanscombe, Kent), List of Chrysanthemums.—James Veitch & Sons (King's Road, Chelsea), Catalogue of Garden and Flower Seeds, &c.—Osborn & Sons (Fulham), Catalogue of Vegetable and Flower Seeds, &c.

COMMUNICATIONS RECEIVED.—Ben.—E. M.—J. H.—J. B.—W. B. H.—H. E.—R. J.—W. H.—G. G.—W. D.—E. M.—T. B.—A. G.—C. Lawrence.—R. F.—A. A. (thanks).—J. S.—H. W.—J. R.—P. H. G.—H. E.—G. B., Invergarry.—Kewia.—H. W. W.

Markets.

COVENT GARDEN, December 23.

Although this is Christmas week business is not so active as we could wish, there being little demand generally except for late Grapes. Importations of foreign goods are heavy, consisting principally of Pines, Pears, and Apples. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0 5 0	Lemons, per 100	4 0 6 0
Cobs, per doz.	2 0 2 6	Pears, per dozen	1 6 5 0
Grapes, per lb.	3 0 5 0	Pine-apples, per lb.	1 0 2 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, Globe, per doz.	3 0 6 0	Horseradish, p. bun.	4 0 ..
Asparagus, Fr., bndl. 25	0 ..	Lettuces, Cabbage, per doz.	0 6 1 6
— Sprue, per bund.	1 6 2 0	— Cos, each	0 6 1 6
Beans, French, p. lb.	0 9 ..	Mint, green, bunch.	0 4 ..
Beet, per doz.	1 6 2 6	Mushrooms, p. bask.	1 6 2 0
Cabbages, per doz.	1 0 2 6	Onions, per bushel.	5 0 ..
Carrots, per bunch.	0 4 6 0	— Spring, per bun.	0 6 ..
Cauliflowers, English, each	0 3 0 6	Parsley, per bunch.	0 4 ..
Celery, per bundle	1 6 2 0	Radishes, per bun.	0 2 ..
Chilis, per 100	3 0 ..	Rhubarb, per bund.	1 0 ..
Cucumbers, each	1 6 2 0	Seakale, per basket	2 6 ..
Endive, per doz.	1 0 1 6	Small salad, pun.	0 4 ..
Garlic, per lb.	1 0 ..	Spinach, per bushel	4 0 ..
Herbs, per bunch	0 2 4 0	Tomatoes, per lb.	0 9 1 0
		Turnips, new, bunch.	0 4 ..

POTATOS.—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 45. 6d. to 85. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag. Trade still bad, and prices 10s. to 20s. per ton lower than above quotations.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Begonias, per doz.	5 0 12 0	Ferns, in variety, doz.	4 0 18 0
Bouvardias, per doz.	12 0 24 0	Ficus elastica, each	1 6 7 6
Chrysanth., p. doz.	6 0 18 0	Foliage Plants, various, each	2 0 10 0
Cyclamen, per doz.	12 0 18 0	Hyacinths, per doz.	10 0 12 0
Cyperus, per dozen	6 0 12 0	— Roman, doz.	15 0 18 0
Dracena terminalis	30 0 60 0	Lily of the Valley, per pot	4 0 6 0
— viridis, per doz.	12 0 24 0	Myrtles, per doz.	6 0 12 0
Epiphyllum, per dozen	18 0 30 0	Palms in var., each	6 2 1 0
Erica gracilis, dozen	9 0 18 0	Poinsettia, per doz.	9 0 18 0
— caiffra, per doz.	8 0 12 0	Primula, single, per dozen	5 0 6 0
— hymalis	12 0 36 0	Solanums, per dozen	6 0 18 0
Euonymus, various, per dozen	6 0 18 0	Tulips, 12 pots	8 0 12 0
Evergreens, in var., per dozen	4 0 18 0		

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 3 0 6	Mignonette, 12 bun.	4 0 9 0
Arum Lilies, 12 blms.	6 0 9 0	Narcissus, Paper-	
Bouvardias, per bun.	1 0 3 0	White, 12 sprays.	1 0 2 6
Camellias, per dozen	3 0 6 0	Pelargoniums, 12	
Carnations, 12 blms.	1 0 2 0	— zonal, 12 sprays	0 9 1 6
Chrysanth., 12 bun.	0 12 0	Poinsettia, 12 blooms	3 0 6 0
— 12 blooms	1 0 3 0	Primula, double, per bunch	1 0 1 6
Cyclamen, 12 blms.	0 3 0 6	— single, 12 sprs.	0 6 1 0
Epiphyllum, 12 blms.	1 0 1 6	Roses (indoor), doz.	2 0 6 0
Eucharis, per doz.	4 0 9 0	— yellow Fr., doz.	1 0 2 0
Euphorbia, 12 sprays	3 0 5 0	— red French, doz.	1 6 2 6
Gardenias, 12 blms.	12 0 18 0	— Christmas, 12 bl.	1 0 2 6
Heliotropes, 12 sp.	0 6 1 0	Stephanotis, 12 spr.	12 0 18 0
Hyacinth, Roman, 12 sprays	2 0 3 6	Tropæolum, 12 bun.	1 0 3 0
Lagerflora, white, 12 blooms	4 0 6 0	Tuberose, per dozen	2 0 4 0
— red, 12 blooms	1 0 3 0	Violets, 12 bunches.	1 6 2 6
Lilac, Fr., per bunch	8 0 10 0	— Neapolitan, Fr., per bunch	3 6 5 0
Lily of the Valley, 12 sprays	2 0 5 0	— Czar, Fr., bunch	1 0 2 0
Marguerites, 12 blms.	0 4 0 9		

SEEDS.

LONDON: Dec. 22.—The attendance on the market today was exceedingly thin, and there was a complete absence of business. Mail advices, just received from the United States, and also from Canada, describe the crop of Clover seed as proving remarkably short. Of new English seed the supply continues trifling, and the qualities appear very variable. The stock of Timothy held in this country is unusually small. Spring Tares, being good and cheap, meet with attention. Home-grown Buckwheat is now extremely reasonable. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday, to effect sales of home-grown Wheat, lower prices had to be submitted to, but the quotations were regarded as nominally the same as on the previous Monday. Foreign Wheat went slowly, at barely late rates. Good stout Barley was in moderate demand at full prices, but medium and inferior sorts were in limited request at fully the late decline in prices. Grinding Barley moved off slowly at barely late rates. The malt trade was quiet on former terms. For Oats the quotations were rather higher than on Monday se'nnight, but the trade for Indian Corn was slow, at barely late rates. Beans and Peas sold at about former prices, and for flour no material change in the quotations was noted.—Trade was very dull on Wednesday. There was no great desire shown to buy, and the market was distinctly easier, not only for Wheat, but for the various kinds of spring corn.—Average prices of corn for the week ending December 18:—Wheat, 44s.; Barley, 31s. 6d.; Oats, 20s. 7d. For the corresponding period last year:—Wheat, 46s. 6d.; Barley, 38s. 7d.; Oats, 20s. 11d.

CATTLE.

At the Metropolitan Market on Monday trade in beasts was very dull. Our top quotation was quite the extreme. The few good sheep on offer were readily disposed of at fully late rates; otherwise trade was dull. Choice calves were very scarce and dear. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 6s.; sheep, 5s. 4d. to 5s. 8d., and 6s. 4d. to 7s. 2d.—Trade on Thursday was quiet and without feature. Beasts sold slowly at barely Monday's rates; sheep were steady, and calves at full prices.

HAY.

Tuesday's Whitechapel Market report states that the supply of fodder was good, and trade rather better for best qualities. The following are the quotations:—Prime Clover, 100s. to 117s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 98s.; inferior, 30s. to 70s.; and straw, 30s. to 39s. per load.—Cumberland Market quotations:—Superior meadow hay, 94s. to 105s.; inferior, 45s. to 76s.; superior Clover, 110s. to 120s.; inferior, 75s. to 92s.; and straw, 34s. to 40s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that supplies have been moderate, and with a quiet trade quotations have undergone no important change. Scotch Regents, 95s. to 110s.; ditto Victorias, 110s.; ditto Champions, 90s. to 95s.; Essex Regents, 80s. to 90s.; ditto Champions, 80s. to 90s. per ton; German Reds, 45. 6d. to 55. 6d. per bag.—Last week's imports consisted of 24,637 bags from Hamburg, 2532 Rotterdam, 13,705 Bordeaux, 779 St. Nazaire, 60 Jersey, 1452 Bremen, 420 Ghent, 50 Barcelona, 62 sacks Ostend, 145 tons Rouen, and 59 tons Barfleur.

COALS.

The following are the quotations current at market during the week:—Ravensworth West Hartley, 14s. 9d.; East Wylam, 16s. 6d.; Walls End—Hetton, 17s. 6d.; Hetton Lyons, 16s.; Lambton, 17s.; Original Hartlepool, 17s. 6d.; Wear, 16s.; Easington, 16s.; Haswell, 17s.; Hawthorns, 16s. 3d.; South Hetton, 17s. 6d.; Tunstall, 16s.; Radford Navigation, 16s. 6d.

Government Stock.—The closing prices of Consols on Monday were, for delivery, 98½ to 98½, and 98½ to 98½ for the account. On Tuesday the final quotations were, 98½ to 98½ for delivery, and 98½ to 98½ for the account—both ex div.; the same figures were returned on Wednesday. Thursday's closing quotations were, for delivery, 98½ to 98½, and 98½ to 98½ for the account, ex div.

SHARPE'S NOVELTIES.

CULVERWELL'S GIANT MARROW PEA.

This, the most recent of Mr. Culverwell's introductions, is decidedly the best Pea he has raised. It is a Blue Wrinkled Marrow, growing from 4 to 6 feet in height, with a strong branching habit, the haulm being covered from top to bottom with Giant Pods, containing 10 to 13 very large Peas of the most exquisite flavour. As a main crop Pea for the Gentleman's Gardener who requires a long succession of Peas, or for the Amateur growing for Exhibition, it is unequalled. The stock being small a limited quantity only will be sent out this Season, as we are anxious its merits should be fully tested as early as possible.

Sealed Packets, 5s. each, post-free.

As the Pea requires to be planted, not sown, the Packet is sufficient to afford a fair trial.



Culverwell's Giant Marrow Pea.

SHARPE'S INVINCIBLE,
NEW LONG-PODDED BLUE MARROW PEA.

The Invincible is a cross between Veitch's Perfection and Essex Rival, and has the advantage of being but little liable to the attack of mildew. The plant is about 3 feet in height, of a robust branching habit. The pods are produced in pairs and occasionally three together, from near the ground to the top of the stem—the rows having the appearance of being clothed with pods from top to bottom. The pods are closely packed with from ten to twelve large Peas, which, when cooked, are of exquisite flavour and of a beautiful deep green colour. The Editor of the *Gardeners' Chronicle*, in his review of New Vegetables in the spring of 1879, mentions Sharpe's Invincible as one of the three Peas of the season worthy of notice.

Price, per Quart, 3s. 6d.

Half-pint Packets, free by post, 1s. 6d.

NISBET'S VICTORIA
TOMATO.

This is a seedling from Vick's "Criterion." The fruit is pyriform, and grows in bunches, each bunch containing from eight to twenty fruit, which are the size and colour of a Victoria Plum; it contains but few seeds, and for flavour is unsurpassed. It should be sown in rich soil; it requires no stopping, as it produces a bunch or two of fruit at every joint. To grow it in perfection it should have part of the bunches removed and the berries thinned.

Price, 1s. 6d. per Packet.

Tomatos may be gathered almost every day in the year from the above new variety.

Mr. Nisbet says, in January last:—"The original plant, which has been bearing fruit since last May, I destroyed a few days ago, to make room for Melons; and plants struck from cuttings are now bearing fruit: these will grow on and continue fruiting during the Spring and Summer."

"I desire to say a word in favour of this Tomato, which with me has proved to justify all that has been said in its behalf; I can therefore without hesitation confidently recommend it to all who may be inclined to give it a trial, and I am sure they will not have cause to be disappointed. Perhaps some of your readers can bear me out in this who have given it a trial. But some may say the fruit is so small: I take for granted there are many sorts much larger, nevertheless its extraordinary productiveness fully compensates for this, and I question very much if nearly double the weight cannot be obtained from this variety in a given space than from any other variety extant. It is a decided acquisition for winter work, in fact it may well be termed an *all the year round* Tomato. Its colour is good and flavour excellent; its Grape-like clusters, which are produced from every joint, averaging a dozen berries to a bunch, also recommend it for decoration, and I doubt not had Mr. Fish given this variety a trial for this purpose, instead of the Cherry Tomato mentioned by him a few weeks ago, he would have been much more satisfactorily rewarded. This Tomato never requires stopping, consequently does not make so much foliage—an objection raised by Mr. Fish, with regard to the Cherry Tomato for decorative purposes. E. MORGAN, *The Butts, Harrow-on-the-Hill*."

Nisbet's Victoria Tomato.—"I can endorse every word your correspondent, Mr. E. Morgan, writes in favour of the above. I have grown every variety that has come under my notice, and I have no hesitation in saying the Victoria is the earliest, hardest, most prolific, and best for winter use I have yet seen. It is very useful for decorative purposes, and excellent for pot-culture. W. G. PRAG, *Nell, Castle Gardens, Sherborne, Dorset*."

RAUCEBY HALL MELON.

Price, 2s. 6d. per Packet.

ASWARBY PARK SEEDLING MELON.

Price, 2s. 6d. per Packet.

SHARPE'S "CONQUEROR" LONGPOD BEAN.—The longest and best of all Longpods. Price, 1s. per Packet.

SHARPE'S "EMPEROR" RED BEET.—Splendid stock—dwarf, very deep in colour and glossy. Price, 1s. per Packet.

SHARPE'S PRIZE WHITE SPANISH ONION.—It is impossible to obtain anything finer for exhibition purposes than the seed we now offer. Price, 1s. per Packet.

SHARPE'S EXQUISITE CURLED PARSLEY (the Lincoln Green).—The perfection of garnishing Parsley. Price, 6d. per Packet.

EDELWEISS.

(GNAPHALUM LEONTOPODIUM, Jacq.)
(LEONTOPODIUM ALPINUM, Cass.)

Price, per Packet, 1s.

SHARPE'S Extra Choice CALCEOLARIA.—Price, 2s. 6d. per Packet.

SHARPE'S Extra Choice CINERARIA.—Price, 2s. 6d. per Packet.

SHARPE'S Extra Choice PRIMULA SINENSIS, Red, White, and Mixed.—Price, 2s. 6d. per Packet.

These three varieties of Florists' Flowers are the finest ever offered, having been carefully selected for years and grown specially for us.

CHARLES SHARPE & CO.

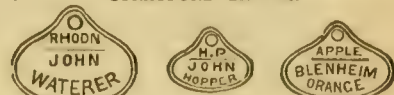
SLEAFORD

TRADE PRICES ON APPLICATION.

NEW LIST NOW READY.
THE "ACMÉ" LABELS
(REGISTERED).

Highly commended by all the Gardening Papers. IMPERISHABLE. Specimens and Price List on application. SOLE MANUFACTURERS, STEVENS & PINCHES, 48, LEICESTER SQUARE, W.C., and 27, OXENDON STREET, S.W.

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-PACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

Established 150 years.
WINDOW GLASS, SHEET LEAD, PAINTS, &c., THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

Inches.	Inches.	
15-oz., 6 X 4 to 7 1/2 X 5 1/2, 9 1/2, 10 1/2, 11 1/2, 12 1/2.		
8 X 6 to 10 X 8, 9 1/2, 10 1/2, 11 1/2, 12 1/2, 13 1/2.		
10 1/2 X 8 1/2 to 14 X 10, 10 1/2, 12 1/2, 13 1/2, 14 1/2.		
15 X 10 to 18 X 12, 11 1/2, 13 1/2, 14 1/2, 15 1/2.		
20 X 12 to 24 X 16, 11 1/2, 13 1/2, 14 1/2, 15 1/2.		
20 X 17 to 24 X 18, 12 1/2, 14 1/2, 15 1/2, 16 1/2.		

15-oz., Orchard House, 20 X 12, 20 X 15, 16 1/2, 17 1/2, 3d., 18 1/2, 3d., 20 X 16, 20 X 14, 20 X 17, 18 1/2, 3d., 20s.

15-oz., for Cutting up, 34 1/2, 41 1/2, 42 1/2, 66s. per 300 feet case.

21-oz., for Cutting up, 34 1/2, 41 1/2, 42 1/2, 66s. per 200 feet case.

LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.

Lists on application.

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BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities of

BETHAM & SON,

LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 15-oz. & 21-oz.

HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 400 feet,

Carriage Paid to any Railway Station in England.

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Geometrical Mosaic and Encaustic

TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

MAW AND CO., Benthall Works, Broseley, Shropshire.

Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS

are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense,

as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

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PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL

BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES,

for Conservatories, Halls, Corridors, Balconies, &c., from 2s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

F. ROSHER AND CO., Brick and Tile Makers.

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SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEATS or LOAM supplied at lowest rates in any quantities.

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N.B.—Orders promptly executed by Rail or to Wharves.

A liberal Discount to the Trade.

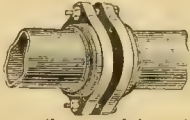
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DENNIS PARK IRONWORKS, STOURBRIDGE,
MANUFACTURER OF
HOT-WATER PIPES,
IMPROVED "EXPANSION JOINT" PIPES,
BOILERS,
SPOUTING, PUMPS, TANKS, WROUGHT-IRON TUBING,
And every description of Ironwork for Horticultural and
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SOCKET HOT-WATER PIPES.

	s. d.	s. d.	s. d.
Pipes 6 ft. long—2-in., 1 8 .. 3-in., 2 9 .. 4-in., 3 6 each.			
(9 ft. long) — " — " 3 9 .. " 4 9 ..			
Elbows (No. 12) — " 1 1 .. " 1 8 .. " 2 0 ..			
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"Expansion Joint" Hot-water Pipes.

The "Expansion Joint." The Best and Quickest Made.



This joint, being easily removed, is specially adapted for Tenants.

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Pipes (6 ft. long)—2-in., 1 6 .. 3-in., 2 4 .. 4-in., 3 1 each.			
(9 ft. long) — " — " 3 4 .. " 4 6 ..			
Elbows (No. 3) — " 0 9 .. " 0 11 .. " 1 1 ..			
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Joint complete, with Rubbers and Pins, 2-in., 11d. each;
3-in., 1s. 3d.; 4-in., 1s. 6d.

Delivered into Trucks or Boats. Illustrations and Price Lists free.
Terms—Cash against Invoice less 2½ per Cent. Discount.

Estimates for Heating given from Plans.

ALL CASTINGS SUPPLIED OF FIRST QUALITY ONLY.

PIPES and FITTINGS,
FOR HEATING APPARATUS.

The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yard.

SILVESTER & SAINSBURY,

Castle Hill Foundry, Newcastle, Staff'dshire.

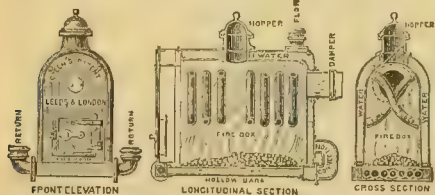
GREEN'S
PATENT
WROUGHT-IRON HOT-WATER BOILERS,

With Tubes or Shelves, and Hollow or Ordinary
Cast-iron Grate Bars.

SADDLE BOILERS,
With WATERWAY BACKS and WELDED BOILERS,
Specially adapted for Heating Greenhouses, Conservatories,
Churches, Chapels, Schools, Public Buildings, Entrance Halls,
Warehouses, Workshops, &c.

They are the neatest, cheapest, most effective and durable
of any extant.

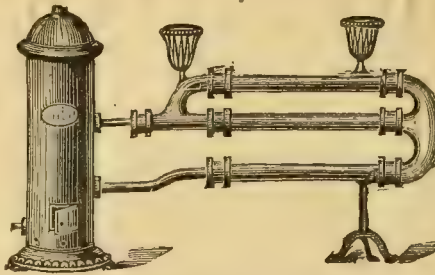
The Tubular ones are remarkable for their great Heating
Power, Slow Combustion, and the length of time the Fire
will Burn without requiring attention.



Descriptive Illustrated PRICE LIST may be had free on
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THOMAS GREEN & SON (Limited),
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And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

HOT-WATER APPARATUS,
Heated by Gas.

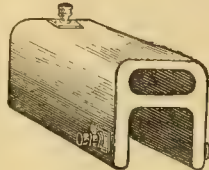


Prices, complete with Boiler, from £3 7s. 6d.

DR. ADAMS' PATENT GAS STOVE FOR HEATING GREENHOUSES, &c.

For full particulars, apply to
JOHN WRIGHT AND CO., 71, Broad St., Birmingham.

FLETCHER, LOWNDES & CO.
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IMPROVED
**TERMINAL END
SADDLE & FLUE
BOILER.**

Unsurpassed for economy
and utility.

HEATING APPARATUS fixed complete.

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STOVES—STOVES.

Terra-Cotta! Portable! For Coal!

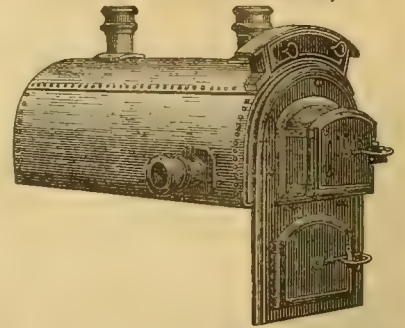
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Healthy Heat twenty-four hours or longer for about 1d.
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purpose. Pamphlet and authenticated Testimonials sent. In
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BEDWORTH BOILER WORKS.
(ESTABLISHED 1800.)

SMITH BROTHERS,



Makers and Inventors of this Wrought-iron Rivetted Saddle
Boiler, called the **IMPROVED COMBE ABBEY BOILER**
—which we consider is the best ever offered to the Public for
Heat and Durability, is made in a very substantial manner and
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as shown in drawing.

For practical references apply to **Mr. WILLIAM MILLER,**
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The Best System of Heating is by Hot Water.
The Best Hot-Water Joint is Jones' Expansion Joint.

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ENGINEERS and IRONFOUNDERS,
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THE BEST HOT-WATER JOINT.



Medal Awarded Horticultural Show, Aston, 1875.

SIMPLE,
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NEAT,
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Specially adapted
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the most improved BOILERS, EXPANSION JOINT PIPES,
or COILS, on application.

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UPPER GROUND STREET,
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Have the largest and most complete stock in the Trade
to choose from.

HOT-WATER BOILERS, PIPES, and CONNECTIONS,
And all CASTINGS for HORTICULTURAL PURPOSES.

Their New Illustrated Catalogue, 10th Edition, now ready
(price One Shilling).

Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.
Price List on application free.

TWO GOLD MEDALS
Awarded to us by
Royal Horticultural Society,



At the Grand Show at Preston,
July, 1878.
Out of Fourteen Competitors.

Having extensive works, special machinery, and first-class workmen, who have been many
years in the trade, we are able to supply the very best class of buildings at an extremely low
price. As we are the only firm in the kingdom that has ever been awarded Two Gold Medals
by the Royal Horticultural Society, this will be some proof of the quality of our productions.
Our buildings are constructed so as to combine great strength, simplicity, and durability,
with extreme lightness, and being made of the very best materials, last with ordinary care, last

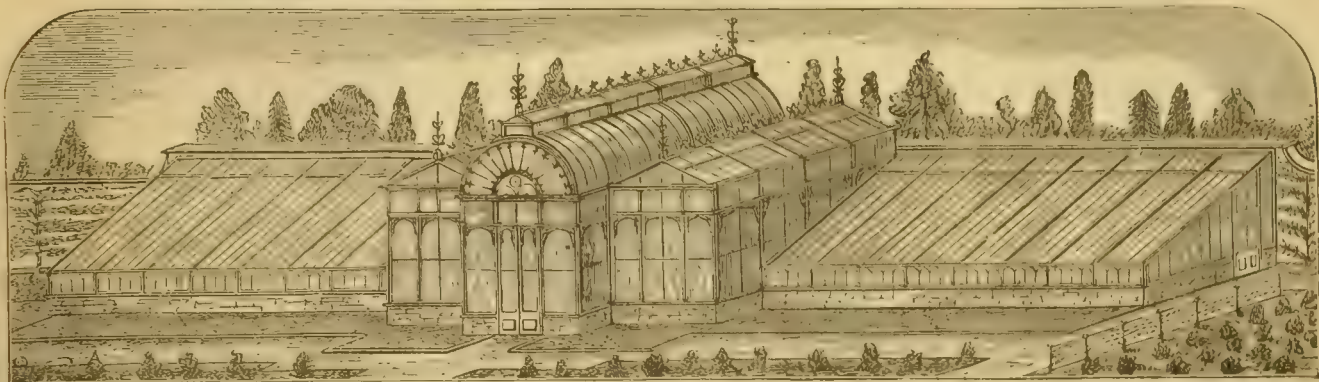
a lifetime. The ventilators at top and bottom open the whole length with one handle to each series.
The glass used is 21-oz. British sheet, and the paint the best genuine white lead and oil.
HEATING APPARATUS, with thoroughly reliable Boilers supplied and fixed in the most
practical and efficient manner, and guaranteed to work economically and answer its purpose in all
seasons. We devote special personal attention to this branch of our business, and have never had
a failure.

Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.

R. HALLIDAY & CO., Royal Horticultural Works, MIDDLETON, MANCHESTER.

HENRY ORMSON,

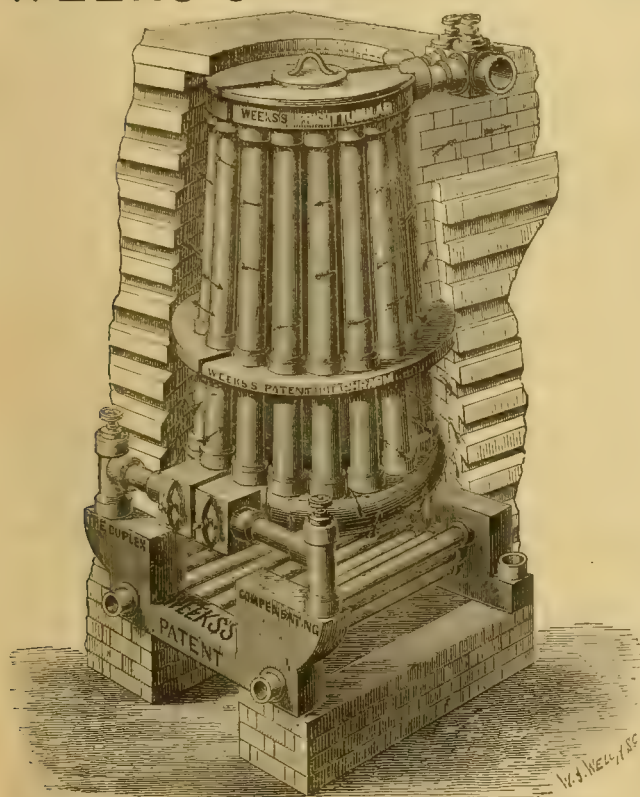
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THE BEST BUILT HOTHOUSES AND CONSERVATORIES.

Surveys made and Gentlemen waited on in any part of the Country. Catalogues, Plans, and Estimates supplied gratis on application.
UNSURPASSED BOILERS AND HEATING APPARATUS.

**THE ZOOLOGICAL GARDENS AND
WEEKS'S PATENT DUPLEX TUBULAR BOILER.**



The Nobility and Gentry who visit the unique and splendid collection of the *Zoological Society*, in Regent's Park, and who take an interest in the science of Heating by Hot Water, would do well to examine the mode in which the various houses are warmed.

About twenty years ago J. WEEKS & Co. had the honour of first putting down one of their Boilers at "the Zoo," which gave such immense satisfaction that all the old Boilers have, from time to time, been replaced by their *Patent Tubular Boilers* and improved system of heating. Their Boilers have also been put down to warm all the new houses.

At the present time the whole of the establishment, containing about

**THREE MILES OF PIPING,
IN ABOUT FIFTY SECTIONS,**

is warmed by their *Patent Tubular Boilers*, and of the manner in which they do their work, Mr. BARTLETT, the well-known manager, after nearly twenty years' experience of them, writes as follows:—

"Zoological Society's Gardens, Regent's Park, London, N.W.
 "September 23, 1880.

"Messrs. J. WEEKS & Co.

"Gentlemen,—I have much pleasure in stating that since the introduction of your Hot-water Apparatus, about twenty years ago, into these gardens, I have found the working of the same most admirable, not only with reference to the warmth, and with ease of management, but in the economy in fuel and labour. I am constantly asked by the Visitors and Fellows of the Society how the various houses are kept warm during the winter, and at the same time supplied with sufficient fresh air. I invariably call their attention to the new *Lion House*, as this building appears to me PERFECT as far as warmth and ventilation are concerned; and I feel it my duty to recommend this mode of heating buildings, whether intended for animals or plants.

"Yours faithfully, "A. D. BARTLETT."

For ILLUSTRATED CATALOGUE and full particulars (post-free),
 apply to

J. WEEKS & CO., HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS,
 KING'S ROAD, CHELSEA, LONDON, S.W.



"ART WITH ECONOMY,"

Applied to Conservatories and Greenhouses.
 With Illustrations, Prices, &c.

Part I., now ready. Post-free, twelve stamps.

CHEAP ART-SUMMERHOUSES.
 Illustrations and Prices Gratis.

T. H. P. DENNIS & CO.,
 MANSION HOUSE BUILDINGS, LONDON, E.C.
 WORKS: CHELMSFORD.



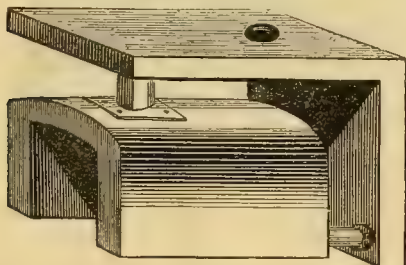
WARNER'S TURNIP AND ROOT CUTTERS.



PRICES UPON APPLICATION.

J. WARNER & SONS,
Crescent Foundry, Cripplegate, London, E.C.
Foundry Works: Walton-on-the-Naze, Essex.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.		To heat of 4-in. Pipe.	Price.
High.	Wide.		
20 in.	18 in.	18 in.	300
20 "	18 "	24 "	400
20 "	18 "	30 "	500
24 "	24 "	24 "	700
24 "	24 "	30 "	850
24 "	24 "	36 "	1000
24 "	24 "	48 "	1400
28 "	28 "	60 "	1800

Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Balham Hill, S.W., May 29, 1873.

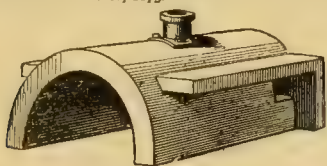
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

Silver Medal, 1874.

THE TERMINAL SADDLE BOILER.—
First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



"This boiler possesses the rare merit of sucking all the heat from the fire."—*Gardeners' Magazine*, p. 254.
"I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 327.
"For moderate cost and real efficiency the Terminal Saddle is one of the very best."—*The Garden*, p. 95.

Prospectus post-free.

T. JONES, Temple Street, Manchester.

RITCHIE'S PATENT GAS or OIL HEATING and LIGHTING STOVES.

Silver Medals awarded at Wolverhampton Exhibition, 1883; and Brussels International Exhibition, 1880.

No Smoke
No Smell
No Flue
No Danger
No Injury to Pictures or Plants

No Dust
Ventilation and Purification
Light and Warmth combined (Fuel Cost less than other

For Conservatories
For Halls
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For Harness Rooms
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Prices from £3 3s. to £10 10s.
Full particulars and testimonials forwarded on application to RITCHIE and CO., 23, St. Swin's Lane, London, E.C.
WEST END SHOW ROOMS: 40, Albemarle Street, Piccadilly, W.

HOT-WATER PIPES AND FITTINGS, also COILS,

SINGLE,
DOUBLE,
TREBLE,
or
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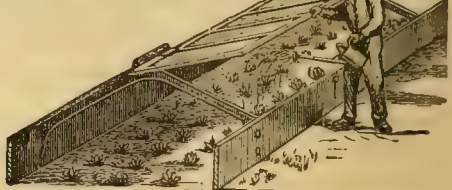
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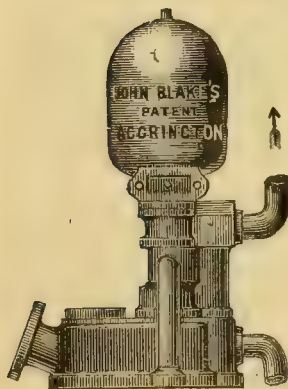
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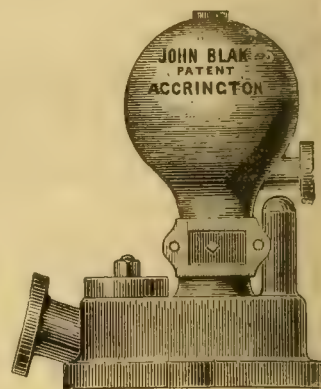
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The Castle Brick Company, Northop, Flint.
The Leyland and Farrington Gas Company.
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Edward Singleton, Esq., Preston Deanery, Northampton.
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John Fielden, Esq., Grimston Park, Tadcaster.
The Rev. Canon Bridges, The Avenue, Ewell, Epsom.
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John Rowe Bennion, Esq., Nursted House, Petersfield.
J. Spender Clay, Esq., Ford Manor, Surrey.
The Guardians of the Sheffield Union (New Workhouse).
Richard Mercer, Esq., Sandling Place, Maidstone.
James Smithells, Esq. (Caledonian Railway), Dean Wood, Rivington.
Chas. J. Ebdon, Esq., Baldolo Manor, Hasting.</p> |
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This Ram, for deep working falls, will force up one-third of the water passing through it.

RECENT TESTIMONIALS.

From J. SPENDER CLAY, Esq., *Ford Manor, Lingfield, Surrey, August 9, 1880.*—"In reply to your letter of inquiry I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6120 gallons per twenty-four hours, being 120 gallons above the quantity you guaranteed."

From the Right Honourable the EARL of ROMNEY, 56, *Eaton Place, S.W., June 12, 1880.*—"Sir,—In reply to your inquiry, I have pleasure in stating that the Hydraulic Ram which you erected for me at Gaydon does its work remarkably well, and is a great success. I think the work is especially creditable to you on account of the very small fall of but 3 feet with which you had to deal, and I shall always be glad to recommend you.—Yours faithfully, ROMNEY."

From JOHN ROWE BENNION, Esq., *Nursted House, Petersfield, August 25, 1880.*—"I have much pleasure in saying that the two Hydraulic Rams you put down for me, and which are supplied from a spring now yielding in this dry season only 3 gallons per minute, are sending up an ample supply of water to my house and the home farm, distributing the supply through more than 2000 feet of pipes and to an elevation of 137 feet. Of this result I think you have as much reason to be proud as I have to be satisfied."

From EDWARD SINGLETON, Esq., *Preston Deanery, Northampton, July 9, 1880.*—"The Hydraulic Ram you fixed here for me is very successful. It sends up more than sufficient water for a hundred head of cattle, besides horses, also feeds a steam engine, and during two severe winters we have not had a pipe go wrong with frost as I quite expected they would do. No farmer who requires abundance of water should be without one."

From Col. TREMAYNE, *Perran-ar-Worthal, Cornwall, March 7, 1880.*—"The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons per day to a height of 125 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

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